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THE
GARDENERS' CHRONICLE.

A Weekly Illustrated Journal

OF

HORTICULTURE AND ALLIED SUBJECTS.

VOL. VII.—NEW SERIES.

JANUARY TO JUNE, 1877.

LONDON:

41, WELLINGTON STREET, COVENT GARDEN, W.C.

1877.

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Jan-Je
1877

LONDON :
BRADBURY, AGNEW, & CO., PRINTERS, WHITEFRIARS.

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No. 158.—VOL. VII. { **NEW SERIES** } SATURDAY, JANUARY 6, 1877. { Registered at the General Post Office as a Newspaper. } Price 5d. Post Free, if desired.

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NEW SEED CATALOGUE For SPRING, 1877.

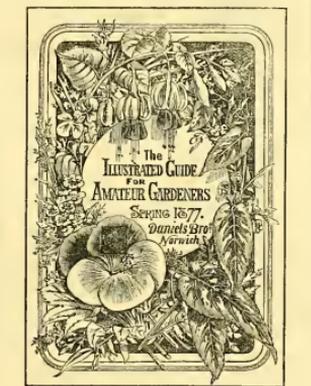
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Yeovil Nursery. B. R. DAVIS, having arranged to take the Business belonging to the late Mr. F. Pierce, begs to assure the Nobility, Gentry, Clergy, and the Public generally, that it will be his constant endeavor to merit a continuance of those favours bestowed for so many years upon the late proprietors, and to supply the same in every respect to all orders entrusted to him. B. R. D. begs to offer a quantity of large ARBOR-VITAE, 8 to 10 feet, of the D. DONADA, WELLINGTONIA, THUJA, LIMES, 8 to 12 feet, and a large assortment of TREES and EVERGREENS, Standard and Ornamental Planting; having been periodically transplanted will remove with perfect safety. MAGNOLIA GRANDIFLORA, Farnouth variety, extra fine, 3 to 4 feet, 1s. 6d. Standard, Portland, extra fine, at a very low price; will remove with B. R. DAVIS (late E. Pierce), Yeovil Nursery and Seed Warehouse, Yeovil, Somerset.

Australian Plants and Seeds. EUCALYPTUS GLOBULUS, PALMS, SEEDS INDIGENOUS to Australia, &c., supplied on the most reasonable terms. Priced CATALOGUES and Special Quotations on application. SHEPHERD AND CO., Nurserymen and Seedsmen, Darling Nursery, Sydney, New South Wales. (Established 1827.) Agents: Messrs. C. J. BLACKITT AND CO., Cox's Quay, Lower Thames Street, London, E.C.

WHOLESALE OFFER OF NURSERY STOCK.

100,000 FIR, Larch, 4 yr., 2 to 3 feet, twice transplanted. 70,000 LARCH, 4 yr., 15 to 20 feet, and 15 to 25 feet. 20,000 SYCAMORE, 3 to 4 feet, fine. 20,000 BIRCH, fine, 1 to 2 1/2 feet, and 2 to 3 feet. 20,000 LAUREL, common, 2 to 3 feet. 15,000 LAUREL, Portland, 2 to 3 feet, extra fine. 2,000 PINUS AUSTRALIS, 6 to 8 feet, transplanted spring, 1877.

For names and lowest quotations, apply to MICHAEL GARDIN AND CO., Elm Grove Nurseries, Newry, Ireland.

Special Offer to the Trade.

CHOICE SEEDS.—Purple Loathen Stocks and Parsnips, and the Egyptian and cross Cauli-tuft; Dell's Black Beet; Egyptian Turnip-rooted Beet; Best's Nasturtium, spring; King's Tom Thumb Nasturtium, true size; Carrot, James' Wonderful, double; Broccoli, Chapple's Cream, and snowflake Potato; Austrian Pines, 50c. per bush, and particulars on application. E. ABBOTT, Railway Nursery, Ardleigh, near Colchester, Essex.

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MARTIN AND SON, Cottingham, and 67, Market Place, Hull. *Apples, pyramids, 12s. per doz. Pears, pyramids, 12s. per doz. Plums, odds, 4s. 11s. per doz. Apples orientalis, 2 feet, 12s. per doz. *Arbutus, 5 to 6 feet, 6s. per dozen. *Acer Negundo var., 9 p. doz. *Alban frutex, named, 9 p. doz. *Barbaris japonica, 1/2 to 2 1/2 feet, 2s. per dozen. *Buxus sempervirens, 2 to 3 feet, 2s. per dozen. Cedrus libanotis, 4 to 5 feet, 18s. per dozen. Juniperus drupacea, 2 to 3 feet, 42s. per dozen. Juniperus sinensis, 4 to 4 1/2 feet, 2s. per dozen. *Liliodendron decorum, 4 to 5 feet, 2s. per dozen. *Ligustrum japonica, 2 to 2 1/2 feet, 2s. per dozen. *Lilac, 4 feet, 5s. per dozen. *Laurel, common, 2 to 3 feet, 2s. per 100. *Laurel, Cokchis, 2 to 3 feet, 16s. per 100. *Laurel, caucasia, 2 to 3 feet, 20s. per 100. Phyllyrea, 12 to 12 1/2 feet, per doz. Pine, Cembra, 4 to 5 feet, 18s. per dozen. *Vera English, 3 to 4 feet, 10s. per dozen. *Tree Beech, 2 to 3 feet, 12s. per dozen. Ivy, gold, extra bushy, 2s. per dozen. Rhus hibernica glabra, 2s. per dozen. *Syringa, 10 to 15 ft., 5s. per doz. *Roses, standards, 2s. 9d. per dozen. *Trees, strong ornamentals, 8 to 12 feet high, 40s. per 100. *Shrubs, deciduous flowering and evergreen, 25s. 6d. per 100. *Pine, Austrian, 3 to 4 feet, 10s. per 100. Fir, Scotch, 1 to 4 feet, 10s. per 100. Oaks, English, 6 to 10 feet, 20s. per 100. *Sycamore, 6 ft., 10s. per 100. Elm, 4 to 5 ft., 10s. per 100. *Beech, 2 1/2 to 3 1/2 feet, 40s. per 100. *Ash, 2 1/2 to 3 1/2 feet, 40s. per 100. Those marked * we can supply by the 100s, Laurels by the 100s, and the rest by the 100s. Catalogues on application. N.B.—Cash or reference.

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CHOICE VEGETABLE SEEDS, 42s., 27s., 42s., 63s., and 105s. each, carriage paid. As my new and choice seeds are now in large demand, please order early. SPECIALITIES.—CAULIFLOWER, Yewitch's Autumn Giant, 12s. 6d. per packet. LETTUCE, Alexander's Cos, true, 12s. per packet. ONION, Cambridge, 12s. per packet. BROCCOLI, Leamington, finest late, 1s. 6d. per packet. GARDEN CUCUMBER, large, and early, 1s. per packet. CATALOGUE of new and Choice Seeds on application. R. B. M'COMBIE, Grower of Choice Seeds, &c., Christchurch, Hants.

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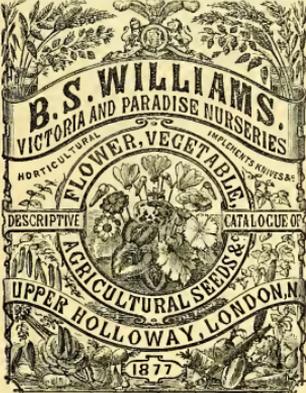


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We have imported extraordinary large native bulbs of this magnificent novelty, which are in finest possible condition, and which will produce an abundance of flowers. Price, each per dozen, will be given by every Seedsmen and Nurseryman. Wholesale prices of Messrs. Hurst & Son, 5, Leadenhall Street, E.C.; and of F. SANDER AND CO., SEED GROWERS, ST. ALBANS.

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PLATANUS OCCIDENTALIS (true), 10 to 12 feet high, and girthing 4 to 8 inches at 4 feet from the ground.
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The Queen's Seedsmen,

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ODONTOGLOSSUMS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, January 11, a large importation of the beautiful ODONTOGLOSSUM PESCATOREI, O. TRIUMPHANS, O. HASTILABIUM, O. PHALÆNOPSIS, O. CORONARIUM, just received, ex *Vile*, from the United States of Colombia, in good condition. Collector says the varieties found of O. coronarium are of the most magnificent description, the inflorescence itself, which is very dense, being about 1½ foot high by 9 inches broad, and the flowers individually very large and attractive.

At the same time will be sold some good plants of the handsome O. VEXILLARIUM, O. CIRRHOSUM; several good plants, just breaking into growth, of the new and beautiful SOBRALIA VIRGINALIS; good plants of ODONTOGLOSSUM CRISPUM (ALEX-ANDRÆ), various DENDROBIUMS, and a few choice ESTABLISHED ORCHIDS, including the new white-flowering VANDA UNDULATA, the sweet-scented DENDROBIUMS AMENUM and BARBATULUM, PHALÆNOPSIS SCHILLERIANA, &c.

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SPLENDID NEW MELON, 1877.

CHARLES LEE & SON

(Successors to Messrs. J. & C. LEE)

Have the pleasure to announce that they have purchased
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MANN'S HYBRID GREEN-FLESH MELON,

Which they now offer for the first time.

It has already earned a high reputation in London and the provinces for its many excellent qualities, among which may be mentioned a remarkably high and exquisite flavour at all seasons of the year—perfection of shape and size for dessert—a thin rind and melting flesh, with an overflow of perfumed juice. It is also a heavy cropper, and forces well.

Dr. HOGG has spoken of this excellent Melon in the highest terms, and after tasting it pronounced it a fruit of the highest merit.

Mr. CULVERWELL, of Thorpe Perrow, fellow judge with Mr. FOWLER, of Harewood House, at the Leeds Horticultural Show, where they awarded a First-class Certificate to "Mann's Hybrid Green-flesh Melon," speaks of it as "an exceedingly fine Melon, especially at that early season—the early part of June."

Mr. INGRAM, of Belvoir Castle, writes, in the third week of October, "that in spite of the disadvantage of a long term of gloomy weather, at that season of the year, 'Mann's Hybrid Green-flesh Melon' was sweet, tender in flesh, very juicy, and distinct in character."

Messrs. Charles Lee & Son are now prepared to offer this very useful and delicious new Melon
In Sealed Packets, at 8s. 6d. per Packet.

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SEEDS OF SUPERIOR QUALITY.



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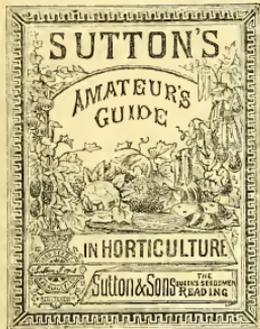
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* All seeds amounting to 20s. will be delivered free of carriage to any Railway Station in England.

ILLUSTRATED SEED CATALOGUE gratis and post-free to all applicants.



SATURDAY, JANUARY 6, 1877.

TRAINING AND TYING PLANTS.

AS the season when the annual process of retying hard-wooded plants in particular has arrived, it may not be out of place to say a few words on the subject. The very different manner in which pot plants generally, and more especially those of a hard-wooded nature, are now grown from what they were before taken in hand by the exhibiting growers, has necessarily made this work considerably different from what it once was. There are many who will recollect that these subjects were usually seen cramped for years in undersized pots, spring upwards, with a few gaunt branches and bare stems, with perhaps a single stick to support each starveling, which generally exhibited so little in common with its natural form and habit of growth as to be somewhat difficult of recognition. This, be it remembered, was the case with a class of plants which when in a state of Nature mostly assume a low-spreading, bushy habit. This form is so changed by the influence of under-glass cultivation in even the best constructed light-affording houses we can give them, that unless counterbalanced by timely stopping the leading shoots, so as to direct and distribute the sap into the lower lateral branches, a straggling, objectionable growth is the result. When, however, by judicious treatment, a plant is so grown as to consist of a large number of branches, generally of slender character, it naturally follows that these require some support, hence the necessity for sticks and ties; but in the use of these it should ever be borne in mind that they belong to the category of things that are generally designated as necessary evils.

Sticks should never be used in greater numbers than are absolutely necessary to keep the branches sufficiently open to admit the requisite light to the inner portion of the plant, to support it in the shape most conducive to maintain it in a healthy, well-clothed condition of foliage, and to display the flowers to the best advantage. There is one other and very important consideration, that must be taken into account in determining the more or less support that a plant requires; that is, the particular purposes it will be wanted for. Plants that are only intended for home decoration, and have not to be moved about further than from one house to another, need a comparatively small number of sticks, and still fewer ties, than such as, in addition to doing duty at home, have to be conveyed a considerable distance to exhibitions. Such plants as Azaleas, the branches of which are naturally stout enough to support themselves in the desired position, after they have been trained to the desired form and have acquired strength and substance, need very few sticks when only wanted for home use. Eriostemons, again, are comparatively stout-wooded plants, and do not need so much tying as many things; neither do Darwinias (Hedatomas), although each of the strongest shoots will want a stick: the smaller lateral growths do not require securing. Of Epacris, also, the flowering wood looks better when not too stiffly tied; Acrophyllum venosum is another stout-wooded subject, that when not to be moved about much wants no more tying than may be sufficient to preserve the

outline reasonably; the same may be said of *Adenarras*, *Cassia corymbosa*, *Correas*, *Crowcas*, *Diosmas*, *Hoveas*, *Desfontainea spinosa*, *Dillwynia*, *Boronia*, *Plama* indica, *Witsenia corymbosa*, *Statice*, *Melroca* clegans, *Pimeles*, *Pharomomas*, *Mitiraria coccinea*, and the strong-wooded *Heaths*, such as *Cavendishii*, *depressa*, and the *vestitas*, or any others of similar growth, which only need as many sticks and ties as will hold them in position, and keep them furnished with leaf-clad shoots down to the pot. Naturally weak-wooded plants, such as *Droacophyllum gracile*, *Chorozemas*, *Aphelexis*, *Leschenaultia*, *Roella ciliata*, *Swinsonas*, and *Tetrathecas*, must have more support, merely to keep them from hanging about in an untidy manner. There are also very many *Heaths* so weak-wooded that if a considerable number of sticks be not used they cannot be kept in shape at all, even if never moved off the stage of the house in which they are grown.

In the case of plants for exhibition we sometimes see the quantity of sticks used for training carried to such an excess beyond what is really necessary as to make the plants hideous to look upon; and to stamp those who thus torture them as totally devoid of the slightest notion of artistic taste, however capable they may be of so treating their plants as to preserve them in a healthy condition. This over-training is most objectionable when it extends so far as tying flat down the points of the flowering shoots in a horizontal position all over the surface of the plant. The operator may think he secures his aim in displaying the quantity of flower most conspicuously, but it simply makes what otherwise might be a meritorious specimen look wretchedly bad. But although tying should never be carried to such an extent as this, still with plants that have to be subjected to the shaking unavoidable in conveying them to an exhibition in the best constructed vehicle, it is absolutely necessary that as many sticks and ties should be used as will keep every shoot in its proper place, and the whole of the flowers from chafing. Otherwise, even plants with hard flowers, such, for instance, as the *Cavendish Heath*, will be so injured as to turn them black, and with the far greater number of things literally grind them away, and this when only a few miles have to be traversed. It will be needless to say that the evil is much aggravated when long distances have to be gone over. If any one who has not had experience in this matter has any doubts about it, and will just try the experiment of moving a loosely tied plant only a few miles, he will get enlightened on the subject.

Many a gardener has had his exhibiting career cut short through his plants coming home disfigured for want of being sufficiently tied. We have frequently known gentlemen anxious to support horticulture, and also encourage their gardeners, and equally desirous of giving the public an opportunity of seeing fine plants, yet they were so disgusted at the condition in which their plants returned from the shows that they put a stop to exhibiting altogether. The amount of tying indispensable to the safe carriage of flowering plants is much greater than those who have not tried it are aware of; the shoots must of necessity be secured in a way that deprives the plants to a considerable extent of the loose elegance that can be allowed them when they have not to be moved further than necessary for home use. This is what some of those who give us their views upon plant tying, and condemn the work of exhibitors, never appear to be able to comprehend. We are from time to time favoured with the ideas of those who generally indulge in a sweeping tirade against the bad taste displayed by exhibitors in the way they tie their plants. If these would-be critics do not succeed in con-

vincing those they essay to enlighten and who have had ample opportunity of judging in the matter, they at all events manage not only to display a total absence of practical knowledge of the subject they treat upon, but also show their want of ordinary perception in not being able to discriminate betwixt the training necessary to give the plants required for home use, apart from such as have to go through the severe jolting unavoidable from their being moved even a moderate distance.

But, although this operation needs to be so far varied for the different purposes plants are required to fulfil, when they have arrived at a considerable size, yet in the early stages of their existence the training they need is identical. Unless the branches, especially the strongest, are well and regularly tied out in a horizontal position low down from a little above the collar, the foundation for the future specimen can never be satisfactory, inasmuch as the plant will, whilst in a comparatively young state, get bare at the base; but when from the commencement the branches are properly placed so as to distribute them equally in the desired positions, the after-treatment in tying is simple, and should be carried out just so far, and no farther, than the particular purpose the plants are wanted for demands. The support that pot plants in this way require is simply a necessity resulting from the highly artificial conditions we force them to endure; and the more we can conceal the hand of art thus inseparable from their existence, the greater measure of success we attain.

A SPRING TOUR IN ITALY.

THE summer and winter climate and vegetation of the plain of Lombardy present greater contrasts than do our English seasons. A descent from the Alps at midsummer brings you at once into the midst of tall Maizes, fields of ripening Rice, and hedge-way rows of *Mulberries* in luxuriant leafage intertwined with *Vines* which have nearly completed their season's growth.

From the refrigerating influence in winter of the snow-covered Alps forming its northern boundary, little or no difference can be observed up to the middle of March between the spring vegetation of the northern Lombardy plain and that of England, and late frosts even in May occasionally do serious damage. On February 26 heaps of snow were lying in the garden of the grand Hôtel de Turin; the plain of Lombardy was seared and soddened by the winter scarcely over, and *Galanthus nivalis* in the hedgerows and *Eranthis hyemalis* in the fields were the only indications of coming spring.

A night journey from Venice brought me at day-break on February 27 to the head of the Adriatic, with the calm land-locked Gulf of Monfalcone far below the level of the railway to the right, and to the left long parallel ridges of oolitic and cretaceous limestone full of little lakes and waterlogged hollows trend away to the south-east as an irregular stony tableland, the home of a rich and special flora.

This configuration holds good for nearly 300 miles down the east coast of the Adriatic, and has determined the outline of the archipelago of parallel islands off the Dalmatian coast. The isolated hollows or complete rock basins seen on the east side of the railway are not unfrequently in calcareous rocks, and are the result of the gradual dissolution of the limestone through swallow-holes or underground channels, of which the neighbouring cave of Adelsberg is a gigantic example. I am informed by Herr Max Leitch that it is in similar hollows that *Lilium dalmanicum* occurs in the neighbourhood of Cattaro, farther south. Monfalcone is interesting to the botanist in being one of the most western habitats of the beautiful *Crocus reticulatus*.

From the flat alluvial plain at the head of the Adriatic the railway gradually ascends the coast Monfalcone to the Nabresina junction, where the line to Trieste branches off. The approach from this point to Trieste is most striking; the line winds down the western face of the escarpment, the vegetation of which is notably different from that of the barren summit. *Salvia humilis* is a most abundant indigenous plant, and several

species of *Euphorbia* clothe the rocks. The steep bank between the railway and the edge of the gulf is densely clothed with plantations of Olive, of unusual vigour and size. Trieste, with its forest of masts, is seen for miles before we reach it, far below us. We pass above the marine villa of the unfortunate Emperor Maximilian, and look down hundreds of feet into the Adriatic waters, now quiet and smooth as glass, in the early morning dotted over with fishing boats, and fringed with spiral *salix* nets spread out from the shore, and nearly land-locked by the grey outline of the Italian and Italian coast to the west and south. We quickly descend down the escarpment, through tunnels and across viaducts, into the bay port, full of life and dirt, the great maritime outlet of the Austrian empire, through which over twenty millions of import and exports pass during the year.

TRIESTE.

The city stretches up from the water's edge to the foot of the great oolitic escarpment, here about 1000 feet high, flanked by neocomian beds, mostly consisting of dark grey marls, which lie at a high inclination against the upturned edge of the oolitic rocks, forming the limestone plateau known as the Carso.

Chevalier Tommassini, the Governor of Trieste, has formed an interesting little botanical garden on one of the hills overlooking the city. It contains representatives of the local flora and the plants of Istria and Dalmatia. Very few species were yet in flower, but patches of a nearly large *Galanthus*, from the neighbourhood of Pirano, in Istria, formed striking features. The entire plant is quite twice the size of *Galanthus nivalis*, with long perianth segments, and may possibly prove to be distinct. There were also in the garden some of the local *Crocus*, including some brightly coloured varieties of *Crocus Weldenii* just expanding.

On Monday, Feb. 28, M. Tommassini kindly accompanied me on a botanical excursion over the Carso plateau to the east of Trieste, rich in rare plants though few species were yet in flower. It consists for the most part of a great treeless wilderness of limestone, with escarpments facing west and dipping to the east. One of the highest points is known as Mont Spaccato, and on the eastern slopes there are here and there low woods, principally of Oak, the most extensive of which is the Lipizza Forest, but the greater part of the Carso is devoid of arboreal vegetation, except near the villages, where M. Tommassini has established plantations of *Pinus austriaca*, thriving well on the limestone, though not indigenous.

Among the plants of the Carso may be enumerated: *Foenicia peregrina*, *Lilium carniolicum*, *Heliolepis viridis*, *Gagea pusilla*, *Potentilla subcaulis*, and *Fritillaria montana*. The association of the two latter plants is interesting, as they occur in similar association on the Plateau des Rochers above Grassano, 400 miles to the west, though I believe neither species occurs within 300 miles in the intermediate district.

The Carso forms a western starting-point for many species, but it affords a wide eastern distribution. It is the most western habitat of *Crocus reticulatus* (*C. variegatus* of Hoppe and Hornsch), which extends to Podolia, Asia Minor, and the Caucasus. It occurs in profusion in the Lipizza Forest, on Mount Spaccato, and near the villages of Opsina and Prosecco, varying with lilac and white flowers, externally striped. The corn-coats are densely enveloped with wire-like reticulated fibres. Deen Herbert erroneously associated it with the Crimean Cloth of Gold *Crocus* as varieties of the same species, but the two differ materially, not only in the colour of the flowers, but in the character of the corn-coats and the form of the limb, which is much narrower and more acute in *reticulatus* than *susianus*. Opsina is also the habitat of the beautiful diminutive *Crocus albiflorus* of Gay—a miniature form of *Crocus vernus*.

Prosecco, further to the north, is the most western habitat of *Crocus Weldenii*, which extends south-east for several hundred miles down the Dalmatian coast. It has been associated with *C. biflorus* as a variety, but as it resembles the typical form of *biflorus* only in its having somewhat corn-coats, its title to specific rank seems to me very strong. The form of the limb is almost rhombic; the prevailing colour white, but examples occasionally occur beautifully flushed with brilliant lilac and purple. A small form of *Galanthus nivalis* occurs abundantly on the Carso, and *Cyclamen europaeum* in the Lipizza Forest.

On Feb. 29 I made a short excursion by steamer

to Pirano and Stromana in Istria, passing large flocks of wild swans resting on the water. Sturgeon are here most abundant, and we had on board a large cargo of huge spider-like crabs, with legs spanning nearly a yard, which seem to be the prevailing crustaceans of the Adriatic. A walk from Pirano to Stromana afforded nothing of particular interest except the large form of *Galanthus nivalis* observed in M. Tommasini's garden, and *Primula vulgaris* with white flowers. On the evening of the same day

taken from an old drawing by Gerolamo Porro, made in 1501, and preserved in the lecture gallery at Padua—for a copy of which I am indebted to Professor Visiani—represents the original plan of the garden then limited to the circular space. The little geometrical compartments or flower-beds are fenced off by neat stone partitions environing spaces from 2 to 3 feet across, each apparently intended for a single species. The arrangement of the masonry has since been somewhat altered, and made more simple; a conservatory now

Goëthe's reference to the plant is inscribed over the building:—

Giovanni Wolfgang Goethe
Poeta e Naturalista
Di qua trasse nel 1802
Il concetto e le prove
Della sua *Metamorfosi delle Piante*.
Roberto de Visiani
Perche non mancasse a' posteri
La Palma che lo ispirò
Ni ripirava nel 1802.
La vetustà gloriosa.

Many other trees in the garden betray great age,

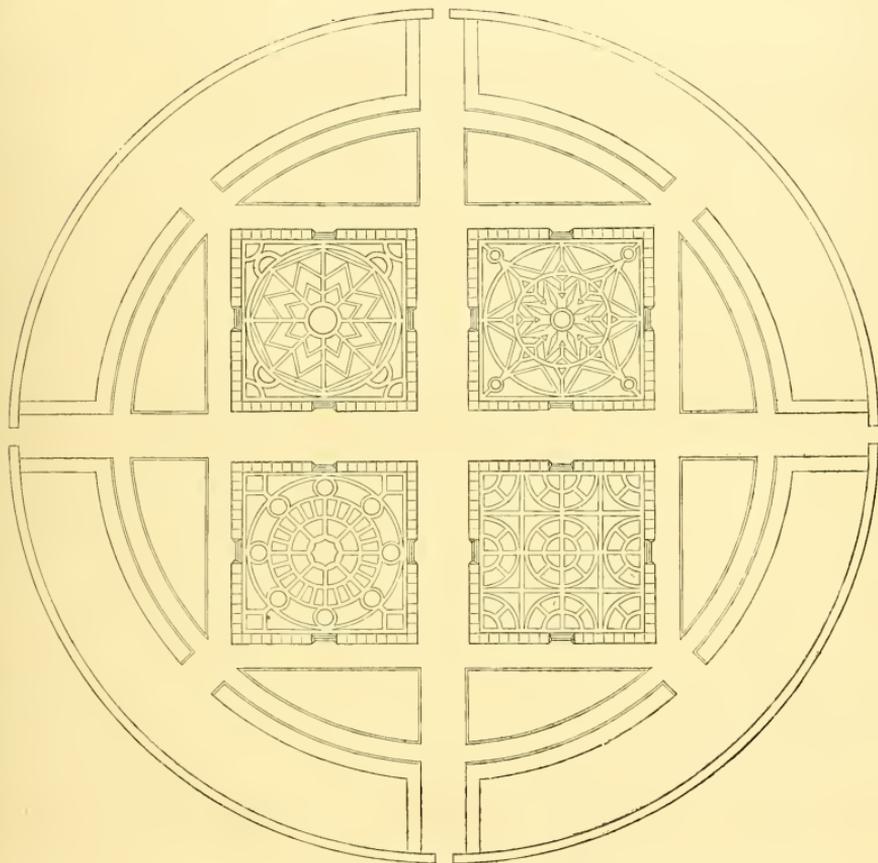


FIG. 1.—ORIGINAL PLAN OF THE BOTANIC GARDEN AT PADUA.

I left Trieste by steamer for Venice, arriving at Padua at 10.30 on the following morning.

PADUA.

A walk of about a mile from the station through the picturesque arcaded streets brings you to the great church of Saint' Antonio, towering over the portals of the little botanical garden (see previous illustration, p. 685, vol. vi.), so interesting to the horticulturists as being the oldest botanical garden in Europe, and as recording the mediæval sentiment of associating stone masonry and gardening, which are here mixed up in a charming manner. The accompanying engraving (fig. 1),

encircles the northern half of the old garden, and the extensions outside the original circle must, judging from the age of the trees, have been made within a few years of the founding of the garden, under the direction of Cisalpino, in 1500.

The garden contains several plants of historic interest—grand specimens of *Bignonia radicans* and *Chamaecyparis humilis*, referred to by Goëthe in the supplement to his essay on *Metamorphoses*, which indicates that he was less of a naturalist than a poet. The Palm is 8½ metres in height, branched into seventeen growing points, and is yet in full vigour, protected by a small conservatory. The following record of

amongst them a huge stump of *Platanus orientalis*, 24 feet in circumference, bearing a little leafage. The dying embers of a life of 180 years, a grand old specimen of *Celtis australis*, is in a similar condition; indeed, the whole place, so interesting in its antiquarian associations, is saddened by an aspect of decay aggravated by present neglect. The untutored tangled growth of a wild garden has its charms, but where the features of the garden are ordered by rigid architectural precision, the utmost neatness of detail is essential to a satisfactory result. Nothing can be more charming than the laying-out of the little circular "garden of simples" at Padua, each prettily formed

compartment intended for a special occupant, and the space grouped pleasantly to the eye, but its disorder as a garden, and the weedy paths and empty spaces, where symmetry and order are essential to the original scheme, is most depressing.

It was also disappointed with the culture in the glass-houses, and the same remark is applicable to every garden I visited in Italy; indeed, the Italians are far behind northern Europe in greenhouse gardening: this is partly due to the bad structure of the houses. Few of them have top lights, and many have glass but on one side; the occupiers under such circumstances are inevitably lanky and drawn up, and bear the aspect of having spent their lives in trying to look out of the front window. One notable exception is the magnificent specimen of *Araucaria excelsa*, which has a pagoda-like structure to itself. It was planted in 1840, and has attained a height of between 50 and 60 feet, symmetrically branched down to the very base. Out-of-doors, even in the south of Italy, the Norfolk Island Pine does not seem to thrive; none of the specimens I saw will compare with those in the Portuguese gardens. Their growth is evidently slower than in Portugal, and when attaining any size they get a rigid unsymmetrical aspect. *Araucaria imbricata* does not seem to flourish, and good symmetrical specimens are seldom seen in Italian gardens.

Of the trees in the garden, *Cupressus pyramidalis* forms striking features within the original circular space, and there are also fine examples of *Cupressus funebris*, *Abies cephalonica*, *A. excelsa*, *Pinus Laricio*, *F. Strobus*, *Taxodium distichum*, *Cedrus Deodara*, with straight undrooping branches, resembling in habit the Cedar of Lebanon; also *Magnolia grandiflora*, *Diospyros virginica*, *Juglans oliviformis* and *J. nigra*, *Cornus glabra*, *Quercus Ilex*, *Q. pedunculata* and *Q. laevis*, 16 feet high. Their orientals is used for framing high fences for shade, and bears close training into wall-like masses. A singular result has been produced by grafting *Tilia argentea* on *Tilia europaea* at about 4 feet from the ground; the trunk of the graft, 2½ feet in diameter, having outgrown the stock of *T. europaea*, which is barely half a yard across, producing a most singular top-heavy appearance.

The little arbutum outside the circular garden contains for us a good collection of trees, but the specimens are long past their prime, and suffering prematurely from want of space; and the dense contiguity of the older trees would render renewal by planting almost impossible without first cutting down the greater part of the original collection. This is a point which seems to have been lost sight of in the planting of almost all the earlier botanical gardens.

From Padua I proceeded *via* Bologna and across the Apennines to Florence, which I reached the same evening, and in my next I purpose sending you a few notes on Florentine gardens. *Geo. Mors.*, R.L.S.

THE BULB SEASON OF 1876.

THE bulb season of 1876 can hardly be considered quite so satisfactory as several of its immediate predecessors. For several years past this branch of trade has been rapidly extending, and notwithstanding the large quantities annually sold to cheap buyers at the various auctions, legitimate traders have had no reason to complain. The choicest and most expensive varieties must always be procured from respectable dealers, while the auctions, by making these articles more widely known, increase the demand for the popular and cheaper sorts.

There are several reasons why there has been a somewhat diminished demand this season, but the principal reason will be found in the general stagnation of trade, and the disquieting war rumours which from time to time have filled all the lucky (?) bondholders with gloomy apprehensions lest some very interesting coupons should be conspicuous by their absence, or at the best appear considerably reduced in value. This was especially the case during the months of August and September, when the first importations of bulbs usually arrive, and the trade is generally brisk. The regular orders meet their usual appearance, but in a somewhat modified form, while the elasticity of trade has been altogether wanting.

Glancing briefly at the principal items, we begin as usual with the Hyacinths. The demand for the choicest varieties has been very limited indeed. The cheaper and better-known named sorts have had a fairly good sale, while the bedding kinds sold very

slowly until the beginning of the present month, when a slight revival in trade became apparent, and most dealers have now cleared out.

Tulips, next in importance, have shared a somewhat similar fate. High-priced sorts have been almost ignored, but the cheaper kinds have sold fairly well. An exception to the general depression is to be found in the demand for the late border section of this handsome order of bulbous plants. For some years past these have been gradually increasing in popular favour, and this year is no exception to the rule.

It would be well if an effort were made to obtain a dwarf habit in these magnificent flowers, seeing that the long fleshy stem on which the flower is borne is liable to be snapped by the first gust of wind, unless a covering (which is generally unsightly) has been provided. Mr. Gridon and his enthusiastic coadjutors in Lancashire might take this matter up, and by this means render a service to the whole of the horticultural world, and enhance the interest in these beautiful flowers.

Narcissi have again become a drug. The somewhat unaccountable increase in the sale of these last year has been fully compensated for by the diminished sale this. The disease afflicting them may have had something to do with it, as it is not very encouraging after paying a long price for a bulb to find it rotten when it should have been gay with bloom.

Crocuses generally have sold very well. It seemed at one time that they would be left on hand, but the contrary has been the case, and it is questionable if such a complete clearance has been effected during the past twenty years. The prices of Crocus have been very moderate, and this may be one reason why they have so readily been sold.

Snowdrops, having for several years steadily increased in price, have at last, like the camel's back, succumbed to the last straw, and the advertisement columns of the *Gardener's Chronicle* best tells the tale of a large surplus as a necessary consequence. Reckless speculators are alone to blame for the mischief which, unfortunately, falls on other shoulders besides their own.

Anemones and Ranunculuses are steadily increasing in popular favour, and have sold very well. The new French varieties of the former are a vast improvement, both in colour and size of bloom, on the Dutch-grown roots hitherto offered.

Amongst miscellaneous flower roots those principally used for early forcing occupy a prominent place. The leading articles are Roman Hyacinths, Narcissus totus albus, *Ilotia japonica*, and Lily of the Valley. The demand for all these increases every year, and does not seem to be liable to the same fluctuations as other branches of the trade.

It is worthy of note that all these produce white flowers, and it is further noteworthy that the white varieties of Hyacinths, Tulips, &c., have been more in demand than any other colours. Why this has happened it is not very easy to define, but the fact doubtless has some significance.

The quality of the bulbs has been generally very sound and good. The hot, dry weather in June and July thoroughly ripened them, and, as far as this is a reliable guide, the results cannot fail to be of a very satisfactory character.

On the whole things might have been worse. A little rest is needful for all things; the check in trade is only of a temporary nature, and should the difficulty not arise from the expansion of civilising and elevating commerce be removed, the love of the truly beautiful, which is fast permeating society in all its classes, will manifest itself with redoubled vigour, and claim larger supplies of these by no means insignificant adjuncts to its full development. *S. E. D.*

WHICH ARE THE BEST LATE GRAPES?

As you invite the opinions of correspondents on the above question I have sent you a few examples of the varieties I consider the best as grown here. The bunches I intend sending you of them are only small, to economise space, but you will be able to judge of the flavour of the berries all the same.

As to the different varieties of the Muscat of Alexandria, there is no doubt but that they are the best-flavoured white Grapes grown; but they can hardly be termed very late Grapes, for it is only in exceptional cases that they keep till the end of January without shrivelling too much.

To commence with the very late Grapes: Lady Downe's, of the black section, is the latest keeping sort grown, but its hard flesh is not relished by some, especially invalids. I have kept it, however, in some seasons, in bottles of water until the middle of June, and in good condition.

I send a bunch of a seedling black Grape raised from a cross between Lady Downe's and West's St. Peter's, and which has the quality of keeping till April good success. It is distinct from any other variety which I know, by the purplish colour of the young wood and midribs of the foliage, and bears bunches something like those of Lady Downe's in having a shoulder nearly as large as the bunch itself. In flavour it resembles West's St. Peter's, but its berries are larger and oval-shaped; they are not however now so well coloured as last year.

West's St. Peter's is still one of the very best late Grapes grown for its delicious vinous flavour, and although not a show Grape, no collection should be without it.

Barchard's Prince is with me an excellent late keeping variety, and in flavour something like those of the St. Peter's section.

The Black Alicante, although one of the finest late show Grapes grown for its fine compact clusters, large berries, and fine jet colour, is yet, as grown by me, never of the flavour of the above-mentioned sorts. It likewise, when it begins to shrivel, seems to lose its sweetness, and gets watery and insipid.

Gros Guillaume, when well ripened, is an excellent keeping Grape, especially if the bunches are not too large, and it is not to be despised for its flavour when kept very late in a dry and equable temperature.

In addition to the late varieties of black Grapes I have sent a small bunch of the Mill Hill Hamburg, a variety of good colour, long with me, and any other of that section, being firm in the flesh, the Hamburgs in general are not very late keepers.

Of the section of the latest keeping white Grapes the Royal Vineyard with me keeps quite plump and good till the end of April. This variety has been discarded by many growers for its hard flesh and flavour, but when well ripened it will be found in March and April very useful both for flavour and variety in the dessert dishes.

Trieblich, which is the best late-keeping white Grapes known, a very vigorous grower, and produces enormous bunches when grown well. I believe some forty years ago I first introduced this variety into general cultivation, having got it from the late Mr. Meard of the village of Welbeck, where it grew originally at Shobden Court, in Herefordshire, where, as I understood him, it was received from Italy. It requires the temperature of the Muscats to ripen it well, and to be kept dry, or its large bunches will get mealy, and the berries soft and damp off.

The old Tokay is a late variety that keeps well with me till March. Its flesh is very firm, and the berries not very highly flavoured, but it is useful when white Grapes are wanted for variety.

Muscats of Alexandria, as above stated, is the best flavoured of all late white Grapes, but it is always shrivelled with me, and used before the others above described are commenced cutting. *William Tillyer.*

The Muscat of Alexandria certainly stands at the head of the list of white Grapes. When comes Royal Vineyard, according to our estimate of the samples sent; and finally, but considerably behind, Trebbiano and Tokay. The black sorts are not so easily placed. Gros Guillaume and the Mill Hill Hamburg, have a certain resemblance in flavour, and will best please those who like sweet Grapes. The seedling named above, with West's St. Peter's, and Barchard's Prince, are more acid, and will suit some palates better than the other sorts. Lady Downe's was not sent, as I believe it is decidedly inferior. Mr. Tillyer's seedling is a fine-looking Grape, one of the best of the above as to preservation, and scarcely, if at all, inferior to West's St. Peter's in flavour. *E. J.*

—Mr. Grieve's experience with late Grapes, as recorded at p. 836, vol. vi., is nearly identical with my own. He has sent me this season two large varieties full of grapes. I have this day tasted and noticed them all. I find Lady Downe's No. 1 both for plumpness and appearance. Black Alicante is firm in berry and bunch, but has just begun to shrivel. Barchard's Prince's berries are much better than all, but that objectionable foxy colour gives one clear and important point to the Alicante. The very look of a bad coloured Grape is hateful, and on this score the Alicante before Mrs. Price's. To please the palate of your employer is no doubt an important item, but to please his eyes is, to my way of thinking, quite preferable. Barbarossa is plump and good, but it is not an accommodating Grape, wanting much more ripening. In white Grapes we have nothing here like Trebbiano. *K. Gilbert, Burghley.*

BOTTOM-HEAT: ITS USE AND ABUSE.

THAT bottom-heat is one of the most powerful and essential aids to growth, few will deny; that it is capable of being used in excess, and applied at the wrong time, must also be admitted; but there does seem a danger of making the abuse of this potent cultural force the occasion of a series of onslaughts on its legitimate use. The several cases recorded by Messrs. Bines, Wildsmith, and, if I remember rightly also a year or two ago by Mr. Tillery, are no doubt vivid illustrations of the evil effects of an excess of bottom-heat applied at the wrong time. In each of them there was a twofold cause of failure—the amount of heat was in excess, as well as itself itself an excess. The excess is proved by the fact of the stronger state or healthier condition of the Vines at the ends of the houses. Supposing, then, that no part of the borders had been made hotter than these two extremities, there is no proof that the bottom-heat would have proved injurious. Without greater precision as to absolute temperature, it is quite a logical and legitimate inference to assume that the fermenting dung and leaves were heated to excess, to the inevitable injury and enfeeblement of the Vines. We ask how exceedingly capricious and even violent the most staid-looking fermenting materials often become within the shortest period of time, and at the most unexpected seasons and places. The term bottom-heat itself needs definition, and the amount of it employed recording, before such failures as those referred to, can assume much scientific importance or practical value. By bottom-heat let us understand, once for all, a temperature equal to that of the air, or 5° Fahr., or at the most 10°, in advance of the atmosphere in which the Vine or other plant was or is resting or growing. Are your able correspondents able to affirm that this difference was not exceeded? If so, then we must either admit the cogency of their reasoning, or find some other and better explanation of their facts. But if not, then it is but reasonable to assume that the evils recited were caused by an excess of bottom-heat, and cannot be accepted as any reasonable argument against its legitimate use.

My friend Mr. Bines will, I am sure, excuse me for finding proof in his article that by bottom-heat he means a good deal of it, in the two or three paragraphs of his lucid paper he writes quite seriously about growing and flowering stove plants better without bottom-heat than with it. From this it is obvious that the "champion cultivator" does not consider an equality of terrestrial and atmospheric heat bottom-heat. Possibly he would say all excess of terrestrial over atmospheric heat was bottom-heat. If so, then almost everything turns on the answer to the questions, How much in excess should the bottom-heat be over the top to prove useful? and at what point in advance of it does it cease to be useful and become injurious? And, further, What was the amount of difference between the temperature of the tops of the plants and the roots in the cases referred to? It may be too much to expect exact data, but without some approximate estimate of the difference, the experiments recorded prove nothing whatever but the injurious effects of an excess of bottom-heat. It is no extravagant supposition to assume that the layer of fermenting materials was as much as 90°, while the heads of the Vines were in a temperature of 45° at starting; and if so, the results would of necessity be as described by your correspondents.

It may be added that most of the zealous advocates of bottom-heat for Vines are quite content with a measure of it, which somehow our friend writes down as none at all. That is the having the roots in the same temperature as the tops, which of course is the happy condition of all above plants.

But another cause of failure is the employment of the bottom-heat at the wrong time. Though it is difficult to point to any season when the roots are at rest, and it would be easy to prove that they are abnormally active at the descent of the sap, yet the natural and extension under the influence of descending fluids is a widely different thing from an abnormal activity of the action set up and sustained by the warmth and the moisture of artificial heat from fermenting materials, two months or so before the tops were ready to start. The difference between the character and union of these two sets of roots, the natural and

unnatural, is as wide as the Poles asunder; the natural roots are vicarious chiefly, the unnatural are selfish wholly; the first serve the Vine, the second feed themselves, the first strengthen, the second weaken. The mission of the first roots is to fill the Vine with strength and all good things; the second empty it and rob it at all points; it may never be forgotten that natural currents, as well as natural functions, may readily be reversed in such plants as the Grape Vine under unnatural conditions. For instance, it is the legitimate function of roots to collect and convey food to and for all parts of the Vine, but develop an abnormal activity in the roots out of season, and they then drain the stems and branches of vital force and available food—for currents are reversible in vegetable tissues without inconvenience, and fluids have the power of flowing in any direction where there is an active outlet. Hence roots started out of season, or so long in advance of the top, finding no demand in a natural direction, set up the business of accretion and extension on their own account—supplies are drawn by the roots downwards, instead of through the tops upwards. The buds and stems are impoverished before starting, and when they do start they have to reverse an established order of policy and practice, arrest a downward current leading to destruction, and establish an upward or constructive growth. To take a favourite illustration in morals—correct enough for our purpose—to train a virtuous child is like starting to develop a character on a clean sheet of paper. To educate a vicious lad there is much of the past to be erased before a start can be made in the right course. It is almost precisely so with the Vine. Start top and bottom almost abreast, and all is smooth sailing. Start the roots long in advance of the top, and all the established currents of life have to be stemmed and turned by the ascending fluids. Nor is it any wonder that the plant should be worsted and weakened in such a struggle. But my point here and now is, that the struggle, and its legitimate results of weakness prove nothing against bottom-heat, only that it was out of season.

The cases as recorded do not even show that bottom-heat was not be applied slightly in advance of top-heat, only that in these cases there was too wide an interval between the two. The whole question, in fact, under this head turns on time, as under the first it resolved itself into one of quantity. It might, for instance, be wise and helpful to apply bottom-heat to the roots of Vines a week or ten days before the tops were started, but it by no means follows that, therefore, it would be wise to subject them to a vapour-bath of steam-fermenting materials one or two months before the command was given to the top, to lose it from the restraining fetters of dry and cold air, and let it go into the warmth of a genial and growing atmosphere.

No, your useful hints upon the nature of evidence, and even the meaning and weight of facts, would teach us better logic than to come to the conclusion that bottom-heat itself was evil, on the slender and even irrelevant basis that it led to failure when used at the wrong time, and to excess. To counsel that outside Vine borders should have no covering at any season, but merely enough to enable them to show off the leaf is quite a long way on the other side of bottom-heat, and virtually recommending that the Vine roots be in a much colder medium than their heads.

In fact, this, as I understand it, is the inference drawn by Mr. Bines from Nature. Nature is many-sided, and has many voices; hence, I assume, my different reading of her teachings in this matter. Nature uses bottom-heat abundantly, and so determined was she to have the roots made one for all warm, that she took special pains not to sensibly warm the air by the passage of the sun's rays through it, but first of all to warm the surface of the earth, and then make that, root-filled as it is, her great warming-pan for the heating of the air. In full view of the fact that heat travels slowly downwards,—which, however, tells both ways in this argument—it is impossible not to see in this simple arrangement that Nature took the most forcible means in her power to keep the roots of plants warm, and experience an experiment alike show that she has provided abundantly of bottom-heat.

It is needless, however, to bear in mind that these views must not be interpreted as advocating an excess of bottom-heat. It will be found in practice that, as near as may be, an equality of terrestrial and celestial heat

results in the strongest growth and the finest produce and if there is to be a difference in degrees of temperature the roots may safely have it within the moderate limits already stated. The chief danger, under our highly artificial modes of treatment—with the heads of our Vines in the tropics, and the roots too often wandering in a half-named state in search of the North Pole—arises, not from heat, but from cold. Hence the present vindication of a wise and prudent use of bottom-heat for Vines. It is found remarkably useful for Vines in pots, and one might have thought that, on the sound principle that what is sauce for the goose is sauce for the gander (how savoury of Christmas the proverb seems), what was so good for Vines in pots would be equally good for Vines out of pots. But it would almost appear as if this were no longer to be accepted as true, and, more, that Nature has herself made a fundamental mistake in providing more bottom-heat for Grape Vines and other plants than was necessary. I trust ever to stand shoulder to shoulder with Nature in declaring that bottom-heat is a right good thing—a strong, useful, healthful, cultural force—though too much of it at the wrong season may prove a very bad thing indeed; and in this determination and these conclusions I hope to have with me all the able cultivators concerned in getting up those cases that seem to point to other conclusions. *D. T. Fish.*

PLANT PORTRAITS.

MESSRS. A. C. VAN EEDEN & Co., of Haarlem, have favoured us with the two parts for 1876 of the *Album van Eden*, which contains faithfully executed chromo-lithographed plates.

TULIPS VAN DER NEER and WOUVERMAN, two early flowering sorts, both large-flowered varieties, the former of a dark rich hue of crimson, and the latter dark violet in colour. Both varieties are described as having "firm, upright stems, and their habit of growth all that can be desired."

LILIUM LONGIFLORUM, a well-known favourite, which the editor alludes to as being admirably adapted for forcing into flower in April and May.

LILIUM CHALCEDONICUM, the two forms found in the trade, one red and partly spotted with black, the other wanting in the latter particular. *L. chalcædonicum* is reported to be not very abundant in Holland, owing to the constant demands from abroad.

IRIS SUSAANA, sometimes called the "Morning Widow of Susa," is beautifully portrayed. "According to Clavius," it was imported from the East to Vienna about six centuries ago, and there soon found its way to the Netherlands, where even at that time people made a great point of collecting plants of foreign origin."

IRIA HYBRIDS, a plate containing several varieties of English origin, varying in colour from white to orange, buff, and dark crimson.

DOUBLE TULIPS MARILLO, COURONNE DES ROSES, AND LA CANDEUR.—The latter is the best known of this trio. Its colour is white, its habit neat and dwarf. Couronne des Roses is mentioned as being a good early variety, and is of a bright rosy shaded pink colour. Marillo is a fine soft rose, darker coloured flowers appearing with age.

TIGRIDIA PAVONIA, which "deserves unquestionably the place of honor among the Tigridias as well for the size of the flowers as for their brilliant colours."

HYACINTHIS MARIE and ALBA MAXIMA, the former single blue, the latter single white. "Alba maxima has bulbs of the first order; and those of Marie are so beautiful, so splendidly formed and large, that it would undoubtedly be readily bought, . . . for the public generally entertain the erroneous idea that the largest bulbs produce the largest flowers, and, as a rule, they are not inclined to believe that a variety, which has always a small bulb, sometimes far outstrips a sort which makes large bulbs."

FERTILISARIA MELÆGRIS, a very pretty and handsomely marked species, for culture in either pots or borders. It is said to be suitable for forcing, and will flourish freely in a rich garden soil with plenty of sand.

POLYANTHUS NARCISSEUS.—This plate contains three varieties, white, sulphur, and primrose, of this well-known plant.

LILIUUM SPECIOSUM ALBUM, a fine white variety, which "will be always worthy of its place, whether grown in pots or planted in the open ground."

CAMASSIA ESCULENTA, a beautiful old, hardy, blue-flowered, bulbous plant, that has not met with such an extended culture as it deserves. It was introduced more than forty years ago by Douglas, who sent it from North-Western America to the Horticultural Society's garden at Chiswick.

— The *Gardeners' Monthly* for December has a coloured illustration of the Californian Palm, *FRITZ-CHARDIA FILIFERA*.

— The January number of the *Revue de l'Horticulture Belge* has a coloured plate of two varieties of GIENET AZALEAS, elsewhere referred to.

— The *Floral Magazine* for December last contains coloured illustrations of

LILIUUM NEILGERRENSE, the beautiful new Indian species figured in our columns last autumn, p. 332.

AURICULA TOSPY (Kay), a self-coloured variety, "and one of the darkest flowers in existence, the paste being of the purest white, the tube of the right size and golden." It was raised in Scotland by the late Mr. Kay.

BONIMAEA CARDELI, a valuable new Amarylloidaceous plant, of recent date, introduced by Mr. Bull from New Granada, and figured in our columns at p. 793, vol. vi. Its portrait, on a reduced scale, will also be found on the Almanac issued to our subscribers to-day.

PENTSTEMONS MRS. A. F. BARON and OCTOORON, both hybrids raised by Messrs. Downie & Laird, of Edinburgh. The former is a very graceful flower, possessing all the perfect qualities of the improved Pentstemon. The flowers are of a soft rose pink colour, with a broad well-defined white tube. Octooron is not so smooth a flower, but by reason of its broad spike and rich dark colour, is a valuable addition to our store of these grand autumn border flowers.

— The current number of the *Florist and Pomologist* contains coloured plates of Rhododendron Princess of Wales and Willson's Queen Victoria Pear.

RHODODENDRON PRINCESS OF WALES is one of a second race of hybrids bred from *R. jasminiflorum* by Messrs. Veitch & Sons, and is the most beautiful of them all. The colour is a soft but brilliant tint of rose-pink, with a pure white throat and tube. As a decorative plant this is a decided acquisition, since in the genial atmosphere of a warm greenhouse, it may be expected to go on growing and flowering indefinitely.

WILLSON'S QUEEN VICTORIA PEAR is an excellent autumn variety, raised about twenty years ago by the late Mr. W. Willson, of Whitby, a well-known florist and Rose grower. The fruit is of about medium size, and of a greenish or pale brownish tint yellow-green colour, with a thin coating of pale but bright russet-brown on the exposed side. The flesh is juicy and sugary, having a strong Pear flavour, blended with a smack of that of Noyeau.

BLUNDERS.

THERE is among the various educational seminaries the school of suffering, where lessons are given to those who will not learn in any other academy. Beginners frequently find out near cuts to knowledge, without taking all the usual steps; and, but for one spoke wanting in the wheel of fortune, all would have gone well, though for want of that little spoke the wheel would not turn to profit. How often do we see that the chalking of the wheels and bands of the spinning-jenny is necessary before it will turn aright. To be sure the machine wanted very little, yet all the rest was useless until that little was got. There may possibly be a royal road to knowledge, especially to horticultural knowledge, "but this the gods in later times perform." A little sulphur and a little heat did good service in Z.'s victory against red-spider, but when neighbour X. copied this recipe, he over-heated the pipes, and the crop of Grapes was ruined; and when the blunder became evident, X. cried for very sorrow—

"But you awe awaits a vinery when
It sees the tears of bearded men;"

and from that day forward, X. would as soon seek the aid of Satan as that of sulphur.

B. was a clever youth, but went astray on the soap question. Like

"Donald Caird, with meikle study,
He caught the gift of making soap;"

got the hot tallow in the wash-house copper, and the hot ley in an iron pot, regardless of the heat of either; and as the fatty acid did not rise in vapour, or give sign or warning as long as it was under 60°, there was a good margin for blundering. But as soon as the ley was put to the tallow it rose in a jet of froth like foam, and first it filled the copper, then the wash-house, and threatened to fill the yard, when B. left, and no doubt "a wiser and a better man he rose the morrow morn."

In the earlier days of horticulture, before hot-water pipes were in vogue, there was in most gardens, from royalty downwards, a good deal of rough firing to be done, and it was nobody's business to direct the drudge that was told off for the stoakehol. Indeed, it is likely enough that lecturing an aspiring youth on the science of combustion would not have been taken in good part, so every one fired after his own fashion, and I generally found the fire the wrong end set, but black enough towards the flue to be heated. It is rather late in the day now to speak of fire-flues, and late hours for young gardeners with the fire-shovel and lantern; but I have more than once seen the furnace bars melted by blundering.

In the culture of Mushrooms it is a good plan to have the command of steam free in the Mushroom-room, and in good hands all goes well; but it is a hackneyed saying that even the coarsest true lovel itself does not always run smooth, neither does the culture of the common Mushroom. I had attached to the Mushroom-house a nice little copper, for the supply of steam; it had a wooden lid, and a zinc spout to carry the steam, the whole being very much like that well-known article called in the North a "sma' still." My fireman had put more fuel on than was needed, and when I walked my rounds I found the wooden lid charred, and in the bottom of the pot, along with the remains of my zinc spout. Fortunately the Mushrooms had not appeared, and no harm was done; but later on, some six or seven years, I had a splendid house of Mushrooms scalded to death by the same blunder, namely, steam in excess.

There are few, among my subjects so little understood as combustion; everybody makes fires, or, at least, mends them, but each has a way of his or her own, and a large commercial business is done with "fire-lighters" whose composition is a profound secret. If you go into some of the restaurants in Liverpool a little before dinner-time, the cloth is laid, and so is the fuel in the grate, but it is all black and cold, when a dapper little maid comes in with a vial of petroleum, and with a quill or small brush sprinkles the lumps of coal, and striking a match—

"Quick as the spark from smitten steel
From nitrous grain the blazing fire,"

—the whole becomes a cheerful blazing fire with no coals used until the business of the house required their services. Powdered resin in good hands is less dangerous than petroleum, in kindling a fire or refreshing one that has gone down—

"Ay, me! what perils do environ
The man that meddles with cold iron."

"Or he that doth our minds unsettle
By burning stones to boil the kettle."

It is related in the jest and tale books of birds who had built their nests too early in the season, that their callow young were killed by frosts; hence the moral—

"Not only choose a proper mate,
But proper time to marry."

The "times and seasons" are the very vitals of horticulture in the northern counties. You cannot trust greenhouse plants out-of-doors before the first week in June, although in the southern counties they risk their bedding-stuff soon after the middle of May; and should severe frost occur, the gardener cannot be blamed, since the practice is general. Now K. was a handy labourer, and so he got employed in a single-handed place; and in his anxiety to do right he laboured early and late, and as far as besoms could go, he kept the place clean. He got rather late with his Onions, Leeks, and Carrots, but would not, as he said, be cast with other things, so he sowed,

* Hudibras.

or rather planted his French Beans in good time; they came up well and quickly, but only to be frosted, and their case was worse by half than frost-ripped Potatos, for they never sprouted the second time. Next year he marked the almanac with two crosses, one the date when the cow should calve, and the other, May 15, the time to plant French Beans—not to blunder a second time.

A West-countryman of my acquaintance got recommended to a head gardener's place, and as the gentleman was showing his new servant the place he asked him what religion he professed, at the same time stating that his religious views would not alter the good opinion he had of him; to which question the gardener replied "that he was not particular." This was a serious blunder, and was taken to mean a total absence of all religious training, and he was paid a month's wages the next morning, and left the place; proving, what I have stated above, that the school of suffering and dearly-bought experience can teach important lessons, long after our school days are gone by, for besides the three "R's" of our Board Schools, and, on the Green of the Archbishop of York, of the Latin and Greek of our Colleges, they do not exhibit models for imitation, however grand their utterances are. In practice, the high moral training is as needful to the gardener as his skill in gardening. The late Dr. Lindley, who knew the state of the English market for gardeners as well, if not better, than any other man, told me that although he was pestered with applications from gardeners for situations, when he wanted a man that could be trusted to manage an important place—fit to be trusted with money and means, and capable of managing himself with care—it was difficult to find one to fit one. Now this is what comes of blunders! *David Sangster.*

New Garden Plants.

ADIANTUM NEOGUINEENSE, sp. n.*

This plant belongs to the same group of species as *A. rhotiopicum*, though differing from it in many important respects, obviously in the sori, which are rounded and entire, and in the rachis, which is continuous at the edges of which meet so as to close the aperture. It is a larger plant of fuller development, the fronds, independent of the stipes, being already, though but recently imported, about 15 inches long, and fully as much in width as the base. The rachis is castaneous, 6 to 8 inches long, and before handling covered with a glutinous bloom on the polished surface. The lower pinnae are themselves three times divided, the rachises of the secondary pinnae and pinnules being remarkably slender and hair-like. The pinnules which terminate both pinnae and pinnules are wedge-shaped at the base, irregular in the outline of the outer margin, being boldly crenate-lobate, the lobes large and entire except when serriform. This lobing is a conspicuous feature, and is more or less observable over the whole frond. The lower pinnules are smaller than the terminal ones, and are of a trapezoid form, but showing more or less of the lobing already referred to. In the fertile parts of the frond these broad rounded lobes are split into three or four narrow, linear, serrate, deep sinuses, in each of which a small sorus is so deeply sunk that the margin of the pinnule is continued around and beyond it. The texture of the frond is pellicled membranaceous, and the colour is a dark green, with a glaucousness—more or less marked—on both surfaces, when mature, but in the young and partially developed state the fronds are of a very pale green. This will no doubt prove a free-growing and also an elegant addition to our ferns. It has been recently obtained from New Guinea by Mr. Goldie, when collecting for Mr. B. S. Williams, of Holloway; and it is from plants now growing in Mr. Williams' collection that we have derived the foregoing particulars of the plant. *T. Moore.*

MASEVALLIA MACRURA, *Reich. fil., supra*, 1874, 40.

My prediction that this curious species would soon appear in gardens is fulfilled very speedily. There it is in England—at Chelsea. It has unusually large leaves for a *Masevallia*. From the articulation of their petiole base to their top they are a span high, and they attain a breadth of two to 3 inches, so that they

* *Adiantum neoguineense*, sp. n.—Fronds spreading, glabrous, deltoid, tri-quadripinnate, pellicled membranaceous, dark olive-green, with a glaucousness on the lower surface. Ultimate pinnules on very fine hair-like stalks, the terminal one cuneate, the lateral ones trifid, averaging about 1/2 inch long, crenate, with the lobes serrate, the lobes small, distinct, about 6-8 to a pinnule, orbicular, entirely sunk in closed sinus, the lobes of the lobes being small, orbicular, with a fine filabellate, about four running into each sinus; stipes castaneous, smooth, glaucous; secondary and tertiary rachises very slender, hair-like.—Hb. New Guinea.

make a very stately impression. Their substance is very stout, and the surface is shining. As to this, they may be compared to the beautiful leaves of *Masdevallia towarensis*, though they are far superior. The flower-stalks are equal to the leaves, perhaps a little shorter sometimes. The cucullate bract stands just at the back of the perigonial tube. It is inclined apparently to show some variation as to the length. The wide tube itself is very short, of firm texture, and slit into an upper and an inferior lip. The upper lip forms a short triangle, extending in a long, strong tail; the inferior lip is longer and broader, dividing in two long, strong, spreading tails. Those tails are light yellow, the bodies themselves of the sepals light

flower, when many are rather dark. This species would appear to be rather rare. It is New Grenadian, and appears to have escaped one of the best *Masdevallia* hunters, Mr. Wallis. The discovery is due once more to M. B. Roel. Then a short-tailed variety was gathered by M. Patin, the young Belgian. Afterwards Mr. Shuttleworth met with it during his first journey, and from his plants Mr. Bull sent me lately. *H. G. Rehb. j.*

ONCIDIUM ELEGANTISSIMUM, n. sp.*

I saw this really elegant plant at Messrs. Veitch's in October last. A glaucous, short, broad, ribbed, two-leaved pseudobulb throws a splendid panicle

yellow of the glorious *Oncidium varicosum* and *O. Rogersii*; the calli of the base with black purplish borders. The anterior limb of lip is beautifully marbled and dotted with light brown, which feature renders it so very pretty, for there is a quiet charm in seeing all those brown dots washed away like clouds to pass into yellow.

This is near another most elegant and nearly unknown plant, Dr. Lindley's *Oncidium Gardneri*—one of the most beautiful of Brazilian Orchids. It is easily understood by its very short claw to the lip, as in this, by the calli being entirely of a purplish black, the two long anterior ones totally covered with small warts, not only with a few marginal ones, as in *O. elegantissimum*.



FIG. 2.—MASDEVALLIA MACRURA.

brownish, with dark purplish brown streaks. There appears to be much variation in the varieties as to the length of the tails. I can affirm this to be so from eighteen specimens at hand—from 6 to little over 4 inches in length. The petals, column, and lip, form, as usual, a small body, yellowish, with purplish dots, the middle lobe of lip being orange-yellow; the petals are rhomboid, blunt, and very thick, now emarginate at apex. Lip three-lobed in the middle, the side lobes blunt, the anterior lobe blunt, recurved, covered with short acute warts; there are two lamellae between the basilar lobes. The column is acute at its top. The greatest curiosity of the flower is kept inside. The chief nerves of the sepals are prominent internally, and covered with numerous blunt warts. Though they are far more conspicuous in the dry specimens, yet they may easily be seen in the fresh

of flowers, very similar to those of *Oncidium curtum*, Lindl., but with far more shining colours, and the lip much shorter in consequence of the unguis being very short, as in *Oncidium Gardneri*, Lindl. Colours are unusually pretty. The sepals are brown, banded with narrow yellow bands. Broad petals, with a few yellow spots. The lip of the brightest

* *Oncidium elegantissimum*, n. sp. (affine *O. Gardneri*, Lindl.) —Sepalo dorsali apiculato oblongo; sepalis lateribus basi connatis unguiculatis, dein albe bilobis oblongis acutis; tepalis cucullatis ovatis extus bilobis emarginatis; labelli auriculis minutis, isthmo brevi; lacina antica dilatata subtrifurca biloba; callo basae triangulari; carina antherogica, area limbo incrassata subcirculari utraque in basi; callis anticae lateraliibus disco levibus, limbo papillois parvis; columna albe angustis subquadrateis. Sepala brunneo flavo fasciata; Tepala brunnea maculis paucis flavis, Labellum pulchre brunneo xanthinum circa limbum lacinae mediae pulchre brunneo guttato fasciatum. *H. G. Rehb. j.*

mum, where those bodies are much smaller. I have just now, after having for nearly two days studied the whole group, finally made out that *Oncidium flabelliferum*, Finel (see *Fraxel's Magazine*, xvi, p. 65, 1859), is nothing but *Oncidium Gardneri*. Both Dr. Lindley and myself never had much trouble with this plant. Dr. Lindley's materials of *Oncidium Gardneri* were not good, so that he named for me a variety of *Oncidium crispum*, Lodd., his *Gardneri*, which troubled me a long while. Only by seeing other specimens of Gardner's No. 442, I understood the plant. I, indeed, had rightly named *Oncidium flabelliferum* for Mr. Linden, 1858 (see C. Koch, *Berliner Allgemeine Gartenzeitung*, p. 379), but from three flowers I had obtained, two were monsters, with two lips, so that I had no well-marked impressions.

Another species, proposed by myself, may be com-

pared to these two species as to colour, *Oncidium* pretiosum. It has a much longer nail (analis, as this is the narrow part between the basilar auricle, and the anterior dilated part), totally different call, and a column with a far more protruded tabula infrastigmatica, which is so very inconspicuous in both *Oncidium Lindleri* and *O. elegantissimum*, which, too, have very short columns. *H. G. Kuhn, f.*

MUSTARD AND CRESS.

FEW people who see and purchase the punnets of small salad, locking so neat and nice in the green-grocer's windows, have a thought of how it is produced further than they suppose it grew somewhere; or have a notion of the magnitude and importance of this branch of market gardening, or the number of people it directly or indirectly gives employment to. It is a branch of gardening which is carried on to a certain extent all the year, but the time of its greatest activity commences with the arrival of the French Lettices in our markets, and continues through the spring and summer months. Shortly after Christmas, therefore, in the places where it is grown, the floors of the early viciaries and other suitable warm houses are prepared for the crop. The seed is frequently wetted and placed in hot situations, to swell and even start before sowing, though this I believe is more with a view of shortening the time the crop occupies the ground, and as a rule one crop a week is taken.

One great labour connected with growing Mustard and Cress is the necessity of having fresh soil for every crop. Each time a crop is cut the whole of the soil used is removed and fresh soil spread for the reception of the seed. It certainly does not require much depth of soil, but still the labour is considerable. The seed having been sown, the whole is covered with mats, shutters or some such contrivance, for to suit the market the stems must be white, and the tops a bright light green; a purple shade in either stem or leaf spoils its sale. When the crop has reached the proper height it is cut with a very sharp, peculiarly-shaped knife, one round or swarth of which is considered a punnet. Some skill is required to gather the salad together in an upright position, to place it in the punnets, and the punnets require to be of an equal size, that they may be comfortably full, not loose or crowded, to fetch the best price in the market. This process is repeated till the season advances and cold frames can be used, and after the cold frames, out-of-doors crops are grown, still taking the same precautions to blanch the stems, and keep the tops light green.

A skillful hand will cut from 1000 to 1200 punnets per day. It is highly important that the seed used shall be of the very finest quality, or the crop will either be too thin, or, what is almost worse, irregular in its growth, some ready to cut, and some just up, in which case the appearance is not only bad, but it starts to rot in the punnets much sooner than if the whole is regular. Three parts of the so-called Mustard is Rape, which is of milder flavour, and, moreover, smooth and white in the stem, whilst Mustard is hairy, and does not keep so well when cut. One grower of my acquaintance pays £3 per week on an average for punnets alone, and uses from 600 bushels to 700 bushels of seed per year. *J. B.*

Natural History.

THE GOATSUCKER.—Your natural history correspondent, in your issue of the 30th ult., gives me very interesting details of an old favourite of mine, the Goatsucker; but as my observations have led me to different conclusions in several items I am led to write in hopes of further information or correction. The "hissing sound" always seemed to me to come from a bird at rest, not when flying, as your correspondent states, or at least if flying it must have been in a very limited area. Also that the "crackling sound" was made by a bird at rest, probably by beating its wings against the branch on which it was sitting; or, what is more probable, by a magnetic state of the pinion feathers in an excited, nervous quiver of the wings. And this not as a "serenade" by the male, but by the female bird with a leaf-year privilege inviting her mate to come and woo.

Your correspondents' views are that it is a timid, easily scared bird. This I have never found to be the case, but on the contrary, daring—not the courage of bravado but a simple trust, a fear no evil, feeling,

In twilight or moonlight it will settle on the road or park drive—a favourite spot with it—and allow one to approach within a few yards, and then with its peculiar, graceful motion, fit on and re-settle, again to fit on your approach; and thus on for a long distance, as if wooing you to follow and fear not. And also in its more aerial flights when food-hunting, it seems not to heed your presence; rather follows than flees.

And again, your correspondent gives as its favourite haunts "beaths, moors, and commons;" not so my experience, for though not seeking the vicinity of water and bustle, it seemed to love the tree-tudded meadow or park around some mansion. Really I differ on so many points with your correspondent that since beginning to write this a doubt flutters across my mind. Can I be mistaken in the bird? But no. However, if I get corrected I shall not have written in vain. *W. Wilson, West Hill, Shanklin.*

Apiary.

DO BEES MASSACRE THE DRONES?—Until I observed Mr. Murray's paper, at p. 714, vol. vi., on the age and death of drone bees, I knew nothing of the doubts of their slaughter by the common bee. However, without going into what writers have said, or the popular belief of such, I merely say if he has wood or glass hives, and peeps into them shortly after the usual swarming time, he may see the bees attacking the drones with fury, especially in half-filled glasses on the tops of the hives. I have doubts if they use their stings in the fracas, they seem only to throttle them with their strong mandibles, in the most vital part, just under the wings, which is the same kind of warfare as among themselves.

However, in mid autumns, at times fresh broods of drones appear. Those have been mistaken for drones which escaped the general slaughter. I have frequently found drone-cells filled with honey, while the adjoining cells of the same combs contained late brood of drones. Indeed that led to my belief, if we had no winters honey-bees would repeat swarming during the year, or at all seasons. In other words, the instinct or habits of bees are not suitable for our field climate. That accounts for beesaying up both honey and pollen more for the present use of the colonies than any foresight of winter. *J. Wighton, Cussy Park.*

Florists' Flowers.

THE NEW FLOWERS OF 1876.—What shall be said generally of the new florists' flowers of the past year? This can be stated with considerable show of truth, that though the circle of possible attainment lying beyond the present sum of achievement narrows as the ideal of perfection is reached, there is yet so much of un-realised conception that we cannot, and dare not rear up any imagined barrier beyond the line of which it is impossible to proceed. It is well that it is so, for as Margaret Fuller somewhat quaintly put it, "Man is a plant of slow growth, and great heat is required to bring out his leaves. He must be promised a boundless futurity to induce him to use aright the present hour. In youth fixing his eyes on those distant worlds of light, he promises himself to attain them; and there find the answer to all his wishes. His eye grows keener as the gaze, a voice from the earth calls it downward, and he finds all his feet." It is as true in the vegetable world as in that of morals; and the true florist does wisely when he puts no limit to possible attainments.

The delicate and beautiful Auricula appropriately heads the list of the distinguished floral products of the year in Kay's Alexander Meikiejohn, a grey-edged flower of great refinement, nearly perfect in all its parts; Mrs. Purvis (Turner), grey-edged; and Gertrude Knight (Turner), grey-edged, may be seen to better advantage—there is the promise of good flowers in them, though as shown they were marred by defects which detracted from their first-class character. In the alpine section the finest flower of the year is Gorton's Mauve Queen, because so perfect as an edged variety; colour deep mauve, shaded off to a pale margin, and white centre. Turner's Bessie Ray is remarkable for its brilliancy of colour, shaded crimson, margined with a brighter hue. Turner's Slough Kival is another edged flower, shaded purple, edged with violet; Charles Lödgar and William Dragg, from the same raiser, are large bold self

alpine, particularly striking, but regarded as "non-descripts" by the Northern Auricula growers.

New Azaleas of a distinct character increase less slowly than they did a few years ago; there was then a wonderful leap forward, which, as is usually the case, has been followed by a corresponding pause. In point of novelty the new double-flowered variety named imbricata, figured at p. 817, vol. v., 1876, tops the newer single varieties of the year. The flowers are as full as those of a Camellia, the white ground tinted with green, and lit up with flakes of carmine. Jean Verveine is one of the pretty edged flowers, the colour reddish salmon, edged with white, a pretty decorative variety. Flambeau is remarkable for its brilliant hose of light crimson; it is most striking in colour, but wanting in the form and substance to which so much value is generally attached. Apollo is a flower of enormous size, dashed with flakes of scarlet on a white ground; a fine conservatory plant.

The tuberous rooted Begonias promise to become as numerous as bedding Pelargoniums, a most formidable list can now be compiled. Vicomesse Doronille (Veitch & Sons), rich dark scarlet; Excelsior (Perkins), bright crimson; and Majestic (Perkins), vermilion-red, have all seen the light; the flowers are large, with broad petals. Several others have been produced, some with delicate colours; in fact, production goes on with rapid strides. The useful decorative Begonias are finding a place in schedules of prizes, and they are charming objects on the exhibition table but some of them carry badly. They are also being employed for bedding purposes. The ornamental leaved stove type, of which E. Rex is an illustration, have been reinforced in Miranda and Otto Foster, raised by Messrs. Veitch & Co., both having handsome, finely divided leaves.

New Carnations and Picotees are confined to the North. They have not been seen southwards but those who saw them at the exhibition of the National Carnation and Picotee Society held at Manchester in August last speak of them in unqualified praise. I have seen some of them growing in the garden of the raiser, Mr. B. Simonte, at Sheffield, and also in the vicarage garden at Kirkby Malzeard, and am bound to bear testimony to their grandly rounded petals, massive substance, the purity of the ground, and the fine marking. Deserving to be mentioned in this record are: Carnations, crimson bizzure, Frank Simonte, Samuel Barlow, John Simonte, scarlet bizzure, Othello, purple flake, James Douglas, scarlet-flake, Rev. F. D. Horner; Picotees, Mrs. Simonte, Mrs. Gorton, and Mrs. F. D. Horner (named in memory of her at rest in the churchyard of Kirkby Malzeard), all three light red-edged flowers; Mrs. Douglas and Silvia, purple-edged. Other new varieties are Picotee rose-edged Miss Turner, and rose-flake Carnation Mrs. Dodwell, raised by Mr. R. Lord, Todmorden; and rose-flake Carnation Mr. E. S. Dodwell, raised by Mr. Thomas Ewary, Bradford. All the foregoing have been awarded First or Second Prizes.

During the last two or three years Carnations have been named and certificated, but we do not appear to hear of them again. Two double varieties, viz., King Alfonso, rosy red, and Prince Imperial, dark violet-purple, were shown by Messrs. E. G. Henderson & Son, as well as a very beautiful and in my view doubtful if the double varieties will ever make much headway; for decorative purposes they were no more near the single flowers—where their value will lie in their suitability for cutting from.

The past year left us a rich legacy of new Clematises, and indeed so rapidly have they increased during the past ten years that it is now a little embarrassing to make a selection of a dozen choice varieties. Messrs. Jackson & Son give us some fine additions to the double variety planted out against sunny south walls, and also a very bold and striking double flake of Connaught, lilac, very large, and well adapted for planting out against conservatory pillars; and Duchess of Edinburgh, pure white, deep and fine. The double variety to be planted out against sunny south walls, with a little protection in winter. Mr. Nurb's Frostens is also double, the flower rosy purple in colour and of great size; a distinct and fine variety. Messrs. Cripps & Son give us two new double varieties in Gertrude Knight and Cyclamen, the latter in the petals; and Venus Victorix, delicate in colour, semi-double, striking in appearance. All the foregoing belong to the patens and languinis sections. Mr. Henry Little, who has done so much in originating high-class varieties of Cyclamens, has produced a fine flower in Purple Gem, the colour crimson heavily shaded with purple. The difficulty of propagating Cyclamens by division of the bulbs interferes with the distribution of a fine variety like this, but Mr. Little's

experience and that of others who grow up to show that rich-coloured flowers almost, if not quite, reproduce themselves from seed. R. D.

(To be continued.)

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD WOODED PLANTS.—With the present saturated atmosphere it will be necessary to attend particularly to removing any dead leaves, as if not got away they become mouldy very quickly, and will even destroy whole branches. This applies particularly to such things as *Koelia* cistata, *Leontodon* lilioides, &c. It is a good plan to cut away the plants down on their sides to get these decayed leaves away. Less water will be required now than at any other season in the year, but care must be exercised that the plants do not get too dry, or serious harm may be done. Camellias, &c., which have the buds of which have not yet begun to swell, if at all infested with scale should now be cleared. It is a good plan to put a portion of these late-flowering varieties in the north house, so as to still further retard them. In the case of *Camelia* flowers may be had till April or May. With plants that are not so forward as may be desired, and to which a little fire-heat is used, it is necessary to be very careful in the atmosphere here, so that they do not get too dry, or the buds will fall off instead of opening, and they will be over-dry at the roots, or a like result will follow. **Azaleas.**—If any of the earliest forced Azaleas have done blooming, they should at once have a good washing with water, to clear the gam of which has been added to once or twice, and so that means if any trips exist they will be destroyed. After the washing, the plants should be immediately replaced in a temperature such as they have been in, and encouraged to set new growth early; in this way they will be prepared for blooming in the next season. Azaleas that it is deemed desirable to retard, whether for home decoration or for exhibition purposes, should now be put in the north house, where they can be kept cool, as it is their early stages that is retarding, and the most satisfactory carried out. It will be well at the present time to go over the stock of Azaleas and wash them thoroughly with the above mixture; if this is done effectually now they will most probably be little or none the worse at the time they are making their growth; do not wash the tobacco-water off, but let the plants remain laid down on their sides till it has dried on. **Soft-wooded Greenhouse Plants.**—Keep a good look-out for aphides on the stems and leaves of these plants, and as soon as any are discovered take immediate steps for their destruction. For early blooming for conservatory decoration, the old *Calceolaria aurea* floribunda is not surpassed. If grown on from year to year, it will be found very easy to manage, and its fine display. No time should be lost in getting in *Chrysanthemum* cuttings; in a temperature of 45° or 50° they will root readily. Do not cover them with bell or hand-glasses, but let the pots stand on some material that will hold moisture. Conservatory. Everything possible should be done to have the conservatory at this dull time as gay as circumstances will admit. Sweet-scented flowers are always valued, and never more than during the winter months. A few pot plants of plants that will set very early. Heliotropes that have been specially prepared for blooming at this time should be afforded a light position, or their flowers do not open well. *Richardias* as they come into flower should be brought into the conservatory, where, from the distance of some of their flowers, they are very effective. *T. Elaine*.

ORCHIDS.—The depth of winter at first might seem rather premature to cast one's eye along the month that intervene, and take in the display of bloom that should be presented to our view during the spring and early summer months; but though it may be a fair display of bloom, the result is very surprising to the time that is before us, and by forethought, early arrangement and planning, that the desired end can be consistently looked for. At present it will be more the part of the cultivator to be reaping, in a fair display of bloom, the result of his own care and diligence; whilst, however, present attainments are to be enjoyed and rejoiced over, it should also be the aim, by keeping the future in mind, to make the present further the means to greater results and progressive advances. Let us see how the orchids stand with us here. We want, say, a good show of *Dendrobium* in flower during the spring months; presuming that the plants are sufficiently strong, and are matured stock healthy bulbs or stems, the great part of the care now must be directed to a lower temperature than they have hitherto received. *D. fimbriatum*, *moschatum*, *Paxtoni*, *densiflorum*, *Pierardi*, &c., are just a few of those that are best treated in this way. Such as are from 45° to 50° is the regular winter temperature, and but small quantity of water given, they must here

remain for the next two or three months, as the eye may be, until the buds are just showing either at the top of the bulb or along the greater part of their length; then gradually bring them back to the *Dendrobium*-house, where the spikes and flowers will come quickly on, and thus the result will be a much greater display of bloom, which will be finer individually than if the plants had been subjected to a greater heat all through the winter. Another that requires hard treatment to flower well is *Vanda* trees. If a fine growth has been formed during the previous summer, they should also be brought out to the cool, and kept with water for the next two months or more; then, on bringing it back to the East India-house, presuming the growths are strong and thoroughly ripened, it becomes almost a certainty that it will flower. If the plants, however, are but small, the rest recommended will be beneficial to these also, but they should be brought back into heat sooner than the blooming plants, which will cause them to start into growth a little earlier. By this means the more quickly grow into a flowering plant. Carefully look to the plants of *D. crassinode*, *Wardianum*, and *moniliforme*, &c., that are now pushing out their flower-buds; give them a little water at first, then, as the young shoots begin to show, give them a similar quantity of water; the node the display this winter will doubtless be the finest that has ever been seen. Where several plants of this are grown and flowering, carefully make a note of the characteristics of the different varieties, and mark them as they are similar. Some of these many will prove to be much darker in colour, and at the same time the individual blooms will be larger and of finer substance. Where such is the case it is very desirable that the points of difference should be noted and preserved. The very pretty *glossum membranaceum* will now be showing for flower. The beauty and apparent transparency of the flowers cause this to be always admired, and if some of the rose-coloured varieties are grown, and cover at the same time, the beauties of each are better observed. These, however, do not succeed well as a rule, and having tried them under several methods, the one I have found to succeed best is to grow them in sand, and in peat-moss, and hang them in the *Odontoglossum* house. Here, with plenty of water, which quickly runs away, they will make fine bulbs, and flower more freely than when in pots. The night temperatures for this month should be the lowest, and the light the brightest. The following A.M. indicate about the following numbers:—East India-house, 55° to 58°; *Dendrobium*-house, 50° to 55°; *Cattleya*-house, 53° to 55°; *Odontoglossum*-house, 45° to 48°. If only *Dendrobiums* were grown in the house, the temperature should be kept a few degrees lower temperature than that mentioned, but as the collection is almost sure to be a mixed one, and some flowering plants are coming on and others are in flower, the numbers here given will be safer and more satisfactory. *H. Swan, Fillingfield.*

FRUIT HOUSES.

CUCUMBERS.—Until the days begin to increase in length and the sun attains a little more power, a right temperature of 65°, with a corresponding rise of 10° to 15° by day, will be sufficient for the fruiting plants; but where the winter supply is obtained from plants growing in a house divided into several compartments, successions intended for meeting the demand in February may be kept 5° lower until they begin to bear, care being taken that the bottom-heat is not lost. To keep the plants to a bearing stage say till Christmas, from plants thoroughly established in September, the extremely low temperature we sometimes see strongly recommended may answer in mild winters, as the smallest amount of heat will concentrate the plants to a bearing stage; but in severe winters this advice is liable to lead young beginners astray, and it is more than probable the plants will be found weakly and quite unequal to the steady demand which always comes in with the fish season. Where the dry stagnant weather has interfered with the daily ventilation, red-spider and mildew will most likely put in an appearance; if so, the usual remedies without retarding the plants, and the plants to be kept with liberal supplies of tepid liquid manure when required, particularly if they happen to be growing in pots plunged in fermenting Oak leaves or tan. Keep the foliage and young growth always protected from the sun, and the plants must be kept clean. Top-dressings with good turf as the roots appear on the surface. Syringe sparingly for the present, except on fine bright days, when the house is closed about 2 P.M. at a temperature of 55° to 58°. For the present, it will be better for getting up a supply of young plants for early spring work, and for this purpose a good bottom-heat from fermenting materials will be found most conducive to fast and vigorous growth. Let the seed sown singly in small pots, and in a trench near the glass to prevent their becoming drawn, and shift on as they require it. Meantime get together a

good quantity of stable litter and Oak leaves, which should be well broken and mixed in a heap, on a dry bottom in the soil ground, to ferment and sweeten for future use in pits and frames.

ORCHARD-HOUSE.—For some years after the veteran pomologist, Mr. Rivers, introduced the pot system of growing fruit, this department was looked upon by many as an expensive toy; steadily, however, it has worked its way, and if the price of fruit has not been reduced our knowledge of varieties has been greatly increased, as we are now able to grow and taste side by side a great number of kinds in a given space. In large establishments, where the main supply of Peaches and Nectarines is and always will be obtained from trellis-houses and arbors, a selection of early kinds in pots will give one fruit long before it can be obtained from large trees established in borders. Assuming that the trees in the forcing orchard-house were taken in early in December, the buds will be swelling fast, particularly if growing in pots. Daily syringing must be continued until the blossoms begin to open, and even then the atmosphere must be kept too dry. The pots should be well drained (an I favourably placed for the free egress of water, as if fruit trees under the hand are finished, and to increase the chances of a good set of fruit, all ventilators and doors should be set open to keep the house cool, and so retard the swelling and opening of the blossoms until danger of spring frosts has passed away. Where the stock of trees is limited but the plants are good, they should be selected from the nursery—if from the open ground they should be firmly potted and plunged out-of-doors until the buds are ready to open, when they may be taken up and placed in the house, and ripen their growth. *H. Coleman, Easton Castle.*

KITCHEN GARDEN.

One of the most important operations of this month is the getting together as large a quantity of fermenting material as possible; of course the staple of this will be the litter and droppings from the stables, but it may be greatly and advantageously increased by a plentiful admixture of tree leaves. These materials, if frequently and intimately mixed together, will produce a much sweeter compound, and one which will retain a gentle heat much longer than stable manure alone. It is not necessary that the quality of such manure when decayed is equally well suited for garden purposes. With such materials let there be a good-sized hotbed thrown up at once; it will answer many purposes, for although we are in the short, dull days, vegetation will soon be in active movement, and many little crops will have to be started where there is a family of taste to supply and early luxuries are required. Amongst these a small pinch of Celery should be sown thinly in boxes, but it may be sown in trenches, and it is not too early even for very early planting in trenches, but will be found very useful for soups and other flavouring purposes. A pan of *Walcheren Cauliflowers*, to be picked out into boxes before it is too far advanced, will be found very useful for soups, and it is not too early to furnish an early supply where there were failures in the autumn-sown plants. The long continuance of drenching rains during the last month will have been a great hindrance to all operations connected with ground-work. There will therefore be the greater need to concentrate a little extra labour in this department so soon as the weather will serve for wheeling out manure and compost, and digging or trenching up all vacant ground for sowing. It is not too early to furnish as roughly as possible on the surface, so that they may have all the advantage of frosty weather. It may seem almost superfluous, considering the present condition of the soil, to give any reminder about sowing crops in the spring, yet in a few weeks, if the soil may be possible to get in a sowing of Early Mignon and Early Long-pod Beans; the latter will succeed the former in coming in as if sown at the same time. The Peas sown in November will probably be ready for the table in the first week in March, and it may be possible to get in a sowing of Peas, and some dry leaf-mould laid along each side of the rows to form a shelter; the plants likewise may be just covered with the same material. A simple matter, but one requiring attention where neatness is looked for, is the sowing of small pots of *Winter Greens* and leaves on the beds of *Winter Greens* and Broccoli. *John Cox, Redfoss.*

HORTICULTURAL EXHIBITIONS, 1877.

JANUARY.

- 17.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.

FEBRUARY.

- 14.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.

MARCH.

- 3.—Crystal Palace. Exhibition of Artificial Flowers and Fruit.
7.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
21.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
25.—Newcastle-on-Tyne Horticultural Exhibition.

APRIL.

- 2 and 3.—Leeds Spring Flower Show.
4.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
18.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
21.—Royal Botanic Society. Second Spring Show.
23.—Royal Botanic Society. Park. Spring Show.
25.—Royal Horticultural Society of Ireland. Spring Show.

MAY.

- 2.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
15.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
16.—Royal Botanic Society. Summer Exhibition.
24.—Royal Manchester Botanical and Horticultural Society's Show.
24.—Royal Horticultural Society of Ireland. Second Spring Show.

JUNE.

- 6.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
13.—Royal Botanic Society. Summer Show.
20.—Royal Horticultural Society, South Kensington. Meeting of Fruit, Floral, and Scientific Committees.
20.—Blackheath Horticultural Society. Exhibition.

THE

Gardeners' Chronicle.

SATURDAY, JANUARY 6, 1877.

THE institution of a physiological laboratory at Kew, by the munificence of T. P. JODRELL, Esq., affords a fitting occasion for laying before our readers a portrait of one of the founders of vegetable physiology—one who was the direct precursor of BONNET, of DUHAMEL, of DE SAUSSURE—one whose experiments and inferences are still current in the text-books; one, in fact, of whom, together with NEHEMIAH GREW, British science has just reason to be proud. In subsequent issues we purpose giving similar portraits of THOMAS ANDREW KNIGHT, and of other physiologists, to whose labours the gardening world is indebted for a knowledge of the basis on which the intelligent cultivation of plants depends. From the time of KNIGHT down to comparatively recent years, if we except the carefully-devised and laborious experiments of LAWES and GILBERT, comparatively little has been done in vegetable physiology proper by British observers, or at least in that department of it which embraces the study of the mode of working of the plant and its parts, looked at as machines. Botany, or the description and discrimination of one plant from another, including the study of outward conformation and minute anatomical structure, has been studied with zeal and success in this country, but in the particular department we have alluded to we have followed the Germans, the French, and other nationalities to surpass us. There are many indications that this state of things is likely to undergo a change, and it is one which, in the interests of horticulture, is greatly to be desired.

Two hundred years ago, that is to say in September, 1677, was born in the pleasant village of Bokesborough, near Canterbury, STEPHEN HALES, a younger son of a very old Kentish family originally settled at Halden, and a man to be held in honour wherever the life-workings, whether of animals or of plants, are deemed worthy of study. In due time he proceeded to Cambridge, where we are told botany and anatomy together with chemistry formed his "studies of relaxation."

We read of him collecting plants on the Gog-magog Hills, with the aid of RAY's *Catalogue*, accumulating fossils and butterflies, and studying the stars. Entering the Church he became perpetual curate of Teddington, Middlesex, and although he held other preferences he seems to have resided chiefly at the last named village, under whose church tower, built by himself, he was buried in 1761, at the ripe age of 84. Westminster Abbey contains a monument erected to his memory by the Princess Dowager of WALES, in whose establishment he had acted as clerk of the closet. The monument is in the tasteless style of the period, with a Latin inscription, which serves to testify the esteem in which he was held by the "mother of the best of kings," but which is silent as to his services to science. An amiable and benevolent man, he lived, says one of his biographers, not only "a blameless but in a high degree an exemplary life." Withal his career, apart from science, was uneventful and demands no further comment on our parts. What he did in science may be gleaned from a brief enumeration of some only of his principal papers, chiefly communicated to the Royal Society, of which he became a Fellow in 1717. The practical bent of his mind and the scope of his researches will be made so manifest from this enumeration that any lengthened comment will be unnecessary. His first paper contained an account of some experiments on the sun's heat in raising the sap in trees, a paper received with such favour by his contemporaries that, says PETER COLLINSON, to whose account in the *Annual Register* for 1765 we are indebted for some of these details, the request was "like the charge given by PHARAOH's daughter to the mother of MOSES to take care of her son. The result was the publication of STATICAL ESSAYS—*Vegetable Statics*, in 1727, concerning which we shall have more to say in the sequel.

Although he thought it quite consistent with his sacred office to perform experiments on animals which would now-a-days suffice to brand him in the eyes of some people as a vivisector, he was yet humane and careful of the material as of the spiritual welfare of his fellows. "His philosophy was not," says Sir JAS. ED. SMITH, "a barren accumulation for the ignorant to wonder at, for its professor to repose on in sottish self-sufficiency and uselessness, but an inexhaustible bank on which his piety and his benevolence were continually drawing." In accordance with this, we find him addressing a "friendly admonition to the drinkers of brandy and other spirituous liquors," making experiments with a view to find a solvent for stone in the bladder, and for preserving meat in long voyages, for checking fires, for ensuring the due ventilation of ships, mines, prisons, &c. In this latter matter he was so successful that the mortality in the Savoy and Newgate prisons was reduced from fifty or even a hundred in the year to four. He investigated the cause of earthquakes, invented a "seamage to measure unfathomable depths." He devised methods for keeping water and fish sweet with lime-water, also a "cheap and easy way to preserve corn sweet in sacks and heaps, and to sweeten it when musty, and a mode of distilling fresh-water from salt. In 1757 he published in the *Gentleman's Magazine* an easy method of purifying the air, and regulating its heat in Melon frames and hot greenhouses." This was done by inserting a bent pipe into the dung-bed, one orifice of which communicated with the outer air, the other opened in the frame, at the upper end of which were holes to carry off the impure air.

From this mere enumeration we glean a good idea of what manner of man he was. It is satisfactory to find that his merit was recognised. He refused higher preferment in the

Church, but he accepted the honour which the Royal Society conferred on him of a Copley Medal, and English science was honoured in his person in 1753, when HALES was elected one of the eight foreign members of the French Academy of Sciences on the decease of Sir HANS SLOANE.

So much we have gleaned from various sources. The best account of HALES' life and career that we have seen is that by PETER COLLINSON above referred to, and for indicating which we owe our thanks to the Rev. W. W. NEWBOLD.

It behoves us now to allude at somewhat fuller length to the book by HALES which will be longest remembered, and by which his position as a physiologist will be most securely upheld. Almost any text-book will furnish the leading details of HALES' *Statics*. Till a quite recent period HALES' experiments on certain subjects, as here recorded, formed the one source from which later writers took their inspiration. HALES' experiments were repeated and performed in a more or less modified form, and his general results were confirmed. Whether it was the amount of moisture evaporated from a leaf, the amount and force of the current of ascending sap, as measured on the cut surface of a Vine stump, it was—nay is—HALES' experiments which were and are quoted and relied on, and, as we have said, till quite recently but little has been added to what he did nearly two centuries ago. HALES' *magnum opus* is thus entitled:—"The Vegetable Statics; or, an Account of some Statical Experiments on the Sap in Vegetables, being an Essay towards a Natural History of Vegetation; also a Specimen of an Attempt to Analyse the Air by a Great Variety of Chemico-Statical Experiments, which were read at several meetings of the Royal Society." We have spoken of it as a *magnum opus*, and so in some sense it is, though in mere dimensions a small 8vo of a few pages. It appeared in 1726, ISAAC NEWTON being then President of the Royal Society, and it was dedicated to H.R.H. GEORGE PRINCE OF WALES. It passed through several editions, and was translated into the principal European languages. The headings to the chapters, which we transcribe in an abbreviated form, will show in what manner HALES may be said to have laid the foundation of vegetable physiology.

First of all, then, we come to a chapter showing the "quantities of moisture imbibed and perspired by plants and trees."

"2. Experiments whereby to find out the force with which trees imbibe moisture.

"3. Experiments showing the force of the sap in the bleeding season.

"4. Experiments showing the ready lateral motion of the sap, and consequently the lateral communication of the sap vessels. The free passage of it from the small branches towards the stem, as well as from the stem to the branches, with an account of some experiments relating to the circulation or non-circulation of the sap.

"5. Experiments whereby to prove that a considerable quantity of air is inspired by plants.

"6. A specimen of an attempt to analyse the air by chemico-statical experiments, which show in how great a proportion air is brought into the composition of animal, vegetable, and mineral substances, and withal how readily it resumes its elastic state when in the dissolution of those substances it is disengaged from them."

In this last series of researches HALES unwittingly confirmed the researches of BERNAUVE, made about the same time.

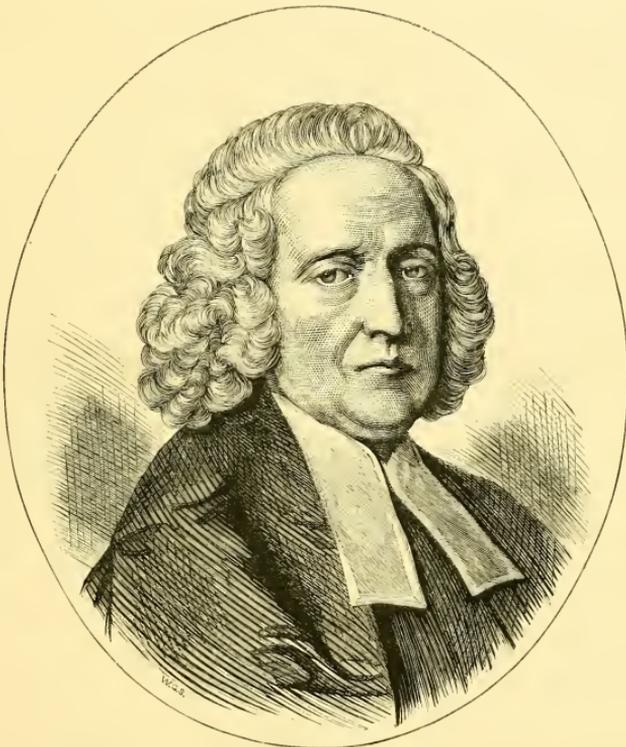
This is not the place to enter into any critical analysis of what HALES did. The above enumeration will suffice, particularly as his experiments and inferences are inwoven into all the more important text-books, and are, even

now, not displaced by more modern research. Our portrait is copied from a fine mezzotint, after a painting by HUDSON.

— WITH our present issue we present our subscribers with a sheet ALMANAC for the present year, designed and engraved by MR. WORTHINGTON SMITH. As on former occasions, the leading idea with the artist has been to reflect in the Almanac a few of the more prominent horticultural novelties, or salient points of interest during the year, and which have been chronicled in our pages. The Kew Supplement,

which is in so far a concession to Mr. WILSON'S scheme. It seems a pity, however, that the Council should have adopted this in so half-hearted a manner. Either let the scheme be adopted in full or let alone. We are well aware of the enormous incubus under which the Council now lies—we are well aware, too, of the labour that the Council has without fee or reward undergone—we recognise that the Council is the most popular of any that we have had for several years, but we must beg them not to succumb to the numbing paralysing influence which the action of the debenture-holders and the Commissioners seem to have induced. The horticultural spirit of the

a bush 10 to 12 feet high, "disregarding both frost and snow, being often covered with flowers from top to bottom, and forming a most beautiful object." At various times during the winter we have been favoured with specimens from Mr. BOSCAWEN, but a few days since, in order to corroborate his opinions still more forcibly, he sent us a large hamperful of the blooms of this delicious Heath. As this was the product of a small garden, it may be judged what would be its profusion in a large establishment. Both Maresfield and Lamorna are comparatively warm localities, though by no means exempt from severe frost and snow. We should be glad to know, from



STEPHEN HALES.

The Founder, in England, of Vegetable Physiology.

and that devoted to the King of the Belgians' conservatory are thus recalled to memory, together with several of the best new plants of the year. The germination and fructification of the Potato fungus, and of allied forms, are appropriately introduced, together with various garden-visitors, of some of whom it may be said in the garden that their room would be preferable to their company. The dates for flower-shows and meetings are as complete as we can make them at so early a period of the year. The mean temperatures are those recorded at Chiswick, on an average of forty years, as revised by Mr. GLAISHER.

— It will be observed that in the circular issued by the Council of the Royal Horticultural Society mention is made at the end of guinea Fellowships,

country is not dead, and it only awaits the earnest well-directed efforts of the Council to lend its aid in the reorganisation of the Society. At the annual meeting, which takes place in a few weeks, we shall hope to hear that the Council has roused itself to a more active policy than has been possible of late.

— We desire to call the attention of our readers to the beauty of ERICA COPONODES, by no means a new plant, but one not sufficiently known. The plant has something of the habit and appearance of E. arborea, but the flowers are larger and more bell-shaped. It was figured in 1835 in the *Botanical Register*, tab. 1698, from specimens supplied to Dr. LINDLEY by Messrs. WOOD, of Maresfield, Sussex, in whose nursery the plant was quite hardy, forming

other correspondents, how the plant fares with them. Where it thrives it is evidently one of the very best hardy winter-flowering shrubs.

— THE POST OFFICE authorities too often act as if they considered the people of this country made for the Post Office, and seem, in particular, to look on the Press of the country with aversion—as their greatest source of annoyance. The officials seem to forget that they are the servants of the public, and that the vexatious and often absurd regulations they make tend to restrict the revenue of the country, to say nothing of the injury done to the Press and to the public in general. Constantly some petty quibble is raised by the obstructiveness of some official whose desire seems to be "how not to do it." The *Printing Times* has

a long article on the subject, most of which we can endorse from our own experience. We trust that the truly childish regulations which are ignored one day, insisted on the next, interpreted to-day this way, tomorrow another way, will be swept away and replaced by a uniform and readily intelligible system. It is not only the annoyance to ourselves and our brethren of the Press which would be thus spared—that is a minor matter—but the labour and cost of the Post Office itself would be reduced, and the revenue at the same time increased. Sarcily the higher officials might be expected to know and put into practice some of the laws of political economy and business management.

— The origin of the GHENT AZALEAS is given in the last number of the *Revue de l'Horticulture Edgée*, by M. VAN HULLE, from which it appears that towards 1825 M. MORTIER, a nurseryman, of Ghent, conceived the idea of retarding the flowering of the early flowering varieties which were likely to be injured by early frosts, by fecundating them with the pollen of later flowering varieties. The experiment succeeded. Not only were flowers of later flowering tendency secured, but flowers of better form and more varied colour and more agreeable fragrance. This variety soon became known as Azalea Mortieriana, the varieties so called having been raised from various crosses between Azalea viscosa, nudiflora, pontica, and calendulacea. Ghent Azaleas are now propagated from seed, the one-year-old seedlings being grafted and treated as Camellias are. They are planted out in leaf-mould, and after two years are in a fit state for sale.

— The *Bulletin of the Belgian Federation of Horticultural Societies* for 1875 contains, in addition to the usual official matter, various articles on physiological subjects, to which we have already called attention. At p. 30 we observe an amusing mistake, which our Belgian friends would do well to correct. The President of the Royal Horticultural Society is stated to be — AVERTON, Esq.! We trace this to a "squib" which was published some time since, but which we hardly expected to see taken up *grand sérieux*. No wonder the poor Royal Horticultural Society is "agonisante."

— We have received from Mr. SINCLAIR, gardener to Sir H. D. INGLYB, Bart., Ripley Castle, Leeds, a copy of his GARDEN DIARY, or, rather, GARDEN ACCOUNT-BOOK. It contains a page for every day in the year, on which is printed the name of each kind of fruit, vegetable, salad, and herb, that is usually grown, with an *L. s. d.* column to show the money value of the quantity sent into the house each day. Cut flowers and plants are treated in the same way, and provision is made for recording the temperature three times a day, and for other observations on the weather, as well as for a few general remarks. Such a book as this should be kept by every gardener, who would find it an excellent check on extravagance either in the kitchen or still-room. The one before us, however, would have been better had the space allowed for the various entries been on a more liberal scale. We may note, too, that through the transposition of a letter the word *Borecole* is misspelt on every page.

— As originator of the ROYAL AGRICULTURAL BENEVOLENT INSTITUTION, Mr. MECHI suggests, in the *Agricultural Gazette*, that at all public agricultural dinners it should be one of the toasts. A good and worthy farmer, the late Mr. CONGREVE, has left to it £1000. We are informed that the late Mr. GEORGE MOORE has also bequeathed to it £1000. Mr. MECHI adds that he fears this very disastrous farmer's year will greatly add to the number of applicants for relief.

— The *Ceylon Times* states that a letter in its issue for December 7 bears testimony to all that has been written of the rapidity of growth of the PRICKLY COMFREY, showing clearly enough that it is a plant specially adapted to the soil and climate of Ceylon. "There should be no reason," says the journal in question, "why it might not be grown successfully on most of the poor waste lands of the low country. Messrs. THOMAS CHRISTY & Co.'s circular, forwarded to us with the letter, says, 'The Comfrey, being a deeply-rooted plant, is independent of weather and climate, for in the driest and hottest

seasons it will afford several heavy cuttings when all other vegetation is either burnt up or at a standstill.' With this plant at their disposal the natives of the poorer districts of the maritime provinces might turn to good account many an unproductive field, many a barren waste. We commend the idea to the Government, which has resolved on establishing an experimental garden at Meerigama, for the special development of products suitable to native industry. A better plant could not be grown for general distribution than the Prickly Comfrey, which might be gradually distributed amongst all villagers applying for cuttings of it."

— THE ENFORT OF ROSES TO PORTUGAL AND ASSAM last year by one of the leading nurserymen in the North of Ireland, is an interesting item in the events of the year. The taste for Rose growing and Rose showing which has sprung up in Portugal lately is, the *Irish Farmer's Gazette* has reason to believe, to be largely attributed to a member of the Crawford family, who is an enthusiastic rosarian, and is now settled on his property in one of the richest wine-producing districts of Portugal. It is to be hoped the cultivation of Roses in Assam will be as successful as has been the cultivation of the Chinese Tea plant in that country.

— Dr. E. GOEZE, we learn from the *Hamburger Gartenzeitung*, has left Lisbon, and taken the post of Inspector of the Botanic Garden at Greifswald.

— SIGNOR ALBERTIS, writing from NEW GUINEA, as quoted in a recent number of *Nature*, says:—"I expect to have about 500 species of dried plants, and between twenty and thirty of living plants, collected far in the interior, many of which I did not get afterwards. I hope Mr. C. MOORE will be satisfied, as I have some fine *Crotoms* and *Palms* among them, also some *Ferns* with variegated leaves, *Orchids*, and several other plants with variegated or spotted foliage, &c., from the very centre of New Guinea." *Adonis*, we are glad to hear, we have recently had the opportunity of inspecting some valuable importations from New Guinea at the nursery of Mr. B. S. WILLIAMS, and of which we hope to be able to say more on another occasion.

— We understand that two of Mr. Wm. BULL's collectors—Messrs. CARDER and SHUTTLEWORTH—have just returned from New Grenada, barely escaping with their lives. The revolution has extended throughout the United States of Colombia to such an extent that the utmost lawlessness now prevails. Mr. CARDER was unfortunately robbed, not only of his money and valuables, but also of his revolver. To escape, we understand, the collectors were obliged to go down the river Magdalena in a small open barge, and the river being unusually swollen, that was a highly dangerous alternative. Holders of the beautiful plants that come from that country, and who have secured good stocks, may be congratulated, as from the nature of the revolution it can scarcely be expected that any plants will be received from that country for some time to come. Many of the most handsome of the cool and comparatively cool *Orchids* now so high in popular estimation are indigenous to the United States of Colombia, such as *Madevella* Harayana, the always beautiful *Odontoglossum crispum* (Alexandra), *Pescatorea* and *Rozellia*, *Cattleya Mendelii*, and the exceedingly handsome *Odontoglossum vexillarium*.

— The Golden *Tuja occidentalis*, named *Vervaneana*, is generally represented as having foliage of a bronzy-yellow colour. There can now be seen at the Royal Nurseries, Ascot, some specimens in which the foliage is of a bright golden colour, and most effective. Perhaps the moist sandy bog of the Ascot Nurseries has something to do with the production of the striking gold of colour. The larger the plants the better character did they appear to possess.

— There seems to be considerable doubt as to whether the EMPIA, the supposed NEW DANCER FOR ORCHID-CROWERS, mentioned in our last issue, has anything to do with the destruction of *Orchid* roots or with the spinning of webs. We were assured that no such insects had been found in the *Orchid*-house from which the plant was originally derived, and that the web was in all probability spun by a species of spider

common in *Orchid*-houses. The subjoined letter from Mr. M. LUCAS will be read with interest, as having been written by one who has made a special study of the group of insects in question. We shall be obliged if any of our readers will forward us specimens of the insect, should they unfortunately discover it in their houses:—

"The notes and figures that appeared in your last number have much interested me; as *Embia* has long been one of my pet groups. Like Professor WESTWOOD I have never seen any but fully legged and absolutely wingless forms; yet from analogy the 'nymph' ought to have rudimentary wings, but not (as regards the mesothoracic wings) like the figure. I share his (impudic) doubts as to whether the *Embia* be a real spider in this case. Professor WESTWOOD has overlooked an important notice on the habits of *Embia*. M. LUCAS, in the *Exploration Scientifique de l'Algérie* (insects), pp. 113-114, says concerning his *Embia mauritanica* that he found the perfect insect in the environs of Algiers in June, living in families in sandy places, and running about rapidly on the stems of large herbaceous plants; not using the wigs when about to be captured. Of the larvae he says they are found under damp stones, and inhabit little silken tunnels, into which they retire when an attempt is made to seize them. They are very active, carnivorous, and not rare in winter. In March he placed several larvae in boxes with insects to feed them. He was not able to watch the transformation, but in one of the boxes he found, many months afterwards, a winged insect fully developed. A larva is noticed by HAGEN as having been found at Athens in November under a stone. I possess a larva of *Embia Solieri*, given to me by Mr. F. ASCOLE, found by him at Hyères, under a stone. I think these notes are sufficient to warrant doubts as to the supposed *Orchid*-destroying propensities of the creature, even supposing that the carnivorous habits attributed to them by M. LUCAS be not strictly correct. Analogy certainly suggests dry and dead vegetable matters as a more probable food; yet we have M. LUCAS' distinct assertion that they are carnivorous. R. M. Lachlan, 39, Lines Grove, Leitham."

— Mr. JOHN LEE having retired from the firm of Messrs. JOHN & CHARLES LEE, the business to long carried on by them has passed into the hands of Messrs. CHARLES LEE & SON, who will in future carry on the general business of the nursery and seed trade, at the Royal Vineyard Nursery, Hammersmith; and at the branch establishments at Feltham, Ealing, and Isleworth. It is the intention of the new firm to rebuild the extensive ranges of glass in the Hammersmith nursery on a new site, a portion of the old nursery being taken up for building purposes.

— A correspondent asks for a description of HANSTEIN'S METHOD OF KENEDING VEGETABLE TISSUES TRANSPARENT. He describes in his *Zoologische Abhandlungen*, heft 1, p. 5. It is very simple. He employed it especially in his investigations on the development of the embryo of phanerogamous plants. To release the embryo from the seed a dilute solution of caustic potash was used, and this rendered the embryo transparent. Very young embryos required only a few seconds' immersion in the solution, and afterwards placing in glycerin to make them transparent, and preserve them in that state. The glycerin was diluted with water and alcohol. Older embryos required longer treatment with the potash solution, and subsequent washing in caustic acid. Sometimes it happens that the preparation is too transparent, and the cell-walls are no longer distinguishable; but this is easily remedied by immersing it in a dilute solution of alum, when the walls become distinctly visible.

— To all concerned in gardening operations, the long-continued rains and stormy weather are becoming serious evils of more than ordinary moment. With the soil in its present waterlogged condition, all really useful and seasonable ground-work is out of the question; indeed, it is only with high, gravelly loams that sifting or planting of any kind is possible. Over vast tracts of the country the water is found within some 12 inches to 18 inches of the surface, but on close clay loams the water lies on the surface in puddles, the heavy rainfall having closed up the pores of the soil by constant friction. To attempt the cultivation of soil so affected would be folly, as the moving would simply result in the conversion of it into lumps of clay, to be baked into the consistence of bricks under the possible March wind. Patience under existing circumstances is an uncoloured virtue,

and one that all having to cultivate land will do well for the present to practise. To those engaged in the cultivation of tender plants under glass, the too common flooded stockholes are grave calamities. It is scarcely probable that whilst the water lies so high in the soil we shall have severe frosts, but with so much moisture in the atmosphere fire-heat is as essential for the reduction of damp as it is to maintain a high temperature. The expectation that we shall have a soft, moist winter, seems even more likely to be verified.

— In one of Messrs. VEITCH'S Orchid-houses is now flowering a charming plant of *MASDEVALLIA TOVARRENSIS*. From a compact tuft of broadly oblong strap-shaped leaves rise no less than twenty-nine flower-spikes, bearing some three, others four, pure white flowers. It is a veritable gem.

THE FRUITS AND VEGETABLES OF 1876.

THE Year 1876 stands almost pre-eminent for the great paucity of its Fruit crop in general, and of new or notable varieties in particular, so that our task of reviewing the acquisitions during the past year is an exceedingly light one. This great scarcity in the case of the outdoor fruits, such as Apples and Pears, is chiefly attributable to the action of the late spring frosts, which were last season of unusually long duration. Notwithstanding this general scarcity, we have the pleasure to record the introduction of a few sterling representative fruits.

Grapes naturally claim our first attention, their cultivation and improvement being specially the property of the British gardener. Here we have in Clive House Seedling a very decided acquisition in the class of late black Grapes. This is a seedling variety raised by a gentleman amateur, D. P. Bell, Esq., of Clive House, Alnwick, which is stated to be a cross between the Black Morocco and another black variety from Wortley. The bunches are large and well shouldered, of much the same appearance as the Alicante; the berries large, ovate in shape, with a dense black bloom. In flavour it has the rich sparkling character of the Morocco, and is very pleasant, so that it is free from the tart setting qualities of that variety, and of good constitution. It will prove to be one of the best late black Grapes, and we congratulate Mr. Bell on his success. We may note also, *en passant*, how well Mr. Pearson's last introduction, "Mrs. Pearson," is proving. It is one of the best white Grapes in cultivation.

Pine-apples merit this season a share of our attention. Seedling Pine-apples are of rare occurrence, and their production is evidence of considerable skill and perseverance. We therefore compliment Mr. Hunter, the very able gardener at Lambton Castle, for his success so far. His new seedling, "Lady Cecilia Lambton," is a large and very handsome fruit, not unlike a good Cayenne. Some fruits exhibited before the Fruit Committee were of fine appearance, but of inferior quality; we have, however, tasted some fruits which were excellent, so that we look forward to its taking a front place, independently of its great size and beauty, which will always recommend it.

Apples furnish us with no novelties of particular note this season, and Pears are nearly equally wanting; yet here we must mention one or two excellent additions, as *Amiral Cecile* and *William's Queen Victoria*—the former one of the richest-flavoured January Pears, the latter a good early autumn sort. Both are of medium size, and well worthy of cultivation.

Of Peaches and Nectarines there is little novelty to record, but attention may be called to some of the older but too little known sorts, such as *Goshawk*, which is one of Mr. Rivers' best seedlings, and is a fine large and excellent sort. Let us mention also *Desse* rather as one of the handsomest and best late Peaches, *tar. 60* little known.

Strawberries are not so prolific of novelty either this season, as usual, the excessive drought having materially interfered with their progress. A great many new Strawberries are annually introduced to us from the Continental raisers, the majority of which are worthless. Of the new English sorts we would especially recommend *Enchantress*, *Excelsior*, *Countess*, &c., all seedlings of Dr. Roden—free

and abundant bearers, of excellent quality, and most distinct.

Melons appeared in plentiful array, as usual, some promising scarlet-fleshed varieties coming from *Kashgar*, of which more may be said anon. Mr. Frisby's *Alexandra Palace* proved to be a first-class, high-flavoured green-flesh.

In the VEGETABLE DEPARTMENT the number of new names annually introduced to notice by our enterprising seedsmen is most confusing. We fail to see the necessity or the policy of this continual application of new and special names to well-known varieties. A new name cannot improve the quality of the article, neither do we believe it can tend to the reputation of its introducer in the long run. A spade is still a spade, and we should prefer to call it so, and the *Ne Plus Ultra* Pea bears a more honourable character by that name than any of its new-fangled aliases will ever attain. Improved selections of vegetables are most meritorious and require distinctive appellations, and it is certainly by careful selection that the high standard of excellence is maintained, so it has apparently become the fashion now to bestow a special name on all carefully saved seeds, whilst the original names are lost sight of. This is a tendency greatly to be deplored and discountenanced.

Amongst Peas, which of late years have been replete with novelty, thanks to the great skill of our hybridists, we have again a few very promising varieties to notice. *Criterion*, of Messrs. Veitch, is a seedling of the late Mr. Standish's, and is an early *de Plus Ultra*, name which it wants no better character. *Sutton's Giant Emerald Marrow* is a novel and very distinct sort, a tall, strong-growing variety, with large pods, and of good quality. It has the peculiar glassy green of the old *Dancerot Rival*. *Charley's Commander-in-Chief* is a large and very fine shew semi-wrinkled green Marrow in appearance like *Sicem*. *Allen's Champion* is a good selection of *Dickson's Favourite*, and *Taber's Market Favourite* is a good selection of the *Essex Rival*, but distinct.

Onions we call special attention to the *Trebons*, which, being a new variety, was proved last season to be so exceptionally good for autumn sowing that it deserves all the notice we can give it. We would also note the *Rocca* as being the best form of the large *Tripoli* section.

Of Kidney Beans we make note of the *Early White Etampe*, as being a very early sort; *Nain Blanc Quarantin*, an excellent second early; *Rachel*, *Yellow Champion*, and *Zebra* are all excellent sorts, if so many varieties are really required.

Cauliflowers there is nothing specially new. In the *Chiswick* trials the *Lenormand* was specially distinct, as was the *Extra Earliest Paris*, which is used for forcing purposes, and little known in this country. The *Early variety* seemed to engulph many of the so-called new varieties of former years. Of Cabbages, *Carter's Heartwell* is a good variety of the *Norpareil*.

Amongst Salads we must not omit to mention the *Whitloof*, or *Brussels Chisney*. This is not a new vegetable, but although extremely common in many parts of the Continent, it was scarcely known or cultivated in this country until the past season. It is of the easiest cultivation, and when blanched like *Seakale* it is excellent as a salad or cooked. Speaking of *Seakale*, we are reminded of a distinct sort cultivated by Messrs. Stuart & Mein, the leaves of which are green, with no purplish colouring, consequently when blanched they are pure white, and although exposed, never assume that purplish tint of the common form. On this account it may prove valuable as a market variety.

Potatoes come last, but are far from being the least of the gardener's charges, or the least deserving of notice. Of late years it is pleasant to note the increasing popularity of this vegetable. Immense interest is now being taken, not only in improved cultivation, but also in the production of improved varieties, both in this country and in America, and the improvement is manifest. From America we have received quite a distinct class, remarkable for their great cropping qualities, and for possessing a peculiar whiteness of flesh. In some seasons and in some situations they are wonderfully good, but when they lose the finer qualities of the English varieties. To overcome this—to blend the good properties of both in one, many of our enterprising men have been endeavouring to cross them, and in this Mr. Bennett, of Enville, has succeeded by producing the *Schoolmaster*, now offered

by Mr. Turner. This is a splendid victory, and a splendid Potato in every sense. It is of the *Regent* appearance—a most extraordinary cropper, and of first-class quality. *Criterion* is very similar to this. *Wyllie Seedling* is a fine handsome Potato. It is a variety raised at the village of Wyllie some years ago, and, strangely enough, is scarcely distinguishable from the *American Bessie's Prolific*. Of other sorts we mention *Prince Arthur*, referring to the *Lapstone* section; *Lyons Favourite*, which is a variety raised at the village of Wyllie some years ago, and, strangely enough, is scarcely distinguishable from the *American Bessie's Prolific*. Of other sorts we mention *Prince Arthur*, referring to the *Lapstone* section; *Lyons Favourite*, which is a variety raised at the village of Wyllie some years ago, and, strangely enough, is scarcely distinguishable from the *American Bessie's Prolific*. 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assistance cannot be too highly deprecated. I am free to confess that I am not altogether clear in this matter myself, being far too prone to "follow the leader" rather than take a new course; but, having a desire to be free, I have occasionally worked out a theory of my own, and this one of Vine roots is by no means the least interesting. I have no doubt of the originality of discovery that Vines do not make new feeding roots till the buds are expanded, for I doubt not that scores have known this for years; still the general opinion is that root-growth does and must precede leaf development, but to my own satisfaction I have proved that they do not—more, that though they may be made to produce roots in advance of top-growth by the application of heat to the border, yet that such a practice is injurious to the general welfare of the Vines; both border and other, in a remarkable manner with Mr. Baies' experience, and I doubt not that many of your readers could give similar testimony. Still the great majority of gardeners believe in the doctrine of root precedence; hence all labour and anxiety to keep a low temperature in early Vine borders. Like Mr. Baies, I had strongly imbibed the doctrine, and from those whom I believed best calculated to teach it; and it was only after the demonstrative experiment recorded in my vol. 4, that I was fairly given up, and, being wrong tenaciously I held the doctrine, though this occurred some six years ago, I have hardly ever been able to give up the practice of covering early Vine borders, to induce root formation by the heat so generated. However, in the last year, I have merely covered the borders to keep out the cold, doing it as early in the autumn as opportunity offered, with a view of retaining part of the as yet unexhausted summer-heat; and my conviction is, that if outside borders were covered with straw, or other covering would be requisite, though forcing began ever so early. But the question here arises, Why have outside Vine borders at all? Given a plentiful supply of water, and an easy mode of applying it, and why have inside borders for several reasons preferable—1st, they are independent of weather, no covering from cold or protection from wet being required. Liquid and other forms of manure can be more freely applied. 2nd, they are independent of weather, and an equable temperature as compared with the heads of the Vines than can possibly be the case with outside borders; and I am convinced that at least one spoke in the wheel of successful culture is equality of temperature. 3rd, they are independent of weather. I am an advocate for late viney borders being also entirely inside, for the same reasons as those just mentioned. Further, I contend that the orthodox style of Vine borders is founded on a wrong principle—half border inside, and other half outside—one half protected from all weathers, and when the Grapes are ripe, dry as dust, the other half exposed to all the rain that falls, and sometimes perhaps a bound with frost. Put an advocate of such borders in a similar predicament on a cold frosty night, i.e., with one foot outside the blanket and the other safely enclosed in it, and one can fancy how well pleased to have both inside. I know I am treading on tender ground in this matter, and shall probably be met with the reply that perhaps the best Grapes that have ever been grown were from such borders. Granted that they may have been; it does not follow that yours would not have been better if grown on what I term the inside style. I contend that with the roots entirely in, or entirely outside. Again, it is always more pleasant to record successes, than failures, hence the few records of the latter will appear in print; but all will admit that, as regards "one half border inside, and other half outside," though I do not wish to infer, there is just a possibility that "half-and-half" borders may have been accidental to such failures. Certainly as regards myself, if obliged to give a decisive answer, I should without hesitation, and with strong conviction, that it was right, answer in the affirmative. The subject is to me of such deep interest that I am selfish enough to hope that many others will have a say in the matter. *H. W. Williams, Westbury.* Will some of our correspondents write what they think of the roots in outside and inside borders respectively at the same time? Ens.]

Fruiting of the White Jasmine.—Observing in your last number a notice of the extreme rarity of the fruiting of the white Jasmine, I beg to enclose you a specimen which I found this morning in my garden. The fruiting has occurred in the same place in this neighbourhood, I have made the unusual event the excuse for troubling you. *G. Fuller, Gey, The Grange, Eury St. Edmunds, Dec. 31, 1876.*

Late Roses.—Passing to-day (December 31) the residence of Mrs. Jones, widow of the late proprietor of the White Hart Hotel, situated on Milford Hill, Salisbury (rather an exposed situation), I observed that the late autumnal weather had done good. Climbing Forester and Climbing Devoniensis; as on a standard

fastened to the wall a bloom, finely developed, of what in colour exactly resembles the *Madame Rothschild*. It was not nearly enough, however, to speak positively as to the variety. The trees, which face almost due west, are well sheltered from north winds, and effectively protected from wet by widely projecting eaves. To "speak Rose" in December, as in June," seems now-a-days a less ridiculous thing than it was supposed to be in the "degenerate days" of Byron. *C. H.*

Epiphyllum truncatum.—It gave me much pleasure to see the features of an old favourite of mine again appearing in the pages of the *Gardener's Chronicle*; I mean your reprint of engrafted *Cactus lignosus*. It is thirty years ago since the sketch was taken by the late H. Sellenden Ker, Esq., of Chesant, when on a visit to Mrs. Huskisson, at Earham, Sussex, from a plant grown by me and in the company of the fine "Kew's" lively recollection of seeing him sketching and of my placing the plant in better position for the purpose. I had four of these large plants at the time, the two tallest being on stems about 4 feet in height, the heads fully 2 feet in diameter. They had been in the open air, and under Cereus growing under. The other two were of the double section, and had the Cereus mixed, as shown in your illustration. These plants after flowering were allowed to remain in the warm end of the same glass house, and they had been in the open air during that time. In the spring they were moved to the back of a lean-to Orchid-house, and encouraged into growth. The soil they were grown in was similar to that recommended by Mr. Bester at p. 508. The plants were watered with the usual quantity for flowering they were moulded over to the depth of 1½ inch with fowl-dung fresh out of the fowl-house. In the course of a few weeks the roots were seen to draw up over the surface until the mass became white. The plants were then covered with a mat of straw, and removed by poking it up with a pointed stick, and a similar mulching put on. This method served for years without shifting the plants into larger sized pots. Sometimes as many as three or four flowers would grow on the same stem, and the colour of the petals and the mass of bloom they produced was sometimes marvellous. The *Persikia* is a strong free-rooting plant and does not require tampering with by starving cultivation. It was either Mr. Ker or some friend of his who first suggested the subject, and I reproduce the figure of my plant for the frontispiece of his *Theory of Horticulture*, where I think it will be seen to correspond with the figure in the *Gardener's Chronicle*. [Not in the second edition]. *J. Webster, Gordon Castle.*

Fungoid Christmas and New Year's Cards.—Messrs. De la Rue & Co. have this Christmas, among the best of the admirable productions they have issued a set of six [six] Fungoid Christmas or New Year's cards: No. 31. Each card shows a group of fungi, over and about which fairies, elves, little goblins, and witches are disputing themselves. As the groups of Agarics, &c., are copied from nature, and are made up by myself and my friend Mr. W. Wilson Saunders, many fungological friends may reasonably imagine that we have been improperly reducing the higher fungi to this lower (?) level. But this is not so; and for the two groups complete. One of the titles of the cards was from a tree in a shop-window, just as the first I recently knew of a new edition of my *Mushrooms and Toadstools*, with new key plates, &c., was from seeing a criticism of it in a newspaper. This criticism was not even given, but I do not think the publishers have arranged for all details to be right. The first of Messrs. De la Rue's fungoid cards reproduces on its left my figure (now in the British Museum) of *Cantharellus carbonarius*. The natural habitat of *Cantharellus* is wood-sheds; and care is made to grow in a nice grassy place amongst Ferns, and on one pileus is a Dryad with a red feather in her cap. On the right of this card is my *Boletus parasiticus*, Bull (also in the British Museum). On the pileus of one of the two trees grows complete. One of the titles is in the foreground. The fungus upon which the *Boletus* is parasitic is omitted (*Scleroderma*), probably on account of its strong resemblance in my drawing (to the non-fungoid mind) to a lump of horse-dung. My *Boletus* is well reproduced, but I do not think Mr. Wilson Saunders' group of *Cortinarius* cerealesces. *Fr. (Mycological Illustrations, plate 22)*, but Messrs. De la Rue's artist, not having fungus in his heart, has omitted the *cortina* (or veil) from the *Cortinarius*; and the *Boletus* is shown in the foreground. Nine amusing sprites are playing in the foreground. Card No. 3 is a plant I first published as British, viz., *Cortinarius dilapshus*, Fr. My original, now in the British Museum, or the plate in *Mycological Illustrations*, is well reproduced, but I do not think it is omitted from both specimens. Queen Mab is introduced in the foreground directing the cutting down of one of the two fungi by two infant axe-bearing gnomes. Card No. 4, possibly original, is certainly a fungological nondescript. Four elves are dancing on

the pileus of *Agaricus muscarius* (judging from its red colour and its white gills, but that of the Christmas-card fungus is ringless, and clearly pertains to a Mushroom belonging to a different section. In the foreground are three small beings belonging to the world of dreams, and a small original fungus with no characters in particular. Card No. 5 reproduces on its left Mr. Wilson Saunders' illustration of *Coprinus lagopus*, Fr.; a wood nymph and five evil geni of the masculine gender are engaged in overturning one specimen. On the right of this picture is a possible *Tricholoma*, which is original or copied, cannot say. Card No. 6 is a similar fungus with this last occurs on the right of this card, in which five little dream-folk and two witches figure. The witches with their cauldron are concocting Macbethian broth, whilst on the left are three Cereus, and a reproduction of Mr. Saunders' *Agaricus lacrymabundus*, Fr. The characteristic veil is again omitted, which shows that the copyist who has honoured us by reproducing our drawings has not a fungus eye. *W. G. Smith.*

Horse Radish Culture.—An essay on the culture of this root was read at the West Derby Gardeners' Mutual Improvement Society on December 18 by Mr. C. Gore, of West Derby. In this culture may be of service to some of the readers of the *Gardener's Chronicle*. The whole should be lifted in November, and have the long roots cut off, the remainder being laid in in some convenient part of the garden, and covered with a layer of straw, and be selected for planting, and cut to the length of 8 or 10 inches. All the fibres should be cut off to within half an inch of the bottom (the back of an old knife being a good thing for this purpose), then rubbed with a cloth, so that no fibres remain for branching, except at the bottom. The pieces selected should be tied in bundles, and plunged in ashes with their roots exposed till March, when they should be planted in ground that has been well manured, and deeply dug or trenched to the depth of 18 inches. The distance the rows should be 18 inches apart, and the same distance from root to root, a straight stick being used to dibble them in. The holes are lightly filled up, and the rows covered to the depth of 2 inches. Here they should remain till the time mentioned for taking them up, the rootlets being cut off and prepared as above described for next season's planting. An average sized stick was produced for the inspection of the members, and it measured 6 inches in circumference, and 18 inches in length. The soil was very crisp and tender. I have obtained a sample from Mr. Gore, and have sent it for your inspection. *Wm. Bardsley, West Derby, Liverpool.* [A very fine sample: straight, stout, and succulent. Eds.]

Poinsettias.—I can well imagine what a glorious sight your correspondent (see p. 772) must have had at Acton. I believe, as a rule, Poinsettias are grown too much heat. I have some of the best I ever had high, grown in 4½ and 3½ pots. They were put in as cuttings in the last week in July, and when fairly struck, they were taken into the intermediate-house, where they still remain till wanted for decoration. I have measured one best 12-inch which is 17 inches in diameter, with thirty-four scarlet bracted leaves; height 1 foot 6 inches from the pot. Such plants are a welcome addition on the Christmas table. If wanted for decorating rooms, &c., they will last double the time. I have some of the best I ever had colour is much brighter. *T. Ester, Glenhurst, Essex.*

—A good example of what Poinsettias ought to be for decorative purposes may now be seen in the stove at Croxteth Hall, the Earl of Sefton's. The plants were raised in the last week in the last week in spring, in heat, and grown in cold frames during the summer, in 5, 6, and 8-inch pots, and vary in height from 2 to 3 feet. The floral leaves or bracts are brilliant in colour, the heads measuring from 12 to 16 inches in diameter. *William Bardsley, West Derby, Liverpool.*

Rainfall in 1876 at Wallington, Northumberland.—The following is a copy of the monthly register of rainfall kept here during the past year: January, 1.7; February, 3.77; March, 2.77; April, 4.2; May, 1.3; June, 1.86; July, 1.35; August, 1.51; September, 3.82; October, 2.22; November, 3.87; December, 1.95; total, 37.95. The greatest stand is 12 inches above the ground, and 398 feet 6 inches above sea level. The rainfall is recorded every day at 9 a.m. *W. McCumbe, Gr. to Sir W. C. Trevelyan, Bart., Wallington Hall.*

Lardizabala biternata.—In the last number of the *Gardener's Chronicle* you ask for information respecting the hardiness of *Lardizabala biternata*. It has now been growing in my garden on a south wall for five or six years, and has done very well, and is doing thoroughly well, and this year it fruited—two small bunches of Grape-like fruit. I consider it quite hardy, but, as I stated in February last, let no one plant it in preference to *Stamtonia latifolia*, which I am glad to say has this year again fruited on a west

wall. I again repeat that this is, without any exception, the very best hardy evergreen creeper now cultivated in England. *K. K., Tadley, Exeter, Dec. 30.*

Hints to Young Gardeners.—Young gardeners are very frequently alluded to in complimentary terms by the older members of the craft, and many unwarrantable faults laid to their charge. How is this? That there are faults on both sides I know, but I fear the fault-finders will fail to improve the position or proficiency of either. What is wanting is the establishment of a better feeling, and a little more regard for each other's interests. If head gardeners would treat their young men as they would like to be treated themselves, and let their own conduct be an example, it would save them many of the annoyances they complain of, for those who cannot be managed by good words and feelings can rarely be managed at all. It would be well too for young gardeners to remember that there is no occupation that requires more careful energy and forethought than gardening, and that success depends more or less upon the energy and ability of every separate individual employed in the garden, and any extra achievement adds as much to their own reputation as to their employer's satisfaction. I have always made this my rule of conduct, in spite of many discouragements, and I have succeeded beyond my expectation. I have had experience in nurseries, public and private gardens in many counties, and have had to deal with many dispositions, but have never met with such dunces and black sheep as are too often represented. *J. H. Goodacre, Elevation.*

Dwarf Chrysanthemums.—In answer to an enquiry by one of your correspondents, as to whether the dwarf Chrysanthemums exhibited by me at the Liverpool show were from layers or struck from cuttings, I beg to say that they were struck from cuttings taken on August 1st and struck in the same pot they were bloomed in, they having only one stem each, with one bloom to each plant. *W. Tinwood, The Gardens, Allerton Priory.*

Strawberry Growing.—Whilst admitting the importance of soil, climate, and a good variety in the successful growing of Strawberries, I am yet inclined to believe that, with careful cultivation, very fine fruit may be grown in all good garden soils. The great mistake made by many is planting too thickly at first, and allowing the plants to remain from year to year on the same bed. Thus we often find the plants growing together in a tangled mass, and the result is when a pinch of dry weather comes in June or July, they receive a serious check, the quality of the fruit is depressed, and the constitution of the plant weakened, possibly so much so that the plants are unable to mature their fruiting crowns for the following season. Thus the plants go on from bad to worse. Such a "lazy bed" system will fully account for some varieties growing and cropping well for a few years, and then becoming almost barren and the fruit less flavoured. As a grower of from forty to fifty distinct varieties on light soil, in a backward situation, I have adopted the following system of cultivation, and have found little difficulty in growing abundant crops of excellent fruit from most of the varieties I have tried. In fact, judging by the quality of the fruit grown on one-year-old plants, you might be led to suppose that nearly all varieties were equally good, and it is only after a second or third crop of fruit that you are able to distinguish the better qualities of the favourite sorts. A well-grown one-year-old plant will bear abundance of fruit, and the quality and size all that can be desired. My plan is to give the land one thorough cultivation the winter previous to planting, to plant the bed in July on land that has grown a crop of early Potatoes, in rows 30 inches apart, and 15 inches between each plant, with strong, healthy, well-rooted runners taken from one-year-old fruit-bearing plants only; to let the plants stand to bear two, or at the most, three crops of fruit; as soon as the first crop of fruit is gathered to remove every other plant, thus leaving them at a distance of 30 inches apart each way; to keep the hoe constant in working during the summer and autumn months after planting; and to remove all runners as fast as they make their appearance; in early spring to mulch the land with fresh stable manure at the rate of a good barrowful to every twenty plants, and when the plants are in bloom to finish off with a second mulching of clean straw. Thus treated, Strawberries may be grown in almost any situation, and at least a score good varieties may be selected from, any one of which may be cultivated with satisfactory results. *W. Lovell, Watercourse, York.*

Encyphalartos villosus.—We have so recently figured this handsome Cycad that we need add but little to what we have already said on the subject. We avail ourselves, however, of the opportunity pre-

sented to us by Mr. Bull of figuring the male spike. The illustration (fig. 4) is two-thirds the size of Nature, and the colour a beautiful grass-green, frosted over with a silvery bloom like that of a *Plum*. The



FIG. 4.—MALE SPIKE AND FLORAL DETAILS OF ENCYPHALARTOS VILLOsus.

details show side and front views of the anther-scale, together with a section of the same of natural size. Magnified representations are given of the anther, invested with hairs at the base, and of the pollen cells magnified 150 diameters, the latter on the authority of Mr. Worthington Smith. *Eds.]*

The True Service Tree.—It may interest some of your readers to know that the old tree that Professor Buckman speaks of is still alive, and bears from 5 to 8 bushels of fruit annually. It may be of great age, as I see very little difference the last eighteen years. We have both forms here, but the Apple-shaped is a much smaller tree, and a shy bearer. *T. Foster, Glenhurst, Essex.*

The Garibaldi Strawberry.—My attention has been called to the remarks that have appeared for some weeks in your "Home Correspondence" as to this Strawberry. The Garibaldi raised by me about twenty years ago was the only one selected from several hundreds of seedlings, the seed of which was saved principally from Elton and Keens' Seedling, and was sent out by me in the year 1866. Two or three years previous to that date I foolishly let a gentleman's gardener have some of the plants to test, and, contrary to promise, he distributed them amongst a number of his friends, which consequently disheartened me from bringing it prominently before the public until 1866. I enclose a copy of a circular issued by me at that time, from which you will be able to gather a description of my Garibaldi. *Theo. Armstrong, Netherwood, near Longbridge, near Macclesfield, Carlisle.* (From the circular sent to us by Mr. Armstrong we gather that the variety raised by him is "one of the healthiest, hardest, and earliest grown"; it resembles the Elton Pine in colour and size; it ripens earlier, and fruits longer than the Keens' Seedling, and is of a superior flavor; it is an immense cropper, and grows well on exposed situations, and on land where the Keens' Seedling does not grow well." *Eds.]*

As our name has been introduced in connection with the Garibaldi Strawberry controversy, we may state that we got our stock of it from Mr. Thomas Armstrong, Benah Gardens, near Carlisle, in the autumn of 1865. We ordered it after seeing the fruit, and the impression that it was a new variety raised by Mr. Armstrong, who stated that it was earlier, a much greater bearer, and would give a longer season of fruit than Keens' Seedling. We had no knowledge of the previous existence of any variety under the name of Garibaldi. Vicomtesse Héricat de Thury we got for the first time from Mr. Chas. Turner, Slough, in February, 1871, expecting to find it distinct from any we had, but we have no doubt now that it is synonymous with Garibaldi, which we have found to be the most prolific and generally useful Strawberry in our collection. *Dickson & Co., Waterloo Place, Edinburgh.* (Will some of our French friends give us the origin of the Vicomtesse Héricat de Thury? *Eds.]*

Late Grapes: Mrs. Pince's Vagaries.—Mr. Grieve has (see p. 836) undoubtedly made an excellent selection of late Grapes; he has noted also two Vines of Mrs. Pince's Black Muscat growing "in the same house and under the same conditions," one of which has produced black and the other red Grapes. Seeing that this Grape is prone to produce black fruit, which so greatly impairs its value for dessert purposes, it becomes important to ascertain, if possible, the cause of its non-colouring. I should like Mr. Grieve to examine minutely the two Vines to which he has referred. Are they of the same age, excellently cropped, both having the same relative proportion of foliage and fruit, and especially are they from the same source? There must be a cause for one Vine producing black Grapes, and a different cause for the other yielding red fruit. Can Mr. Grieve tell us wherein is this difference, and what is its nature? If he can do so, he will command the thanks of many gardeners who have long been puzzled to account for the caprices of this fine Grape, refusing to appear in a "black dress." He cannot satisfactorily account for the difference in colouring alluded to, would he raise a young Vine from each of his stocks, and tell us, in due time, if the deficiency of colour so common with Mrs. Pince is constitutional and hereditary? Mr. Grieve appears to have an excellent opportunity of settling that important point which, as yet, is a matter of controversy. Some specimens of Mrs. Pince invariably produce Grapes as "black as swags," while others are a constant yield of fruit as "brown as hedges," and no one has yet told us the "reason why." *Enquirer.*

The Royal Horticultural Society.—In common with other Fellows of the Royal Horticultural Society, I have received a copy of the circular spoken of in your last edition. Permit me to make one or two observations respecting it, and to begin, as we write *Eds.]*, so that we may delete £50,000 from our capital account. This is joyful news for the Fellows, only one can scarcely believe that the debenture-

holders have been so generous; but, at least, it is a grand way of settling the difficulty. Is our Council in earnest, or is it a joke? Read one of the earlier paragraphs:—"That this meeting (*i. e.*, of debenture-holders held on November 23, 1876) declines to authorise the surrender of the lease of the grounds to the Commissioners on the terms mentioned in the letter of the Society of November 2, 1876, and the meeting will not authorise a surrender of the lease unless provision be made for the payment of the debenture debt in full, by reasonable instalments, with the interest in the meantime, and that a copy of this resolution be forwarded to the Society." The Council then goes on to say:—"In these circumstances no open appears open to the Council but to confirm their anxiety of the Society's interests. Pray what would our Council make or wish us to believe in these statements? Here they acknowledge beyond all possibility of a doubt that the debenture-holders have some charge on the Society beyond the doubtful payment of some charge upon their surplus income, for there would be no difficulty in proving that, were this said income double its present amount, there could easily be found a proper way of spending it without any real meaning of our charter; and that the debenture-holders have been left, not to the justice, but the generosity of the Council. In lieu of not being in debt, it rather looks as though we had in part mortgaged our lease in some way to the debenture-holders, and it appears to me that it would be much more satisfactory if the Council were to place before the Fellows a succinct statement of affairs at the annual meeting, or before, if possible, in such a way as to be intelligible to brains of such mean capacity as mine, than incur the expense of printing and posting statements which are incredible and if they would favour us with some particulars of our worthy co-partners the Commissioners, and the footing on which we now stand with them; I think it would be of interest to me, who believe we still linger in the Valley of Tears, for a more judicious body of that august body, and their actions for some considerable time, they have been marching to the tune of—

"O who dare meddle w' me,
And who dare meddle w' me!
My name it is little Jack Elliott,
And who dare meddle w' me!"

The proposition of the Council to make the two guinea tickets transferable is most decidedly good; and I am very glad that the Council have decided sooner, though I feel sure that this and the proposed guinea Fellowships will not cause any large influx into our ranks, nor can it be for one moment expected till such time as the whole *raisonne* of the affair is changed. As they refer to the National Institute, I must hang by his own head." Our good fish does not seem to have done so, and we seem to be waiting with bated breath for Blucher's last word.—

"Nostis, sis habens vias von mir gelernt, lernen,
Sie auch von mir abig sterben!"

Robert Prince Glendinning.

Robert Prince Glendinning. Will you condescend to make space for a few remarks on the last clause of the notice to Fellows lately circulated by the Council of the Royal Horticultural Society wherein Guinea Fellowships but without the right of voting are proposed. Judging from the tone of very many letters which I have received country Fellows will be satisfied with semi-Fellowships, those who live at a distance, who will give a guinea to support a society they believe to be useful, though they get little direct good from its proceedings, and who do not expect the honour of full Fellowships will assuredly give the little longer waiting get. The first bid for their support was a guinea Associateship, a guinea part Fellowship is now offered, a full Fellowship is not. The Council have had their backs to the wall; there was great difficulty in keeping old Fellows and in bringing in new ones, even when the South Kensington Garden was well kept up; in its present state of *disability* the difficulty is greatly increased. Let us hope the neighbourhood will generally subscribe, otherwise it is not a pleasant reflection, however economical the expenditure on the garden may be, as long as it is kept open there will be a charge of some £600 a year for rates and taxes, a severe tax for the last of new to be used, and no paid out of horticultural money. I hope that those who believe in guinea Fellowships, and who are canvassing their friends through the country, will not relax their exertions. A year ago I thought we had tried to come to this, but it was led to believe that the Council were likely to undertake it. Judging from the great number of first-class names collected in two months, a year's work would have given us enough Fellows to make us independent of State assistance. By this time, if we were to have completed the necessary number. Strong societies have grown up starting with supporters less in influence and number than we already have. It is now almost necessary to justify the independent course we are taking, though it is not as if it is no longer I who am advocating guinea Fellowships as the

one means of making the Society what it should be—I am merely the mouthpiece of very many of the best and most experienced horticulturalists of the country, of all ranks, who urge me not to let the matter rest till the guinea Fellowships are accomplished. On a former occasion I had got independent action, having means of knowing more of the circumstances of the time than some of my friends had. I was so certain that it was for the interest of the Society that the Council of 1873 should be continued in office, that I was very ready to resign, and I was, I think, circulated the lady Fellows, asking for their proxies to support the Council. One hundred and fifty ladies trusted me with their proxies; twenty more proxies would have carried the vote of confidence, and I am sure, if I had any office, I should have been the arrangement with the Commissioners on the eve of settlement would have been accomplished, with the result that the Society would now have been free from its debenture debt, free from rent, and with a conditional accession of £1,000, then estimated to amount to £1,000, but which last I doubt would have been continued. Therefore, having been proved right once, I claim the inference. I hope that nothing more will be said about turning out the present Council. On my own responsibility, and without any office, I am finding suitable men who would undertake the office. The present work is both unpleasant and thankless. When we get a really good Society with only horticultural work there will be plenty of first-class names to serve. *George F. Wilson, Heatherbank, Wodbridge.*

Veitch's Self-Protecting Autumn Broccoli.—I can fully endorse all that Mr. W. Johnstone stated in your last issue respecting this Broccoli. I have seen it, and get the first water, and I am sure when it becomes known it will be in great request. I have been cutting this variety for the last six weeks, and have this day (January 2) cut six as beautiful heads as any one could wish, from 4 inches to 6 inches in diameter, as clear and white as a curd. In future I intend growing this kind for follow the Autumn Giant. *J. Little, Cheltenham.*

The Potato and its Difficulties.—The Potato question is the "Eastern Question" of cultivators; it may seem easy, but is full of difficulties. How many have tried to get the first water, and I am sure when it becomes known it will be in great request. I have been cutting this variety for the last six weeks, and have this day (January 2) cut six as beautiful heads as any one could wish, from 4 inches to 6 inches in diameter, as clear and white as a curd. In future I intend growing this kind for follow the Autumn Giant. *J. Little, Cheltenham.*

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essential oil." Mr. Worthington Smith's promised manure, if we may judge from the hints he has given us, will be of an odorous nature, and perhaps is intended to act on this principle as a disinfectant. A little crude petroleum oil would make it still more fragrant. It will no doubt command a trial. *S. S., Swainwick.*

The Villa Garden.

THE VILLA GARDEN GREENHOUSE.—This heading is selected not so much to serve the purpose of setting forth a few remarks as to its management at this season of the year—for we have but recently dealt with that part of the subject—as for the purpose of pointing out errors that sometimes creep into their construction and position.

The modern builder of Villa residences must have but a limited range of ideas as to the principles required in constructing a house suited to the growth of plants; in fact a house suited to the cultivation of plants appears to be the very thing that he least considers. If the builder sets up a plant structure it is for the purpose of situating the house, and the position is north, east, south, or west, as the fancy suits him. A glass structure is deemed to enhance the appearance of a house, while it certainly increases the assessment or rateable value of a dwelling; therefore, it is deemed politic to erect one. In the case of an ordinary detached Villa residence, it generally comes in at the back of the house, and the back entrance leads through it into the garden, and as such houses generally have a basement floor the house is level with the ground floor, and built up over a coal-hole or cellar, or merely on brick pillars.

And the modern builder goes in for decorative effect, and therefore employs architectural ornamentation, and sometimes there is a heavy wooden roof with elaborate carving, or a roof partly wood and partly glass, but so much of the former, and so little of the latter that it might just as well have been wholly of wood. He has the impression that plants will flourish in any shelter, and not to any circumstances, light or dark; and if such is not the case he cares but little. He has built the greenhouse, and the plants must take care of themselves.

Then, too, he must have some colour about it, and so he employs plenty of green and red glass, and we invariably find that the green is of the greenest, and the red of the reddest; for do not these impart a picturesque appearance to the house whereon the rays of the declining sun fall, and light up with crimson glow and purple radiance the house of glass? But about the plants? we ask, and the reply comes back—"A conservatory is a conservatory, and plants are quite another thing;" and with that one must be satisfied.

A neighbour of ours—a lady, fond of flowers, as most ladies are—some time since took a Villa residence in our neighbourhood, and was much attracted towards the house by one of these variegated conservatories. A friend of hers shortly after gave her a plant of Kennedy monophylla, raised from seed sent home from New Holland by a relative of the lady's, and she naturally attached much importance to the plant. It was placed in the conservatory, which was in a north aspect, and had but little sun, save and except about midsummer, when a little shone upon it in the evenings; and it was not to be wondered at that some little time after the plant was sent home with a request that we would explain the reason of its having become denuded of leaves. The reason was too evident—the dark, cold, sunless quarters it occupied were as detrimental to its well-being as could well be imagined; but a temporary sojourn in a greenhouse soon brought it round again, only to be returned to its inhospitable home, to again decline.

That great essential to the well-being of plants, light, is sacrificed at the shrine of appearance. One builder's conception of what is requisite for plants recalls to mind a circumstance that occurred a few years ago when taking a journey through Ireland. It was within a few days of a horticultural exhibition in the south of the Kingdom, and a gardener accustomed to exhibit Fuchsias had some plants that were quite sufficiently advanced in bloom a few days before the date of exhibition, and he hit upon an expedient for prolonging their flower by placing the plants in a dark cellar. I was asked to inspect them after they had been in the tree or four days, and sorry subjects they presented, for nearly all the leaves had

turned yellow and fallen; and the Hibernian horticulturist was sorely perplexed at the result—one that he had never calculated upon. It was a sad ending to so much pains; the absence of light had upset all his calculations—

"Since light so necessary is to life,
And almost life itself,"

it is obvious that to unnecessarily exclude it was wrong in practice. It can be easily subdued by artificial means; but by no means can you add one iota to the daylight of the dulllest day.

When larger and more roomy conservatories are set up, they are invariably as lean-to's, so that they give exit from a dining and drawing-room. They are much better adapted for the growing of plants, but in looking these eventualities are not considered. They are sometimes raised 5 or 6 feet above the ground level, but quite open beneath; the result is that frost attacks from below as well as at the sides and top. If they could be closed up so as to prevent the admission of cold air on the east, north, or west sides, they would be rendered warmer; as it is, such houses are horribly cold in times of sharp weather. But covering in on any one of the open sides is sometimes difficult, because light would thereby be excluded from reaching the windows of the domestic offices on the basement floor and under the conservatory.

And what occurred in many places on Sunday, December 24, and also as a result of the heavy snow-storm of last winter, should be borne in mind by those whose business it is to construct plant-houses. These lean-to houses are placed immediately beneath the sloping roof of a two and three-storied house, and when a thaw comes, and the snow is dislodged, it sweeps avalanche-like down on to the ill-fated glass roof below, with what result may be well imagined. As long as plant houses with glass roof are placed in such a position this is likely to happen perhaps two or three times during winter. The glass with which these structures are glazed is nearly always of the cheapest.

The proper kind of house, and certainly the most satisfactory in all respects, is that set forth by Mr. William Paul in his *Handybook of Villa Gardening*. He says: "Waiving the question of mere outward show, I will venture to describe a house capable of producing and preserving plants, and suited to the requirements of a Villa Garden. First it should be span-roofed, the ends placed north and south, divided in the middle to form two compartments, one of which may be kept warmer than the other and used as a propagating and forcing house in winter and spring. A walk, 2 or 3 feet wide, running down the centre, with raised benches on either side, and 4 feet in width, on which to stage plants, is a very convenient and economical arrangement. The stages should be of slate, because cooler, cleaner, and more durable than wood. The paths may be paved with York stone or bricks. A slate cistern, fixed at one end, or beneath the stage inside, to receive the rain from the house, will save much labour, and place ready to your hand water of a suitable temperature, and of the best quality. This is the sort of house for real utility, adapted for rearing and forcing a number of plants at a small cost."

For any purpose, even if wanted for hardy plants only, this is the best kind of house. It need not be far away from the dwelling, and an asphalt, brick, stone, or well-kept gravelled path will enable the house to be reached in all weathers without inconvenience. It is sure to be in the line of sight of the sun, and away from the chance of harm from the snow-fall from the roof.

Notices of Books.

MESSES, HARDWICKE & BOGUE have issued a third edition of Mr. Worthington Smith's useful little book on *Mushrooms and Toadstools*—how to distinguish easily the differences between edible and poisonous fungi, with figures of twenty-nine edible and thirty-one poisonous species. When any one (especially if he be, as the author of this little book is, zealous) has attained considerable knowledge and experience of any subject, he is rather apt to ignore the deficient attention and defective apprehension of those who have paid no heed to the subject, and seriously to underestimate the amount of necessity of the public in general. We allude to this matter for the reason that

the present little volume contains two uncoloured lithographs of edible and poisonous fungi respectively. Now when deprived of its natural colour, as on fig. 1, on the plate of edible Mushrooms, *Agaricus rubescens* resembles very closely fig. 13 on the plate of poisonous Mushrooms (*Agaricus Muscarius*). Indeed the ordinarily brown warty cap of the former may frequently be replaced by one of a red hue. Compare also fig. 2, *Boletus edulis*, with fig. 27 on the poisonous sheet, *B. satanas*. Of course the mycophagous artist will say, and say truly, that people should read his book as well as look at his pictures; but then, as he himself admits, and also very truly, people are so stupid. Be this as it may, we are satisfied that danger often arises from the would-be fungus eater not having at hand the means of comparison. He gathers one fungus, which from his imperfect knowledge he infers to be such and such a species, because it presents some more or less near similitude to it; but if he could have placed before him the real thing, with the counterfeit, he would be able to detect the difference instantly. Uncoloured plates, such as those in the book before us, do not convey to the uninitiated sufficient marks of distinction. We would, therefore, strongly recommend the beginner not to trust to the uncoloured representations in this book (in so doing we are far from imputing aught against the artist's designs), but to procure the coloured figures by the same artist, and issued by the same publisher. Again we may suggest to Mr. Smith (always in the interest of the stupid people, who cause some inconvenience to others when they happen to poison themselves) the expediency of depicting the edible species side by side on the same plate with dangerous species, for which they might possibly be mistaken. The comparatively frequent occurrence of disasters from mistaking *Aconite* for *Horse Radish*, however, leads us to fear that, until people are trained to observe for themselves, no assistance that can be rendered by others will be of much service unless it be in administering antidotes.

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The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, JAN. 3, 1877.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.		Hydro-met- eorological Observations (from Tables of Gales and Edwards).	WIND.	RAINFALL.
	Mean Reading at 9 A.M. for the Day.	State of Sky at 9 A.M. for the Day.	Thermometer at 9 A.M. for the Day.	Thermometer at 3 P.M. for the Day.			
Dec.	30.52	in.	49.	° F.	80	S.W.	0.11
29	30.48	in.	49.	° F.	80	S.W.	0.11
28	30.48	in.	49.	° F.	80	S.W.	0.11
27	30.48	in.	49.	° F.	80	S.W.	0.11
26	30.48	in.	49.	° F.	80	S.W.	0.11
25	30.48	in.	49.	° F.	80	S.W.	0.11
24	30.48	in.	49.	° F.	80	S.W.	0.11
23	30.48	in.	49.	° F.	80	S.W.	0.11
22	30.48	in.	49.	° F.	80	S.W.	0.11
21	30.48	in.	49.	° F.	80	S.W.	0.11
20	30.48	in.	49.	° F.	80	S.W.	0.11
19	30.48	in.	49.	° F.	80	S.W.	0.11
18	30.48	in.	49.	° F.	80	S.W.	0.11
17	30.48	in.	49.	° F.	80	S.W.	0.11
16	30.48	in.	49.	° F.	80	S.W.	0.11
15	30.48	in.	49.	° F.	80	S.W.	0.11
14	30.48	in.	49.	° F.	80	S.W.	0.11
13	30.48	in.	49.	° F.	80	S.W.	0.11
12	30.48	in.	49.	° F.	80	S.W.	0.11
11	30.48	in.	49.	° F.	80	S.W.	0.11
10	30.48	in.	49.	° F.	80	S.W.	0.11
9	30.48	in.	49.	° F.	80	S.W.	0.11
8	30.48	in.	49.	° F.	80	S.W.	0.11
7	30.48	in.	49.	° F.	80	S.W.	0.11
6	30.48	in.	49.	° F.	80	S.W.	0.11
5	30.48	in.	49.	° F.	80	S.W.	0.11
4	30.48	in.	49.	° F.	80	S.W.	0.11
3	30.48	in.	49.	° F.	80	S.W.	0.11
2	30.48	in.	49.	° F.	80	S.W.	0.11
1	30.48	in.	49.	° F.	80	S.W.	0.11
Mean	30.52	in.	49.	° F.	80	S.W.	0.11

Dec. 28.—Overcast, dull, wet, miserable day. Very mild. Strong S.W. wind.

29.—Overcast, dull, with occasional rain. Mild. Gale at night.

30.—Fine at 9 A.M., overcast. Dull and wet till evening; then fine. Windy. Mild.

31.—Fine, bright, with strong gusts of wind. Very mild. Clear at 9 A.M., overcast; fine till 7 P.M. Gale of wind.

Jan. 1.—Fine, bright, and pleasant till 7 P.M., then dull and wet.

2.—Fine, bright, and pleasant till 7 P.M., then dull and wet.

3.—A dull, wet day. Pleasant till 7 P.M. Mild.

LONDON: Barometer.—During the week ending Saturday, December 30, in the vicinity of London, the reading of the barometer at the level of the sea increased from 29.39 inches at the beginning of the week to 30.19 inches by the morning of the 26th, decreased to 29.68 inches by the afternoon of the 26th, increased to 29.53 inches by the morning of the 27th, decreased to 29.44 inches by the evening of the same day, increased to 29.66 inches by the early morning of the 30th, decreased to 29.36 inches by the afternoon of the same day, and was 29.50 inches at the end of the week. The mean reading for the week at sea level was 29.72 inches, being 0.55 inch above that of the preceding week, and 0.35 inch below the average.

Temperature.—The highest temperatures of the air observed by day ranged from 58° on the 28th to 55° on the 26th; the mean for the week was 50°. The lowest temperatures of the air observed by night varied from 29½° on the 26th to 50° on the 28th; the mean value for the week was 38½°. The mean daily range of temperature in the week was 9½°. The greatest range in the day was 22½° on the 27th, and the least 3½° on the 24th.

The mean daily temperatures of the air, and the departures from their respective averages were as follows:—Dec. 24th, 34.3°, 3° 9' above; 25th, 34.5°, 5.0° above; 26th, 32.4°, 2.9° below; 27th, 31.1°, 1.1° below; 28th, 53.5°, + 16°; 29th, 51.1°, + 13.7°; 30th, 50.1°, + 12.8°. The mean temperature of the air for the week was 43.6°, being 5.9° above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 61° on the 30th, 58½° on the 28th, and 57° on the 20th; on the 24th the reading did not rise above 35½°. The lowest reading of a thermometer on grass, with its bulb exposed to the sky, were 30½° on the 26th, 31½° on the 24th, and 32° on the 25th; the mean value for the week was 36½°.

Wind.—The direction of the wind was from the S.W., and its strength strong. The weather during the week was very dull and wet, and the sky generally overcast; and the first three days of the week were cold, but the last four very mild.

Rain.—Rain on every day in the week; the amount collected was 1.84 inch.

The Mean Reading of the Barometer for the Month of December was 29.309 inches, being 0.496 inch below the average of the preceding thirty-five years, and during this period of thirty-five years there has been no monthly reading in December so low as that of the present December; the nearest approach was 29.279 inches in December, 1868.

The Mean Temperature of the Air for December was 44.4°, and the mean range 10.5°; there are only nine instances of a mean temperature equal to or exceeding 44½° in December.

The Total Fall of Rain during the Month of December was 5.92 inches, and there is no instance hitherto in 1815 when the fall of rain in December was so large as in the present month; the nearest approach was in the

year 1868, when it was 5.4 inches. Rain fell on twenty-five days during the month, being thirteen days more than the average number for December.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 58° at Blackheath and 57° at Truro, Cambridge, Norwich, and Nottingham; at Sunderland 54° was the highest temperature. The mean value from all stations was 55½°. The lowest temperatures of the air observed by night was 24½° at both Bristol and Wolverhampton; at Truro and Brighton 23° was the lowest temperature. The general mean from all stations was 28½°. The range of temperature in the week was the greatest at Bristol, 34½°, and the least at Brighton, 22°. The mean range from all stations was 27½°.

The mean of the seven highest day temperatures was the highest at Truro, 53°, and the lowest at Bradford, 41½°; the mean from all stations was 46½°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 31½°, and the highest at Truro and Plymouth, both 41°; the mean value from all stations was 36½°. The mean daily range of temperature was the least at Bradford, 6½°, and the greatest at Eccles, 13½°; the mean daily range of temperature from all stations was 10½°.

The mean temperature of the air for the week from all stations was 40½°, being 3° lower than the value for the corresponding week in 1875. The highest was 46½°, at Truro, and the lowest 37½°, at Wolverhampton.

Rain.—Rain fell on five or six days in the week at most stations, and at no station was the fall less than 1 inch. The amounts, however, varied from 3½ inches at Truro, 2½ at Plymouth, 2½ at Bristol, to 1 inch at Wolverhampton, Nottingham, and Liverpool. The general average fall over the country was 1½ inch nearly.

The weather during the week was dull and wet, and the sky generally overcast. The weather was cold on the first three days, and very mild on the last four days.

Gales and floods have again been experienced all over the country, resulting in great loss, and many wrecks have occurred.

SCOTLAND: Temperature.—The highest temperatures of the air varied from 48½° at Leith to 43° at Dundee; the mean value from all stations was 45½°. The lowest temperatures of the air ranged from 26° at Perth to 31½° at Aberdeen; the general mean from all stations was 28½°. The mean range of temperature from all stations in the week was 17°.

The mean temperature of the air for the week from all stations was 36½°, being 4½° below that of England, and 8° below the value for the corresponding week in 1875. The highest occurred at Aberdeen and Leith—both 47½°—and the lowest at Paisley and Perth—both 35½°.

Rain and Snow.—The fall of snow and rain was large everywhere, the greatest fall in the week was rather more than 3 inches at Perth, and the least fall about 1½ inch at both Edinburgh and Leith; the average fall over the country was 2½ inches.

DUBLIN.—The highest temperature of the air was 56°, the lowest 34½°, the range 21½, the mean 44½, and the rainfall 1½ inch.



Law Notes.

DELAY IN TRANSIT.—At the last sitting of the Clerkenwell County Court before the Christmas vacation, the case of *Rowe v. The Great Northern Railway Company* was heard before the presiding Judge, Gordon Whitbread, Esq., in which the plaintiff, a salesman, sued the Company to recover the sum of £5, the loss he had sustained in consequence of the want of prompt delivery of three tons of Kent Regent Potatoes, which had been consigned to him from York, and which had not reached the terminus in London at King's Cross in time for a purchaser for whom he had ordered them. Mr. Williams, solicitor, appeared for the plaintiff, and Mr. Harmsworth as standing counsel for the Company. The plaintiff said he was a wholesale salesman at King's Cross, and ordered the goods in question to reach London on Friday, November 17, in order to meet the requirements of a customer on the following morning's (Saturday) market. They, however, did not reach King's Cross till late on Saturday, and during his men had left work, and were not virtually in his possession till early on Monday morn-

ing, and his customer in the meantime got supplied elsewhere, whereby he had lost the sale of the goods, and estimated his loss at the price now sued for.

In reply to question put, the plaintiff said he considered the wholesale first price of the Potatoes were from £5 to £6 a ton, and that £5 profit on the lot was a very reasonable one. Two of the plaintiff's servants were called, who proved leaving their work on the Saturday, at which time no delivery of the goods was made. This evidence completed the plaintiff's case, when the Counsel addressed the Court as some length, urging the non-liability of the Company on the following grounds.

In the first place, the Company did not hold themselves responsible by their bye-laws for reasonable delay, and he would be in a position to prove from witnesses he should call that the goods were not at the York goods station in time to be despatched with the goods train which would reach King's Cross Station in time on Friday evening, and would call the goods manager and checker from York for that purpose; but even should the question of damages arise, which he did not apprehend, they could be merely nominal, as the charge the plaintiff had made was a most excessive one.

The goods manager and checker attended from York, who both stated that the goods arrived two hours after the goods train, by which they would have reached King's Cross on Friday evening had left. This being the defendant's case, his Honor ruled in favour of the Company, who did not apply for costs.

LANDLORD AND TENANT.—A case, just decided by Mr. Justice Lindley, at Manchester, is of some public interest as defining the position of tenants holding non-repairing leases. The landlord, in this instance, had covenanted to keep the roof, windows, main timbers, and exterior of the house in an effectual state of repair. After a time, water frequently penetrated through the roof to such an extent that the tenant was obliged to remove his wife to the kitchen, while many of his goods were completely spoilt. On this being represented to the landlord's agent, he empowered the tenant to get some one to execute the repairs, previously forwarding an estimate of their cost. The tenant failed to find any person who could give such an estimate, and therefore had the repairs executed by a tradesman, who, on receipt of the bill, deducted the amount he had so spent, and tendered the balance. This was refused by the agent, who thereupon put in an execution, and sold off all the property on the premises under distraint. These proceedings resulted in an action before Justice Lindley, which terminated in favour of the tenant. The jury held that, while the landlord had a right to his rent, £30, he must pay to the tenant £7, 2s. 6d. for repairs, £5 for damage done by rain-water, and £65 for illegal distraint, less £5 15s. 4d., the amount realised by the sale. The important point in this decision is that it sanctions the execution of repairs by non-repairing tenants, at the cost of their landlords, when the latter either fail to perform the duty, or are guilty of unjustifiable delay. *Widder.*

Obituary.

The death is recorded, on December 17th last, at his residence, Penrose Street, Walworth, of Mr. JAMES ANDREWS, the well known floral artist, aged 75 years.

Variorum.

THE ANNUAL MEETING OF THE BISHOP AUCKLAND FLORAL AND HORTICULTURAL SOCIETY was held a few days ago, and from the balance-sheet read at the meeting it appears that the society had to sustain a loss of just over £300 on the last year's show, the takings in the way of admission to the park having fallen considerably short of the usual sum. This deficiency is attributed to the causes heretofore mentioned, and the committee had no control—the great depression in trade in the North, and the somewhat unfavourable character of the weather. Notwithstanding this loss there is still a balance in hand of £292 7s. 7d. At this meeting it was resolved that a good portion of this sum should be invested for the benefit of the society, but in order to have a complete legal control over money so invested it was further resolved to take steps to have the society registered as an industrial society under the provisions of the Acts of Parliament relative to these societies. Registration can be completed at a small expense, and then the society will be

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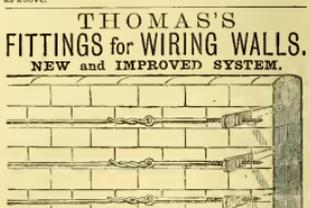
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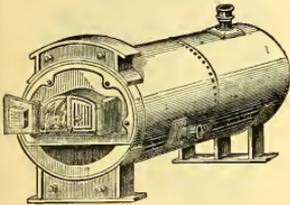
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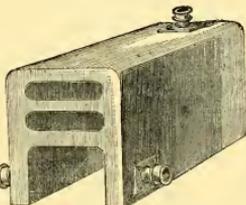
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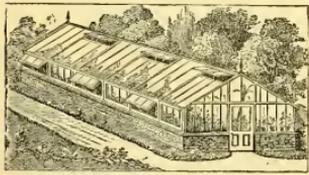
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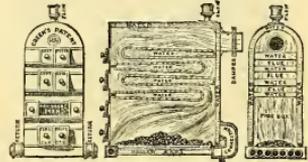
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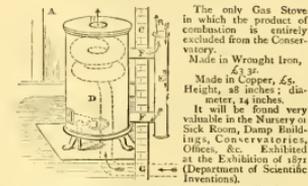
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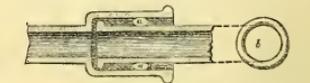


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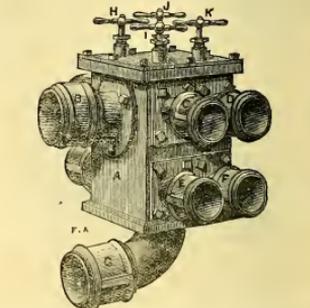
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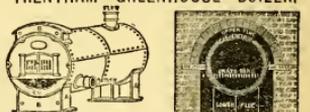
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THE ANNUAL SUBSCRIPTION
 TO THE
GARDENERS' CHRONICLE.

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 Agents:—Messrs. B. K. BLISS and SONS, Seed Merchants, 34 Barclay Street, New York; Messrs. M. COLE and CO., Drawer No. 11, Atlanta Post Office, Atlanta, Ga.; Georgia; and Mr. C. H. MAROT, 84, Chestnut Street, Philadelphia; through whom Subscriptions may be sent.

ROYAL HORTICULTURAL SOCIETY,
 NOTICE.—SCIENTIFIC, FRUIT, and FLORAL COMMITTEE'S MEETINGS, on WEDNESDAY NEXT, January 17, at 11 o'clock, and GENERAL MEETING at 3 o'clock, for ELECTION of FELLOWS, &c.
 Admission 1s.

CRYSTAL PALACE ARTIFICIAL
 FLOWER and FRUIT SHOW, March 3 to 17, 1877. Exhibiting Exhibitors may obtain Badges on application to GENERAL MANAGER, Crystal Palace.

ORCHARD-HOUSE TREES, Fruiting in Pots:—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Malberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Vines, Vines, Vines.
B. S. WILLIAMS announce that his new and GRAPPE VINES this year are unusually fine, and are now ready for distribution.
 See Detailed List in Bull Catalogue.
 Victoria and Paradise Nurseries, Upper Holloway, London, N.

POT VINES.—3000 Pot Vines, of all the best varieties, on Sale at the Garston Vineyard, 6 miles from Liverpool. Price LISTS post-free.
COWAN PATENT'S COMPANY, Garston, near Liverpool.

VINES.—Specially Selected Planting Cans of leading varieties, perfectly ripened without bottom-heat. Extra Strong Cans for immediate fruiting.
JAMES DICKSON and SONS, Newton Nurseries, Chester.

SEAKALE, good strong Crowns, 8s. per 100, per ton at 14s. Terms cash.
J. and R. MASON, Market Gardeners, East Greenwich, S.E.

Notice of Removal.
HEREMAN and MORTON, HOTHOUSE
 BUILDERS and HOT-WATER ENGINEERS, from 14, Titchborne Street to 2, Gloucester Street, Regent's Park, London, N.W. Estimates and Price Lists on application.

PROTHEROE and MORRIS, HORTICULTURAL MARKET GARDEN and ESTATE ARCHITECTS and VALUERS, 26, Grosvenor Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

CABBAGE PLANTS, SEEDS, ROOTS, &c.
 Of all kinds, for the Farm or Garden.—J. G. E. superior Bed and growing Plants and Seeds. Largest and most celebrated.—*See Bedford Mercury,* July 29, 1876. The works of the district office facilities enjoyed at *wide prices* for Bed and growing Plants, and under the skill and perseverance of Mr. G. See they are turned to good account.—*See Agricultural Gazette,* July 31, 1876. See also opinions of the Press, on a Treatise on the Cabbage, CALCUTTES lowest prices, &c., on application to **FREDERICK GEE, Seed and Plant Grower, &c.,** Biggleswade, Beds.

Every one who has a Garden should read **SUTTON'S AMATEUR'S GUIDE** IN HORTICULTURE. Now ready, post-free for 14 stamps.

SUTTON'S AMATEUR'S GUIDE.
 —The most practical work on Vegetable and Flower Gardening extant, and should be in the hands of all interested in Gardening. Post-free for 14 stamps.

A Year's Work in the Kitchen Garden.—See SUTTON'S AMATEUR'S GUIDE.

The Rotation of Crops in the Kitchen Garden.—See SUTTON'S AMATEUR'S GUIDE.

The Cultivation of Vegetables.—See SUTTON'S AMATEUR'S GUIDE.

The Cultivation of Flowers.—See SUTTON'S AMATEUR'S GUIDE.

The Cultivation of the Potato.—See SUTTON'S AMATEUR'S GUIDE.

The Eradication of Garden Pests.—See SUTTON'S AMATEUR'S GUIDE.

The Formation and Improvement of Garden Lawns.—See SUTTON'S AMATEUR'S GUIDE.

SUTTON'S AMATEUR'S GUIDE IN HORTICULTURE, beautifully illustrated with 500 coloured and other Engravings, and replete with valuable information. Post-free for 14 stamps.

SUTTON'S SPRING CATALOGUE OF FRUIT AND FLOWER CURRENT is also ready. Grats and post-free on application.

SUTTON and SONS, THE QUEEN'S SEEDSMEN, Reading.

Large Evergreen Trees for Screens.
WILLIAM MAULE and SONS offer Norway SPRUCE and CEDRUS DEODARA, to 15 feet high, well-rooted—the former at 2s. each, the latter, 3s. 6d.
 The Nurseries, Bristol.

OKAS, 3 and 4 and 3 to 5 feet. Price on application to **EDWARD HOLMES,** Whittington Nursery, Lichfield.

THORNS.—3,000,000 of strong, transplanted. Eaton Road and Queen's Park Nurseries, Chester.

HAWES, or THORN QUICK SEED.—Sound Haws, fit for sowing at present, or spring coming, guaranteed free from soil or other mixture, and thoroughly well preserved. About 50 tons on hand. For lowest prices apply to **GRANT and CO.,** Park Nursery, Portadown, Ireland.

Home-saved Scotch Fir Seed.
WILLIAM WISEMAN and SON have a quantity of the above to offer, also 3yr. and 1yr. SCOTCH and LARCH. Prices on application.
 Grove Terrace and Priors' Haugh Nurseries, Elgin, N.B.

To the Trade.
JAMES BIRD, NURSERYMAN, Downham, has to offer extra fine Standard MAJSDUKE CHERRIES.

To Fruit and Fish Salesmen, &c.
GREEN PARSLEY.—Five Tons to be disposed of. Parties wishing to purchase the same, to be delivered weekly, will do well to apply to **JOHN SALSBERY,** Market Gardener, King's Newton, near Derby.

To the Trade.
H. and F. SHARPE'S Special Priced LIST OF HOME-GROWN GARDEN and AGRICULTURAL SEEDS of 1876 growth, is now ready, and may be had on application to **See** Growing Establishment, Wisbech.

WANTED, strong, well-grown ASH, 3 to 4 feet. Apply to **J. C. WHEELER and SON,** Kingsholm Nursery, Gloucester.

To Nurserymen.
WANTED, 50,000 transplanted Red BIRCH, 2 to 3 feet, delivered in London. Apply by letter to **A. B., 4, Hanover Street, Hanover Square, W.**

WANTED, APPLE TREES, Pitminster Golden Pippin, Marston Court of Wick, Morris' Russet, Beaufhamel, Powell's Russet, Rosemary Russet, Wanstead, Castle Major, Early Almond, PLUMS, Columbia, Gage and Woodstock's Black Gage, all in a bearing state, and true to name.

DAVID SYKES, Croft House, Marsh, near Huddersfield.

All who have a Garden should send for **WEBB AND SONS' SPRING** CATALOGUE OF VEGETABLE and FLOWER SEEDS, the best on Gardeners' letters yet published, which will be found invaluable to the Amateur as well as to the Professional Gardener. Post-free, 1s.; gratis to customers.

WEBB AND SONS' SPRING CATALOGUE OF VEGETABLE and FLOWER SEEDS contains full Instructions for the Successful Cultivation of Vegetables, Flowers, &c.

Now Ready.
WEBB AND SONS' SPRING CATALOGUE OF VEGETABLE and FLOWER SEEDS, profusely illuminated with beautifully executed Engravings and Chromo-lithographs. Grats to customers. Post-free, 1s.

WEBB AND SONS, THE QUEEN'S SEEDSMEN, Wordley, Stourbridge.

Just Published.
ANNUAIRE de l'HORTICULTURE BELGE et ETRANGERE, 1877, containing the Portrait of the late Louis Van Houtte, and a List of the principal Nurserymen and Seed Merchants of England, Germany, and France. Free by Book Post for 30 stamps. Apply to **M. RODIGAS,** Director of the Zoological Garden, Belgium.

Special Catalogue of Fruit Trees and Roses.
THE DESCRIPTIVE and ILLUSTRATED CATALOGUE OF FRUITS (By Thomas Rivers) is now ready; also CATALOGUE of Select Roses. Post-free on application.
THOMAS RIVERS and SON, Sawbridgeworth, Herts.

Roses, Fruit Trees, Evergreens, &c.
WILLIAM FLETCHER'S CATALOGUE is now ready, and may be had post-free on application. The Nursery Stock generally is very fine, healthy, and well-rooted. Early orders are respectfully solicited.
 Ottershaw Nurseries, Chertsey, Surrey.

To the Trade.
STANDARD and DWARF ROSES of the best quality, some splendid in the Trade, is well ripened wood—about 15,000 Standards and 5000 Dwarfs, guaranteed true to name. For lowest prices apply to **GRANT and CO.,** Nursery, Portadown, Ireland.

Special Offer of Roses.
ROSES.—One dozen Dwarf, of the finest exhibition varieties, for 6s., with instructions for planting. Cash to accompany order.
JOHN HUGHES, F.R.H.S., Eastgate Nurseries, Peterborough.

ROSES.—10,000 extra fine Dwarf, on **M. Masetti,** all the leading show varieties. Catalogue free. Special offers to the Trade.
THOMAS GRIFFITHS, Old Nurseries, Tillington, Hereford.

NOTTING and SONS' WHOLESALE GARDEN and FLOWER SEED CATALOGUE is now published. A copy has been posted to their Friends; any one not having received it, upon application another shall be sent.
 Seed Warehouses, 60, Barbican, E.C.

LILIU M AURATUM.—Sound Bulbs, that will in all probability have from 5 to 30 flowers next year, at 1s. to 6s. per dozen. These have been grown from seed and sown in this Nursery, and are far more satisfactory of the most important bulb.
ANTHONY WATERER, Knapp Hill Nursery, Woking, Surrey.

Lappageria alba (true).
MESSRS. THOMAS CRIPPS and SON have a healthy, well-established Plants of the above to offer, some of which are showing bloom, in 5-in. to 7-in. pots. Price, three, five, seven, to twelve guineas each. Usual Trade discount.
 Tootingbridge Wells Nurseries, Kent.

Winter-flowering Orchids.
CALANTHE VESTITA RUBRA Oculata. For price per dozen or 100 apply to **S. WOOLLEY,** Nurseryman, Chessington, Herts.

Evergreen Acorns.
JAMES MCKONNALL has a supply fine EVERGREEN ACORNS, at 2s. per bushel. Westgate Nurseries, Chichester.

Now Ready.
CHARLES TURNER'S Descriptive CATALOGUE OF SEEDS. Post-free on application.

The Finest Dwarf Marrow Pea is TURNER'S DR. MACLEAN. See CATALOGUE, now ready.

New Early Fritillia Pea.
ALLAN'S CHAMPION. Full description in CATALOGUE, now ready.

Schoolmaster.
FINEST ROSE POTATO. Description, with testimonials, in CATALOGUE, now ready.
CHARLES TURNER, The Royal Nurseries, Slough.

SALES BY AUCTION.

Auction Mart, Tokenhouse Yard, E.C. UNRESERVED SALE of about 3000 LILIU AURATUM...

MESSRS. PROTHEROE AND MORRIS will sell by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on MONDAY, January 22...

Heatherdale Nurseries, Bagshot, Surrey. MESSRS. PROTHEROE AND MORRIS will sell by AUCTION, on the Premises, as above...

The valuable FREEHOLD ESTATE to be SOLD. Apply to the Auctioneers and Estate Agents, G.C. and Laytonson & Co.

Queen's Road Nurseries, Chelsea. PRELIMINARY NOTICE of a most important Two Days' Sale of Specimen Exhibition STOVE and GREENHOUSE PLANTS.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. James Cypher, to sell by AUCTION, on the Premises, as above, about the latter end of APRIL...

Messrs. Protheroe & Morris may add that the plants are now to be promising a condition as they are this season, and that they may be viewed any day prior to the Sale.

Plants and Bulbs. MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 35, King Street...

Lilies, Lilies, &c. MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 35, King Street, Covent Garden, W.C., on WEDNESDAY, January 17...

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 35, King Street, Covent Garden, W.C., on THURSDAY, January 18...

Beautiful Flowering Maple Trees. MR. J. C. STEVENS will include in his Sale on THURSDAY, January 18...

TO BE SOLD, a FLORIST'S BUSINESS, Four Greenhouses, Two large Ranges of Pits, and an Acre of Ground.

TO BE SOLD, by PRIVATE CONTRACT, about 12 Acres well grown OSIERS. May be viewed by appointment.

TO BE DISPOSED OF, a SMALL NURSERY, in a first-class situation. Apply to W. J. G. Swan Cottage, 149, Loughborough Road, Brixton, S.W.

Nursery Business To Let. TO LET, an Old-established NURSERY BUSINESS, situated near a thriving and central market town in the North Kingdom of Yorkshire.

The Best Medium-late Kidney Potato in CULTURE. SUTTON'S MAGNUM BONUM. A remarkably good cooking Potato.

From Mr. J. P. BELLING, Gr. de St-Jeor, St-James, Southampton. 'I bought of you in March, 1876, 1 lb. of Magnum Bonum Potatoes...

SUTTON'S DESCRIPTIVE LIST of choice Seed Potatoes and fruit free. SUTTON AND SONS, The Queen's Seedsmen, Reading.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION. NOTICE IS HEREBY GIVEN THAT THE ANNUAL GENERAL MEETING of this Institution will be held on THURSDAY, the 18th inst., at the Bedford Hotel, Covent Garden, W.C.

To the Subscribers' ROYAL BENEVOLENT INSTITUTION. VOTES FOR THE ELECTION on the 18th in favour of ELIZABETH WYKE, the Widow of William Port Ayres...

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION. VOTES FOR THE ELECTION on the 18th in favour of JOHN WILLES, J.R.S., Union Crescent, Kensington; W. NEWTON, Hillside, Newark, Notts.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION. In your 26th year, a childless Widow, who has lost all his savings through the breaking up of his Club.

CRAB and PEAR STOCKS, strong, transplanted, 1/2 to 3/4 feet, from 1/2 to 1/6 each, well rooted. T. EVES, Gravelled Nurseries.—Established 1870.

AUCUBAS, good bushy plants, 1 to 1 1/2 ft., fit for Potting, 7/6 per 100; also all other sizes up to 4 feet. T. EVES, Gravelled Nurseries.—Established 1870.

RHUBARB, Albert and Victoria, 16s. per doz. T. EVES, Gravelled Nurseries.—Established 1870.

LIMES, 10 to 12 feet, stout stems, clean grown and well-rooted. T. EVES, Gravelled Nurseries.—Established 1870.

The Best Cucumber in Cultivation. SUTTON'S MILKE OF CONNAUGHT.—From Mr. ROBERT DEARER, Gr. de la Right Hon. Earl Vane, July 29...

For Sale Cheap. BOX EDGING, 12 to 2000 yards, also NER-TERA DEPRESSA, and ORCHID SPHAGNUM. Sample and price from J. Y. BUNO, Landscape Gardener, Bridge of Allan.

To Trade. OSBORN AND SONS can still supply dwarf maiden PEACHES, NECTARINES, and APRICOTS of the leading kinds, and a few standards. Also Dwarf and Standard APPLES, PEARS, PLUMS, and CHERRIES.

MESSRS. LEVASSEUR AND SON, 11, Old Broad Street, London, E.C., have on hand, immense Stock of Seedling FOREST TREES, Hardy, Coniferous, and other SHRUBS, for transplanting and transplanting.

To Trade. MESSRS. SILBERBAD and SON, 5, Harp Lane, Great Tower Street, London, E.C.

To Trade. PEACHES, CHERRIES, APPLES, and PEARS, spotted dwarf-trained; finer plants cannot be desired.

WILLIAM WOOD AND SON, The Nurseries, Marefield, Uckfield, Sussex.

PEAR STOCKS.—The Subscribers have a quantity of above to remove at once, and beg to offer them at the following very low prices:—3/2, transplanted, fine, 2/2 per 1000.

THOMAS METHVEN AND SONS, Leith Walk Nurseries, Edinburgh.

SEEDS, SEEDS, SEEDS. 1877. VEGETABLE and FLOWER SEEDS, delivered carriage free. Priced and Illustrated Descriptive Catalogue will be sent on application.

DICKSON AND ROBINSON, Seed Merchants, 13, Old Millgate, Manchester.

NEW CHRYSANTHEMUM, Golden Empress of India.—A splendid yellow sport. Plants raised in 1876. Price, 6s. each, two for 11s.

ASPARAGUS.—Good forcing, 80c. per 1000, or 9/6 per 100; also 3/2 and 3/4 yr. old low priced RHUBARB, Marryat, Red, 6s. and 6s. per dozen. Prices to the Trade on application.

To the Trade. OUR HOUSEHOLD CATALOGUE is now ready, and may be had on application. A copy has been posted to all our Customers, if not received an early intimation will oblige.

TO Amateurs. ORCHIDS for Sale, cheap.—A Gentleman has a few Orchids, which he wishes to Dispose of at once. P. M. B., Shibbottorf, Market Harborough.

Gynogone cristata. R. S. YATES has pleasure in announcing that his CRYSTAL ORCHID, is a small, very fine type of one now swelling into bloom-buds. R. S. Y. has 12 or 15 plants with 250 spikes, and 200 to 250 spikes per pot, only. He has a large stock of plants from 2 to 16 weeks each. Sale Chelsea.

The Best Cauliflower. SUTTON'S KING OF THE CAULIFLOWERS. Of rather dwarf and compact growth, with large and beautifully white heads.

From Mr. T. EARD, Gr. de la Right Hon. the Earl of Shrewsbury, Woburn, Bedfordshire, July 14. '—Your King of the Cauliflowers is the admiration of every one. We have hundreds of the Best Cauliflowers raised at 20s and 22s and marvel, plenty 23 and 24 inches in diameter, and so compact as possibly could be. It is a wonder, certainly.'

LARGE TREE BOX and EVERGREEN HOLLY.—Handsome, bushy, and well-rooted, will transplant with good balls of earth, 5, 6, 7, and 8 feet high. Tree Box and Hedge plants to be had also at evergreen tree. An inspection invited. Price on application to T. JACKSON AND SON, Nurseries, Kingston, Surrey.

VERBENAS, VERBENAS, VERBENAS. —Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, and Rose and Rose and Rose, 20s. per 1000. 200 rooted cuttings, in 12 distinct and beautiful varieties. Price on application to T. JACKSON AND SON, Nurseries, Kingston, Surrey.

Fox and Game Codd. ENGLISH FURZE, 1-yr. old, from 5/2; 2-yr. extra, from 10s. per 1000. ENGLISH BROOM, 2-yr. extra, 15s. per 1000. BITTER OSIERS, 2 to 3 feet, 2/2 per 1000. WILLIAM MAULE AND SONS, The Nurseries, Bristol.

To Trade. JAMES GARWAY and CO., Durhams PEACHES and NECTARINES, standard and tree seedling varieties, clean and well grown, 24s. per dozen.

W.M. CUTBUSH and SON have a few hundreds of their splendid HYACINTHS in flower, in quantities from 200 to 500 per case. Price on application. Highgate Nurseries, London, N.

SPIRÆA (HOTELA) JAPONICA, very strong clumps for forcing, equal if not superior to foreign ones. Price 2s. 6d. per pair.

SPIRÆA PALMATA, fine crowns for forcing, 7/2; smaller, 2/2 to 3/2 per 100.

WEBB'S PRIZE COB NUTS and FILBERTS, and other PRIZE COB NUTS and FILBERTS, LISTS of these varieties from Mr. WEBB, Calcut, Reading.

WEBB'S NEW GIANT POLYANTHUS, Flower and Giant COWSLIP SEEDS; also Flower and Giant COWSLIP SEEDS; also Flower and Giant COWSLIP SEEDS; also Flower and Giant COWSLIP SEEDS.

The Best and most Distinct Early Dwarf Wrinkled PEA. SUTTON'S BIJOU. 'Your Biju, Mr. ROBERT FISHER, Gr. de Lord Auchland—'Your Biju, Mr. ROBERT FISHER, Gr. de Lord Auchland—'Your Biju, Mr. ROBERT FISHER, Gr. de Lord Auchland—'Your Biju, Mr. ROBERT FISHER, Gr. de Lord Auchland—'

SUTTON AND SONS, The Queen's Seedsmen, Reading.

New Catalogue of Herbaceous and Alpine Plants. JAMES BACKHOUSE AND SON, York.—This is now in the printer's hands, and will be issued shortly. It will be found to contain many choice novelties; among which is a new Snowdrop (probably the finest of all), a red-checked Golden Fairy, two new Crocuses, a first-class dwarf Campanula, Polyanthus, Campanula purpurea, Petrus, &c. Will be sent on application as usual.

Asparagus, Asparagus, Asparagus. ROBERT AND GEORGE NEAL have the pleasure to offer in large or small quantities, 1-yr., 2-yr., and 3-yr. old— 2/2, 3/2, 4/2, 5/2, 6/2, 7/2, 8/2, 9/2, 10/2, 11/2, 12/2, 13/2, 14/2, 15/2, 16/2, 17/2, 18/2, 19/2, 20/2, 21/2, 22/2, 23/2, 24/2, 25/2, 26/2, 27/2, 28/2, 29/2, 30/2, 31/2, 32/2, 33/2, 34/2, 35/2, 36/2, 37/2, 38/2, 39/2, 40/2, 41/2, 42/2, 43/2, 44/2, 45/2, 46/2, 47/2, 48/2, 49/2, 50/2, 51/2, 52/2, 53/2, 54/2, 55/2, 56/2, 57/2, 58/2, 59/2, 60/2, 61/2, 62/2, 63/2, 64/2, 65/2, 66/2, 67/2, 68/2, 69/2, 70/2, 71/2, 72/2, 73/2, 74/2, 75/2, 76/2, 77/2, 78/2, 79/2, 80/2, 81/2, 82/2, 83/2, 84/2, 85/2, 86/2, 87/2, 88/2, 89/2, 90/2, 91/2, 92/2, 93/2, 94/2, 95/2, 96/2, 97/2, 98/2, 99/2, 100/2.

YEW FOR SALE.—About 2000, from 3/2 to 4/2 feet high; 1000, 9/6 per 100; also 4/2 to 5/2 feet, at 10s. per 100; all in first-rate condition and well-rooted. Price on application to J. Y. BUNO, 149, Loughborough Road, Brixton, S.W.

CHARLES LEE and SON, Succors to Messrs. John & Charles Lee, of the Royal Vineyard Nurseries, Hammermill, W., beg to announce that in consequence of the Retirement of Mr. John Lee from the business, they have the pleasure to announce that the business of the firm as SEED TRADE so successfully carried on for many years by the late firm, and they trust the same liberal patronage so long given by builders, John & Charles Lee will continue to the New Firm.

Charles Lee & Son pledge themselves to devote all their energy to raising First-class Stock in every department, which the large resources at their command will enable them to supply with care and attention. They also continue to sell the best regards quality and price. With a view to a more extensive production of Stove and Greenhouse Plants of the best quality they have introduced the following new and desirable varieties: Glass on a new site, a portion of the old Nursery being taken up for buildings, John & Charles Lee will continue to the New Firm.

CHARLES LEE and SON, Royal Vineyard Nurseries, Hammermill, W., where the general business of the Nursery and Seedling is carried on, and where the following are now in flower: Mr. DIXON, Feltb Nursery; Mr. CANNON, Ealing Nursery; Mr. WEBB, Arborcotton; and Mr. MARSHLEN, Wood Lane, Isleworth.

EAST LOTHIAN INTERMEDIATE STOCK from the Seed of the above special Stock, for present sowing, in packets of White, Purple, Scarlet, and White, well-leaved, at 1s. 6d. and 5s. each colour. Price per ounce to the Trade on application.
THOMAS METHVEN AND SONS, 15, Princes Street, Edinburgh.

To Exhibitors and Others.
 The following **SPECIMEN PLANTS**, in fine health and condition, from the plant-house of a Gentleman relinquishing their growth for the cultivation of Grapes, will be sold cheap. Height and width given in feet, fr. for size of trellis.
 Antherium crystallinum, 1 1/2 ft.
 Begonia rex, 2 to 3 ft.
 Bougainvillea speciosa, 2 1/2 ft by 2 ft.
 Cereoidium Biflorum speciosum, 2 1/2 ft by 2 ft.
 Chrysanthemum exoniense, 2 1/2 ft by 2 1/2 ft.
 Cissua americana, 2 ft by 1 1/2 ft.
 Cissua discolor, 2 1/2 ft by 2 ft.
 Euphorbia splendens, 2 1/2 ft by 2 ft.
 Ficus Pareurii, 2 1/2 ft by 1 1/2 ft.
 Ficus umbra, 3 ft by 1 1/2 ft.
 Fouquieria splendens, 2 1/2 ft by 2 ft.
STEPHEN BROWN, Seed and Plant Establishment, Weston-super-Mare.

To the Trade, &c.
SURPLUS NURSERY STOCK—Limes, Standard, extra fine, 8 to 12 feet; Portugal Laurels, Standard heads 2 to 3 feet diameter; Laurel, common, extra fine, 4 feet; Box, Myrtles, and other sorts, 3 to 4 feet extra fine; Spruce Fir, suitable for Christmas trees, all recently transplanted. Price on application.
SHALLOT SEED—Loving Prize Jersey, a true Shallot, of immense size, and exceedingly mild; less labour, less expense, and a far superior crop than the usual method of transplanting bulbs.
 Wholesale Agents: Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C.
 R. R. DAVIS, Nursery and Seed Warehouse, Yewell.

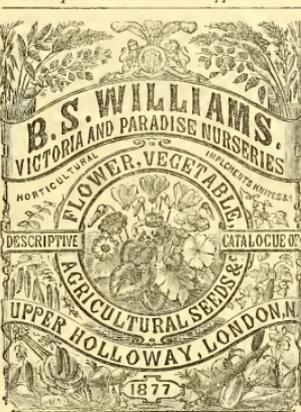
LILIUM AURATUM.—Fine Bulbs of this "Queen of Lilies" can now be supplied at 6d., 1s., 2s., 3s., 4s., 5s., 6s., 7s., 8s., 9s., 10s., 12s., 15s., 20s., 25s., 30s., 40s., 50s., and 60s. each. Sample of two bulbs, postage 6d. extra; more cannot be sent by post. Good and varied selection of Lilies, 2s., 3s., 4s., and 5s. per dozen. Price 1s. on application. Post-office orders payable at Fenchurch Street, E.C.
WILLIAM GORDON, Lily, Bulb, and Plant Importer, to, Cultan Street, E.C.

SPECIAL OFFER. GRAND STOCK.
FRUIT TREES.
 Kentish Cob Nuts
 Morello Cherries, seed trained
 Damsons
 Grape Vines for outdoors
 Mulberries
 Pear dwarf trained
 Standards
 2-3 ft.
 Finely decorated and well-grown
EVERGREENS.
 Aucuba 1 to 6 feet
 Rhododendron ponticum,
 bushy and cheap
 Evergreen Yew
 Also a splendid lot of Daphne indica rubra, set for bloom in most cases; Camosium araphense, and the fine new Camo-
 thore de Versailles; home-grown Cucumbers and Lettuce Seeds.
 Private Buyers and the Trade treated with. For prices and particulars apply to
THOS. BURNARD AND SONS, The Old Nurseries, Maidstone, Kent.

Complets Liberal Collections of CHOICE VEGETABLE SEEDS.
 15s., 21s., 42s., 63s., and 70s. each, carriage paid. As our new and choice seeds are now in large demand, please order early.
SPECIALS:
CARLIFFLOWER, Veitch's Autumn Giant, true, 2s. 6d. per packet.
LITTLE, Alexander Cox, true, 1s. per packet.
ONION, Cantello's Prize, true, 1s. per packet.
BROCCOLI, Lamington, finest late, 1s. per packet.
BRUSSELS, early and late, 1s. per packet.
CATALOGUE of New and Choice Seeds on application.
REVEREND FATHER, Grower of Choice Seeds, &c., Christchurch, Hauts.

Special Offer of First-class Nursery Stock by MARTIN AND SON, Cottingham, and 61, Market Place, Hull.
 Apples, pyramids, 2s. per dozen.
 Pears, pyramids, 2s. per dozen.
 Plums, 40s., 5s., 15s. per dozen.
 Apricots, 2s. per dozen.
 "Autumn King" 5 to 6 feet, 6s. per dozen.
 "Acer Negundo var.", 5s. per dozen.
 "Ailix flexilis", 10s. per dozen.
 "Berberis japonica", 15s. to 25s. per dozen.
 "Berberis frutescens", 10s. per dozen.
 "Berberis Darwinii", 10s. per dozen.
 "Broom's Pine", 3s. per dozen.
 Cedrus salicifolia, 4 to 5 feet, 15s. per dozen.
 Juniperus drupacea, 2 to 3 feet, 4s. per dozen.
 "Juniperus communis", 4 to 4 1/2 feet, 25s. per dozen.
 "Ligustrum lucidum", 4 to 5 feet, 3s. per dozen.
 "Ligustrum japonica", 2 to 2 1/2 feet, 15s. per dozen.
 "Lilacs", 4 feet, 5s. per dozen.
 "Laurel", 4 feet, 5 to 5 1/2 feet, 10s. per 100.
 "Laurel", Colchic, 2 to 3 feet, 15s. per 100.
 Those marked * we can supply by the 100s, Laureds by the 100,000.
 Catalogues on application. N.B.—Cash or reference.

GRANSTON'S NURSERIES, KING'S ACRE, near HEREFORD.
 ESTABLISHED 1785.
SPECIALITIES. ROSES, FRUIT TREES, CONIFERS.
Descriptive Priced Lists on application.



The above Catalogue is now ready, gratis and post-free to all applicants.
 R. S. W. begs to intimate that in the event of any of his Customers not receiving this Catalogue, if they will communicate with him a copy will be sent.

DICK RADLYFFE & CO., SEED MERCHANTS, GARDEN FURNISHERS, and Horticultural Decorators.
PRIZE MEDAL SEEDS.



Complete Collections of Vegetable Seeds.
 No. 1.—Suitable for a very large Garden 4s. 3d. 3 0
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Choice Collections of Flower Seeds.
 Containing only popular kinds of easy growth, which will make a pretty and effective show during the summer months.
 1s., 2s., 6d., 1s., 3s., 6d. and 4s. each.
 All Flower Seeds sent post-free.

For full Detailed List of Collections, see D. R. & Co.'s Illustrated Flower, Vegetable, Agricultural and Garden Catalogue, sent gratis and post free on application to
DICK RADLYFFE & CO., 128 and 129, HIGH HOLBORN, LONDON.

THE NEW PLANT and BULB COMPANY
 Beg to call special attention to their NEW LIST (No. 31), just published.
CONTENTS:
 NEW HARDY BULBS,
 NEW AND RARE LILIES,
 NEW HARDY CYPRIDEMUS,
 NEW FERNS,
 SEEDS OF NEW HARDY FLOWERING PLANTS, &c.;
 All of sterling merit, and at low prices. Post-free on application.
LION WALK, COLCHESTER.

SPANISH CHESTNUT, ASH, LARCH, and ALLER, stock, well-grown, transplanted—A large quantity to be sold at low prices.—G. CHORLEY, Midhurst.
ROBERT AND GEORGE NEAL, Wandsworth Common, Upper Tooting, and Garrett Lane Nurseries.
 These Nurseries comprise about 20 Acres of well-grown and a most useful assortment of STANDARD, ORNAMENTAL, FOREST, FRUIT, and SHRUBS, all of which are in a most healthy and fit condition for removal. A personal inspection invited. CATALOGUES free on application.
 The Nurseries are situated on the main bulk of the Clapham Junction and Wandsworth Common Railway Stations.
Tree Ferns—Tree Ferns—Tree Ferns.
DICKSONIA ANTARCTICA—The above advertisement is now offered at greatly reduced prices, all trunks carefully selected, by an English gardener, from the cooler districts of Tasmania, from a fine specimen, they are carefully dressed and packed, and put on board ships sailing direct to London. Special terms to large buyers. For particulars apply to
 Mr. WALKER, 9, Mount Pleasant, Tumbidge Wells.

Public Notice.
 For Information upon the Planting, Pruning, and general Management of Fruit Trees, see
SCOTT'S ORCHARDIST, free, 3s. 6d.
 At the Royal Nurseries, Marlborough, Somerset, every description of Nursery Stock is grown largely, and at Scott's Royal Seed Stores, Yewell, choice Seeds, Dulms, and every kind of Garden Requisite can be obtained.

Calceolarias (Jules).
H. CANNELL begs to announce that he has a splendid stock of the following, established in 1865, just ready for shipment:
CALCEOLARIAS, 2s. 6d. per dozen.
PRIMEURAS, 2s. 6d. per dozen.
 Smaller, 1s. per dozen less, post-free. Special prices per 100 or 200.
 H. CANNELL, Swanley, Kent.

MESSRS. JNO. STANDISH AND CO'S CATALOGUE for Autumn and Spring, 1877, is now ready, and may be had, post-free, on application.
 It contains the following:—
 Plants of Greenhouse and Pot Culture.
 Stove and Greenhouse Plants.
 Plants for Winter Forcing.
 Acacia Indica and Camellias.
 Tree Carnations and Ericas.
 Fern and Lycopodium.
 Hardy Trees and Shrubs.
 Transplanted Forest Trees.
 Fruit Trees.
 Dutch Flowering Plants.
 Royal Nurseries, Ascot, Berks.

A. M. C. JONGKIND CONINCK, Rotterdam Nurseries, Dordrecht, near Zwolle, Netherlands, has to offer the following:
YUCCA, "MILK OF SPAIN", strong plants, 4 foot high, 2s. per dozen, 4s. 10s. per 100. In my nursery this beautiful new variety has been raised without the slightest protection, the severe winter of 1875.
APPLES, strong 4s. Pyramets and Pyramids, 4s. per 100, 4s. 10s. per 1000.
HARDY AQUATICS at the lowest prices.

Roses—Fonites—Gladious.
CHARLES VERDIER, FHS (successor to the original breeder of the Victoria Verdier, preb), 88, Rue Baudouin, XIII Arrondissement, la Rue Duméril—Paris, has to offer the above three descriptions of plants, which are cultivated on an enormous quantity in his establishment.
CATALOGUES sent post-free on application to C. V., as above, or to
 Messrs. R. SILBERKIND AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

To the Trade—Sandringham Early Kidney Potato.
H. AND F. SHARPE have secured a fine stock of the above excellent POTATO, which is pronounced to be not only the earliest, but the most prolific, and the finest quality in cultivation. Being very free in the haul it is peculiarly adapted for forcing purposes. Price and further particulars may be had on application.
 Seedling Nurseries, Wisbech.

PYRUS or CYDONIA, the NEW JAPAN APPLE or QUINCE—This gorgeous hardy scented May-flowering fruit tree ripened a fine crop of its golden, deliciously delicious fruit, and especially big strong, although the general failure of our common Apple crop. The jam made is most delicious, which may be tasted at the nursery, or sample sent to those who really take an interest in the delicacies of the dinner-table.
 Original plants 2s. and 15s. each, younger 10s., 7s. 6d., and 5s. each.
WILLIAM MAULE AND SONS, The Nurseries, Bristol.

Splendid New Melon, 1877.
CHARLES LEE AND SON (Successors to Messrs J. & C. Lee) have the pleasure to announce that they have purchased the entire Stock of MANN'S HYBRID GREENISH MELON, which is not only a most excellent variety, but 'tis time it has already earned a high reputation in London and the provinces for its many excellent qualities, among which may be mentioned a remarkably big and exceedingly big strong, all seasons of the year—perfection of shape and size for dessert—a thin rind and melting flesh, with an overflow of perfumed juice. It is also a heavy cropper, and forces well.
 Dr. Hogg has spoken of this excellent Melon in the highest terms and after tasting it pronounced it a fruit of the highest merit.

Mr. CULVERWELL, of Thorpe House, fellow judge with Mr. FLOWERS, of Harlow Wood, at the Leeds Horticultural Show, where they awarded a First-class Certificate to "Mann's Hybrid Green-fleshed Melon" as being the most excellent specimen of the Melon, especially at that early season the 25th party of June.
 Mr. INGRAM, of Belvoir Castle, writes, in the third week of October, "that in spite of the disadvantage of a long term of gloomy weather, at that season of the year, Mann's Hybrid Green-fleshed Melon" was a very tender in fruit, very juicy and distinct in character.
 Messrs. Charles Lee and Son are now prepared to offer this very useful and delicious New Melon in special packets, at 5s. 6d. per packet.
CHARLES LEE AND SON, Hammarwich, W.

BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18s. to 30s. per dozen.

Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or £5 per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded, £5 to £7 10s. per 100, or 18s. per dozen.

ANTHONY WATERER,

KNAP HILL NURSERY, WOKING, SURREY.



WM. PAUL & SON,

(Successors to the late A. Paul & Son, Established 1806.)

ROSE GROWERS,

TREE, PLANT, BULB, AND SEED MERCHANTS,

WALTHAM CROSS, HERTS,

Adjoining the "Waltham" Station, Great Eastern Railway.

Inspection of Stock invited.

Printed Descriptive Catalogues free by post.

Vegetable & Flower Seeds
Seed-Potatoes, Tools &c
Best quality, carriage free
Printed Catalogue post-free
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RICHARD SMITH'S FRUIT LIST contains a Sketch of the various forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass; also their Synonyms, Quality, Size, Form, Skin, Colour, Flesh, Flavour, Use, Growth, Duration, Season, Price, &c.

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RICHARD SMITH'S LIST of all the Evergreen Fir Tribe suitable for Britain, giving Size, Price, Popular Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country, and Size there, Situation, Soil and other information, with Copious Index of their Synonyms. Free by post for six stamps.



FOREST TREES AND SHRUBS.

ANNUAL CATALOGUE NOW READY.

THE LAWSON SEED & NURSERY COMPANY

(LIMITED),

EDINBURGH and LONDON,

Will forward their newly published List free to any address upon application.

The Stock of Seedling and Transplanted FOREST TREES, SHRUBS, and COVERT PLANTS is most extensive, and in unusually fine condition.

SPECIAL OFFERS TO LARGE BUYERS WHEN REQUESTED.

SPEED'S VINE AND ROSE MILDEW ANNIHILATOR.



JAMES VEITCH & SONS,
ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.,

Have much pleasure in offering this excellent preparation for the destruction of Mildew. It proves to be perfectly harmless to the Grape Vine, the Rose, and the Peach when applied to the youngest and most tender foliage, and the fruit itself may be dressed with perfect impunity in any state, even before the thinning period, and there are few things more sensitive than the cuticle of young Grapes in the early stage of their growth.

It kills the Mildew instantaneously, and can be rinsed off within a few minutes of being applied, leaving no smell or sediment, or other traces of its application.

It is not poisonous to Animals, although it is instant death to all Fungi.

Experiments were made on a piece of Mushroom spawn, and one puff of the spray distributor on its little active thread-like mycelium shrivelled it up as if charred. As it kills the fungus in a resting state as well as in an active state, there is every reason to hope that it may be found useful in checking diseases of the Potato, the Hollyhock, &c., that are caused by Fungi.

The following Testimonials have been received:—

From ROBERT HOGG, Esq., LL.D., F.L.S., &c., *Phonological Director of the Royal Horticultural Society.*

"I have great pleasure in bearing my testimony to the magical effect which your mixture has upon the Mildew of the Vine. When I was at Chatsworth a few months ago, the application of the mixture, through a spray distributor, on the foliage of the Vioes, was so destructive and so instantaneous as to leave no doubt on my mind as to its perfect efficacy in destroying the Mildew. On examining the foliage with a magnifying glass after the application, I could find no trace of the disease."

From Mr. WILLIAM THOMSON, *Tweed Vineyard, Clovenfords.*

"I tested Mr. Speed's remedy for Mildew this last summer, when staying for a few weeks at Chatsworth, and in my life I never saw a more radical remedy for any such pest. One puff of the spray distributor cleared the leaf of a Vine badly affected with Mildew, during the last no harm, and I believe it can be safely applied to the most tender plant, as well as the fruit of the Vine. I believe it will completely supersede the use of sulphur for destroying Mildew on Peaches, Roses, and Healths, and all other plants liable to attack by Mildew, and that it will prove a great boon to horticulture."

From Mr. STEVENS, *Gardener to His Grace the Duke of Sutherland, Freetown.*

"I have much pleasure in bearing testimony to the efficacy of your liquid for destroying Mildew upon Vines. I saw the liquid applied with a spray distributor, in one of the vintages at Chatsworth, to some badly infested leaves, and upon examining them early the following morning they were perfectly free from Mildew. If the liquid will destroy Mildew on Roses, Hops, &c., as completely as in this instance, it will be a most valuable article of commerce."

From Mr. HARRISON, *Knowsley Gardens.*

"Your Mildew mixture seems effectually to prevent the spread of Mildew. It is also very cleanly in use, being almost without smell, and leaving little or no sediment behind it unless used very strong, and even then it is easily rinsed off with a little clean water."

From Mr. JAMES ANDERSON, *Nurseryman, Mendocomb.*

"The solution prepared by Mr. Speed is the most effective that has come under my cognisance. By simply blowing the spray through a pipe on any leaf affected with Mildew the destruction of the fungus is complete, without the slightest injury to the most tender leaf. For the Stove, Greenhouse, and Rockery, or Peach-house, or even for the Nursery out-of-doors, this solution will undoubtedly prove invaluable, all that seems necessary to guard against is that the leaves operated upon should be as dry as possible."

Sold in Bottles, at 2s., 3s., 6d., 6s., and 10s. each; to make 1 Quart, ½-Gallon, 1 Gallon, or 2 Gallons, ready for use.

Price to the Trade on application to J. VEITCH & SONS, Sole Wholesale Agents.

GARDEN AND FLOWER SEEDS.

THOMAS METHVEN & SONS

BEG TO INTIMATE THAT THEIR DESCRIPTIVE PRICED

CATALOGUE OF KITCHEN GARDEN and FLOWER SEEDS, IMPLEMENTS, &c., for 1877,

Is now ready, and may be had post-free on application.

EAST LOTHIAN INTERMEDIATE STOCK (true), in three colours. In packets, 1s., 2s., 6d., and 3s. each colour.

SNOW-WHITE WALL-LEAVED EAST LOTHIAN INTERMEDIATE STOCK. This is a striking novelty. The purity of the white shows up well upon the grassy green foliage, and it bears the large truss of the East Lothian varieties. In packets, 1s., 2s., 6d. and 3s. each.

SEED WAREHOUSES:

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THE HUNTINGDON NURSERIES.

WOOD & INGRAM'S
CATALOGUE OF SEEDS FOR THIS SEASON

Is now ready, and will be forwarded free on application.

THE NURSERY AND SEED BUSINESS

So successfully conducted for a number of years by the late Mr. JOHN INGRAM, will be continued to be carried on in its various branches, as heretofore, by his Widow and Two Sons, in the name of WOOD and INGRAM, who respectfully solicit a continuance of the kind and liberal patronage which has been given for a lengthened period to their Establishment.

THE NURSERIES, HUNTINGDON.—January, 1877.



JEFFERIES' LITTLE QUEEN COS LETTUCE,

Per Packet, 1s. 6d.,

Is the Earliest, Best Flavoured and Best Coloured Lettuce in cultivation.

MR. EARLEY, *The Gardens, Valentines*, says:—"Your Little Queen Lettuce proved a good selection, although the weather was very adverse to the trial."
MR. MEADES, *Gr. to the Rt. Hon. Viscount Barrington, Bucket Park*, says:—"Your Little Queen Lettuce is a capital variety, as hard as a stone, and has kept well from running to seed this dry summer."

MR. FARR, *Gr. to Sir R. Knightley, Bart., Pawley Park*, says:—"Your Little Lettuce has proved a very useful one, although the season had been very trying for that class of stuff; its early hearting and crisp sweet flavour are sufficient to recommend it to all who are desirous of a small but good Lettuce."

A Packet of this excellent Lettuce will be included in all our Collections of Vegetable Seeds.

JEFFERIES' HALF GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' TWO GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' THREE GUINEA COLLECTION OF VEGETABLE SEEDS,

Are the best obtainable. For particulars, obtain our "Illustrated Garden Guide."

JNO. JEFFERIES & SONS,
GIRENCESTER.

Moore's Duke of Edinburgh Cucumber.
J. MONRO begs to inform the Trade, &c., that he has SOLD the ENTIRE STOCK of Seed of the above-named Cucumber to Messrs. CARTER and CO., The Queen's Seedsmen, 237 and 238, High Holborn, London, W.C.; and as no other Cucumber is grown by J. Monro, those having it from the above-named Firm are bound to have it true.
Foster's Box, January 2, 1877.

The Best Scarlet-fleshed Melon.

SUTTON'S HERO OF BATH.
From Mr. W. Wisnith, *Gr. to the Right Hon. Viscount Eversley*:—"I consider your Hero of Bath the best scarlet-fleshed Melon yet in commerce, being A 1 in quality, appearance, and product of the soil. Your Hero, as it is called, had a prejudice against scarlet-fleshed Melons, pronounces this variety superior."
From Thomas Lockie, *Gr. to the Right Hon. Lord Ocho Fitzgerald, Aquart st.*:—"I consider your Hero of Bath Melon the best I have ever seen of the scarlet-fleshed class. It is very handsome, of good constitution, and excellent in flavour."
Price 2s. 6d. per packet.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

SPECIAL OFFER

OF FOREST, FRUIT, ORNAMENTAL TREES, &c.
PINUS AUSTRIACA, well furnished, 3 to 4 feet, 12s. per 100; 4 to 6 feet, 20s. per 100.

FIR, Scotch, very fine, 4 to 6 feet, 60s. per 1000
ASH, common, 2 to 3 1/2 feet, 20s. per 1000
CHESTNUT, Horse, very fine for avenues, 6 to 8 feet, 12s. per dozen, 9s. per 100

POPLARS, Lombardy, fine, 8 to 10 feet, 40s. per 100
OAK, Turkey, 5 to 6 and 8 feet, 80s. to 100s. per 1000
HORNBARK, 5 to 6 feet, 20s. per 1000
LARCHES, Scotch, 5 to 6 feet, 10s. per dozen
WHITEBORN, Quick, 4 1/2 ft., 12s. per 1000; extra strong, 15s. per 1000

BLACKTHORN, Quick, extra strong, 12s. per 1000
PRIVET, Evergreen, 3 to 4 feet, 12s. per 1000
YEW'S, English, extra fine, 2 to 3 and 4 feet, 80s. to 90s. p. 100
BOX, Green, bushy, 2 to 3 feet, 20s. per 100

HOLLIES, Green, bushy, 2 feet high, 15s. wide, 50s. per 100
BERBERIS AQUIFOLIA, 3s. per 100, 25s. per 1000
APPLES, Pyramid, good shape, strong, 2s. per dozen
PEARS, Standard, 6 to 7 feet stems, good heads, 70s. per 100
Pyramid, very fine, 9s. per dozen.

CHERRIES, Standard, 6 to 7 feet stems, good heads, 75s. per 100

APRICOTS, dwarf-trained, extra fine, 50s. per dozen
GOOSEBERRIES, Warrington Red, extra fine, 10s. per 100
CURRANTS, Red and Black, extra fine, 20s. per 100
SEAKAIS, 1 1/2 ft., for planting, 3s. 6d. per 100
CARNATIONS, CLAWS, and PICOTEES, in pots, named sorts, 2s. 2d. per 100

Messrs. BALL and CO., having large quantities of the above, are enabled to offer them at the very low prices stated. The whole are clean grown and well rooted, and are confidently recommended to intending planters.

Nurseries, Bedford and Kettering Roads; Seed Warehouse, 4, Mercers' Row, Northampton.

Seed List.

CHARLES SHARPE and CO.'S WHOLESALE LIST OF VEGETABLE and FARM SEEDS is now ready, and will be sent post-free on application.

CHARLES SHARPE and CO., Seed Farmers, Stamford; and at 21, New Corn Exchange, Mark Lane, London, E.C.

Select Swede and Turnip Seeds.

CHARLES SHARPE and CO.'S carefully-selected Stocks of SWEDS and TURNIP SEEDS, the produce of their own Seed Farms in Lincolnshire, are offered in their Wholesale Seed List for 1877.

Select Mangel Seeds.

CHARLES SHARPE and CO. have much pleasure in asking attention to their select Stocks of MANGEL WURZEL SEED, which have been grown under their personal supervision upon their own Seed Farms at Heckington, and in the adjoining parishes. Descriptions and Prices are given in C. S. & Co.'s Wholesale Seed List for 1877.

EVERY DESCRIPTION OF HORTICULTURAL and AGRICULTURAL SEEDS, SEED POTATOS of finest quality, both Home-grown and Imported.

CHARLES SHARPE and CO., Seed Farmers, Stamford, and 21, New Seed Market, Mark Lane, London, E.C. All letters address Stamford.

OSBORN & SONS

BEG TO ANNOUNCE THAT THEIR

ANNUAL CATALOGUE OF KITCHEN GARDEN and FLOWER SEEDS

Is now ready, and will be forwarded post-free to all applicants.

It contains a choice selection of "NOVELTIES" and of the "BEST" and most approved kinds of VEGETABLE and FLOWER SEEDS, including among

VEGETABLE SEEDS—Osborn's Forcing French Bean, which has been proved one of the best and most prolific; Osborn's Select Red Beet (or Dell's Crimson), Osborn's Winter White Broccoli; and among

FLOWER SEEDS—Pyrethrum aureum laciniatum, a very distinct and beautifully cut-leaved form of the deservedly popular "Golden Feather." Like its prototype it is perfectly hardy, but of dwarfer habit and more spreading, and is admirably adapted for bedding. It obtained a First-class Certificate at the Meeting of the Royal Horticultural Society, May 3, 1876; and also a First-class Certificate at the Grand Exhibition held at the Westminster Royal Aquarium, May 16 and 17, 1876.

FULHAM NURSERIES, LONDON, S.W.



NEW SEED CATALOGUE

For SPRING, 1877.

All intending Purchasers of choice Kitchen Garden or Flower Seeds should send for a copy of the *Illustrated Guide for Amateur Gardeners*, which will be found the most complete, useful, and beautiful Seed Catalogue ever published.

Price 1s., Post-free.

Gratis to Customers or intending Purchasers.

The Illustrated Guide for Amateur Gardeners, Spring, 1877,

Contains 112 pages of beautifully illustrated Letterpress, with two superbly finished Coloured Plates, Original Articles on the Rearing and Cultivation of various Garden Crops and Flowers, and complete Instructions for the successful Management of the Kitchen and Flower Gardens throughout the year, together with a Select List of choice Kitchen Garden and Flower Seeds, Seed Potatoes, &c.

The most practical and comprehensive Guide for the Amateur yet issued, and should be read by every one having a garden.



OPINIONS FROM THE PRESS.

"The inside is quite in character with the beauty of the exterior, and we do not know of a more useful or beautiful garden guide to lie on the drawing-room table."—*Villa Gardner*.

"This is the most tasteful and best executed thing of the kind that I ever remember having seen, and would be an ornament to any room."—*The Country*.

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DANIELS BROS.,
The Royal Norfolk Seed Establishment,
NORWICH.

FIRST-CLASS NURSERY STOCK.

JAS. BACKHOUSE & SON

Begin to offer the following, of which they have an extra stock:—

FOREST and ORNAMENTAL TREES and SHRUBS.

ABIES DOUGLASHI, extra transplanted, 2 to 3 feet, 100r.; 3 to 4 feet, 120r. per 100

ARBORVITÆ, American or common, 2 to 3 feet, fine, 27s. 6d. per 100

" Chinese, transplanted, 9 to 12 inches, 15s. per 100

ASH, Mountain, 6 to 7 feet, 60r. per 100; 8r. per 100; 7 to 8 feet, 12s. 6d. per 100

ARUNDO CONSPICUA, an elegant Grass, 18s. per dozen

BERBERIS DARWINII, extra transplanted, 12 to 18 inches, 12s. per 100; 17s. 6d. per 100

" WALLICHII, extra transplanted, 12 to 18 inches, 25s. per 100

BROOM, common, 1-yr. seedling, 9s. per 100; 12. 6d. per 100

" bushy, transplanted, 30s. per 100; 6s. per 100

" Spanish, transplanted, 70s. per 100; 9s. per 100

CEDAR, Red, 1½ to 2 feet, 2s. per dozen, 30s. per 100; to 3 feet, 7s. per dozen, 50s. per 100

ELM, English, from seed, 6 to 7 feet, 60r. per 100; 12s. 6d. per 100; 7 to 8 feet, 25s. per 100

" " grafted, 3 to 4 feet, 27s. 6d. per 100; 5 to 6 feet, 40s. per 100

" " grafted of ornamental sorts, 6 to 30s. per dozen

" Wych, 1½ to 4½ feet, 40s. per 100; 6s. per 100; 5 to 7 feet, 12s. 6d. per 100; 7 to 8 feet, 25s. per 100

" Weeping, 6 to 9 feet stems, good heads, 30s. to 35s. per dozen

EUONYMUS RADICANS VARIEGATUS, excellent dwarf shrub for edgings or borders, 25s. per 100; 4s. 6d. per dozen

JUNIPERUS TRIPARTITA, a fine branching semi-erect Juniper, well adapted for covering banks, &c.; 1½ to 2 feet, bushy, 10s. 6d. per dozen; 2 to 2½ feet, bushy, 16s. per dozen

LIBOCERUS DECURRENS, 2 to 3 feet, 18s. per dozen

ERICA CARNEA ALBA (White Spring Heath), 15s. per dozen; hardy sorts, good variety, 40s. per 100; 6s. per dozen

LIMES, from layers, 3 to 4 feet, 26s. per 100; 2s. 6d. per dozen; 4 to 5 feet, 20s. per 100; 3s. per dozen; 8 to 9 feet, 100r. per 100; 15s. per dozen

LILAC, Common, 2 to 3 feet, 18s. per 100; 3s. per dozen

" White, 2 to 3 feet, 25s. per 100; 5s. per dozen

MAPLE, Norway, 6 to 8 feet, 12s. 6d. per 100; 2s. 6d. per dozen; 8 to 10 feet, 25s. per 100; 5s. per dozen

HORNBEAM, 3 to 4 feet, 35s. per 100; 5s. per 100

PICEA NOBILIS, 2 to 2½ feet, fine stout plants, 200s. per 100; 20s. per dozen; 2½ to 3 feet, do., 180s. per 100; 4s. per dozen; 3 to 3½ feet, do., 330s. per 100; 5s. 6d. per dozen

POPLAR, Black Italian, 10 to 12 feet, 30s. per 100; 6s. per dozen; 15 to 18 feet, extra, 21s. per dozen

" Lombardy, 2 to 3 feet, 25s. per 100; 5s. per 100; 3 to 4 feet, 45s. per 100; 6s. per 100; 4 to 5 feet, 60s. per 100; 8s. per 100; 5 to 7 feet, 90s. per 100; 12s. 6d. per 100; 2s. 6d. per dozen; 7 to 8 feet, 20s. per 100; 4s. per dozen

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SATURDAY, JANUARY 13, 1877.

THE CEDARS OF LEBANON.

WHEN Seth, the son of Adam, was sent by his dying parent to fetch the "oil of mercy" from Paradise, he saw from the gate of that glorious garden, which an angel opened for him without permitting him to enter, a Cedar of Lebanon, with branches borne high towards Heaven. The tree seemed to typify the great disaster of Adam's early career. It stood there stricken and leafless, and yet suggesting hope—for the legend is of Christian origin—since a child in glittering raiment was seated on its top, the symbol of hope for all future generations.

This ancient legend—the dream, perhaps, of a Syrian hermit—shows that the Cedar of Lebanon, the timber tree of the Temple built on Zion, was held in highest estimation, and exercised the fancy. The story proceeds that Seth received from the angel three seeds of that tree which he beheld still standing upon the spot where sin had been first committed, but standing there blasted and dead. He carried the seeds home, placed them in the mouth of the dead Adam, and so buried them. And here the natural history of the legend is at fault, for the three seeds, ripened on the same tree in Paradise, produced three trees of different kinds. The truth is, the Cedar of Lebanon, the Cypress, and the Pine, which grew from those seeds, were held in equal estimation by the recluse who dreamt this legend, and therefore the same marvellous, though inconsistent origin was claimed for them all. Their future history is curious. Growing on the grave of Adam in Hebron, they were afterwards most carefully protected by Abraham, Moses, and David. After their removal to Jerusalem, the Psalms were composed beneath them; and in due time, when they had grown together and united into one giant tree, they, or it—for it was now one tree, a Cedar of Lebanon—was felled by Solomon for the purpose of being preserved for ever as a beam in the Temple. But the design failed; the king's carpenters found themselves utterly unable to manage the mighty beam. They raised it to its intended position, and found it too long. They sawed it, and it then proved too short. They spliced it, and again found it wrong. It was evidently intended for another, perhaps a more sacred office, and they laid it aside in the Temple to bide its time. While waiting for its appointed hour, the beam was on one occasion improperly made use of by a woman named Maxmella, who took the liberty of sitting on it, and presently found her garments on fire. Instantly she raised a cry, and feeling the flames severely, she invoked the aid of Christ, and was immediately driven from the city and stoned, becoming in her death a pro-Christian martyr.

In the course of an eventful history the pre-destined beam became a bridge over Cedron, and being then thrown into the Pool of Bethesda, it proved the cause of its healing virtues. Finally, it became the Cross, was buried in Calvary, exhumed by the Empress Helena, chopped up by a corrupt Church, and distributed.

Other inconsistencies in the history of this famous tree are the enormous weight of the relics of the true Cross as disposed of by the Mediaeval Church, and the fact that most of the relics are of Oak, which has always grown freely in the grounds of Italian and English ecclesi-

astics, and which does not grow in Hebron, except the evergreen species. The above story is suggestive in many ways.

In Evelyn's *Silva* of 1664 he does not mention the Cedar of Lebanon, and we may therefore be sure that it had not then descended from its Syrian mountain to the congenial level of the banks of the Thames, in our higher latitude. It was first planted largely by John, Duke of Argyle, the friend of Jeanie Deans. The noble grove at Whitton Park, near Twickenham, was planted by him, and the seeds, which he distributed among his friends, produced the existing ornaments of several sites at Fulham, Richmond, and other neighbourhoods, and established the Cedar of Lebanon in the various gardens on the Thames, where it is still an ornament that may be often observed.

One of the oldest, if not the oldest, Cedars of Lebanon in England is that standing in Bretby Park, Derbyshire, on the east front of the Hall. The gardeners' accounts prove this tree to have been planted in February, 1676. The girth of its trunk, at 4 feet, is 15 feet 8 inches; and so far as we could judge the size of the trunk is not much less at 15 feet or 16 feet, where it divides. From this point the main stem runs up 50 or 60 feet. The spread of the two longest lateral branches is about 100 feet. This tall Cedar has lost many limbs, and is now only scantily provided. The stump of every lost limb has been carefully sealed with lead, and each remaining branch is supported by chains.

There is a legend that a limb of this tree falls at the death of a member of the family. On Maundy Thursday, 1773, when the Cedar in the park was nearly a hundred years old, a friend called to see Lord Chesterfield. He was dying. "Give Dayroles a chair" were his last words, and no doubt the Cedar lost a large limb, for the departed Earl, who died true to his principles, whispering faintly those courteous words with his latest breath, was far beyond the average of men, and greater than his detractors. That fine gentleman of a manifold accomplishments was the despicable individual that the delightful poet Cowper, a morbid man and by no means an impartial judge of men, imagined him.

His life was one of many sacrifices. He poured forth the fruit of his experience with infinite pains for a son to whom he was devoted, and the youth died almost before entering the great world. The old Cedar must have lost a heavy branch. It has lost many since, and the family history has been a mournful one. The last Earl died a young man and childless, on reaching home after a visit. His sister was the wife of Lord Carnarvon, and her death will be remembered. The fall of these recent limbs has left the old tree a wreck—a lofty and noble trunk, almost naked except a few remaining branches on the top, supported by artificial means.

It is said there are seven trees remaining of the forest thinned for the building of Solomon's Temple, and the girth of the largest is 45 feet. [Of late years other forests of the same tree have been discovered, see our volume for 1866, p. 876. EDS.] There is a Cedar of Lebanon at Wilton Abbey 26 feet in circumference at 1 foot from the ground; there are famous trees, too, at Strathfieldsaye, Sion House, and Shobdon.

In England this type of indestructibility produces only second-rate timber. In Palestine fragments of particular value were kept in Cedar boxes by preference, and there was a common saying in reference to articles of value that they were worthy to be cased in Cedar. Not only was the wood extremely durable, but it was of rapid growth, and in Hebrew families it was not uncommon for the parents of a child to plant a Cedar of Lebanon at his birth, to be cut down for the construction of a bedstead at his marriage. In England, where colliers marry at eighteen, and farm labourers at twenty, and the middle-class at twenty-five, there are no trees of strength and toughness which would in like manner overtake the wedding-day, so as to be adapted to the purpose above suggested. *H. Evershed.*

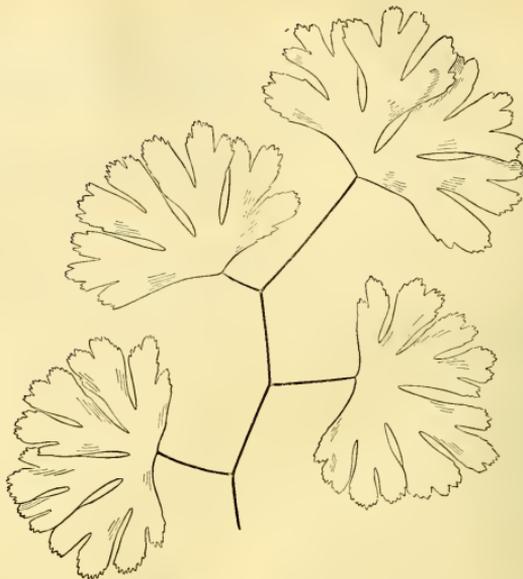


FIG. 5.—ADIANTUM PALMATUM, SHOWING HABIT. (1 NAT. SIZE.)

New Garden Plants.

ONCIDIUM CRISPUM (Lodd.) OLIVACEUM.
I found last autumn a very rich display of *Oncidium crispum* (Lodd.) in the nursery of Messrs. Veitch, and those gentlemen were in a state of despair as to the endless quantity of varieties. As to me I felt much pleased by what I regard as a most interesting variety. It has no Horse-Chestnut-brown in it at all. It is olive-green over and over. The area at the base of the anterior lacinia of the lip is finely yellow, and the

calli, column, wings, and a few blotches at lips base are beautifully black-purple. The combination of these colours makes an unusually nice impression. *H. G. Rebb. f.*

ADIANTUM PALMATUM, sp. n.*

The species of this group of palmate-pinnated Maiden-hairs have been much misunderstood. Being all once considered as one, they have been classed with

* *Adiantum palmatum*, sp. n.—Froonds scrambling or scandent, elongate-oblong, narrowed to the apex, tripinnate;



FIG. 6.—ADIANTUM SPECIOSUM (½ NAT. SIZE.)

A. Feei, as forming a scandent group; but this at least does not apply to *A. speciosum*. The first to be named was the *A. digitatum* of Presl, a plant of which specimens, presumably correct, are in the Kew Herbarium. The *A. speciosum* of Hooker, described and figured in *Species Filicum* (ii., 45, t. 85 c) came next, and this appears to be well represented by living plants, which have been sent out under this name by Messrs. Veitch & Sons. These two were thrown together under the name of *A. digitatum*, in the *Synopsis Filicum* of Hooker and Baker

pinnales distinct, the lower ones obliquely deltid, the posterior side being broadest; ultimate pinnales large, smooth, distant, distinctly stipitate, the stalks 1—2 inch long, in outline varying from obovate wedge-shaped to semi-orbicular, but all palmately cleft half-way to the base or more, and varying in breadth from about 1 inch to 2½ inch; sort oblong, variable in length, situate at the tips of the segments, usually one to each; indusium glabrous, entire; veins forked, 6—8 to each ultimate segment; stipes smooth, dark castaneous, the rachises also smooth and of the same colour, flexuose.—Hab. Chimborazo and Peru.

(p. 125), and a third species included with them, the latter being that here called *A. palmatum*. The three plants are of course near allies, but they are distinct enough for all practical purposes. *A. digitatum* is by comparison smaller in its parts, and of a much neater aspect than the rest, and, so far as can be judged from the specimens referred to—one from the Berlin Herbarium, where *A. digitatum* originated, and another from M. Glazion—it would seem to be altogether a smaller and a dwarfer-growing plant. *A. speciosum* is of much stouter habit than this *A. digitatum*, and produces broadly and abruptly triangular spreading fronds, 2 feet long and 20 inches broad, the large pinnales of which, and at least the ultimate rachides, are downy; while in the *A. palmatum* now described, the fronds are narrow, elongate, reaching 3½ feet in height, and about 10 inches in breadth, apparently almost, if not quite, indefinite in evolution, and having the rachides and the pinnales everywhere quite smooth, the ultimate rachides being distinctly flexuose.

A. palmatum is cultivated by Messrs. Veitch & Sons, and by Mr. B. S. Williams, of Holloway, to both of whom we are indebted for specimens. Our best examples are from the former, and were gathered by one of their collectors at a high elevation on Chimborazo, where the plant is noted as being rare. This specimen, which may not include the whole of the rachides, is 3 feet 6 inches long, and indicates a scrambling habit, though not perhaps strictly scandent. The rhizome is creeping, and the fronds are of an indefinitely elongated form. A very noticeable feature in the plant is the flexuose or zig-zag character of the rachides, most marked near the apex of the fronds, and in the rachides of the primary pinnae. The pinnales are herbaceous in texture, smooth, large, from 1 inch to 1½ inch in breadth, distant, and very distinctly stalked, the stalks varying from ½ to ¾ of an inch; the terminal ones are usually wedge-shaped, while the lateral ones are usually truncate at the base, so as to become semicircular in outline; they are deeply cut down into from three to

five large lobes, which are again more or less parted, an oblong sorus terminating each of the divisions in the fertile portions. When there are two, the tips of the segments are shallowly toothed. The fronds are deciduous. It will be a very elegant garden plant, as the accompanying illustration shows (fig. 5). We understand that it thrives best in a cool stove temperature, and does not require much water. We have seen it growing vigorously in a house entirely without fire-heat. Our figures were derived from one of Mr. Williams' plants, which we are informed were collected in Peru, by M. Roez.

A specimen, as we have said, was imported by Messrs. Veitch & Sons, and is represented by our accompanying figure 6. It has a creeping rhizome, from which arise stout triangular deciduous fronds, with a lamina nearly as broad as long, and very distinct in character from the elongated lamina of the fronds of *A. palmatum*. The fronds are at least tripinnate, the lowest pinnule fully to inches long, with the first anterior pinnule 2 inches long, and the first posterior one 4 inches, thus forming an unequal-sided triangle. The ultimate pinnules on fronds of this size are from 1 to 1½ inch across, the terminal one being wedge-shaped at the base, and the others more or less truncate, but in the more leafy fronds of a younger stage of development there are often pinnules of 2 or 3 inches in breadth. The pinnules are deeply lobed in about three or four divisions, the lobes themselves being again deeply parted, and the sori oblong, crossing the tips of these ulterior lobes. The pinnules are covered with short dense hairs, which give them a woolly feel. Messrs. Veitch's plants were introduced from Peru. *T. M.*

THE FERTILISATION OF PLANTS.

MR. DARWIN'S new book,* like its predecessors, is a perfect mine of facts and generalisations; and it has been no easy task to digest it. I, however, pursue endeavouring to give as concisely as possible some of the chief facts and conclusions which are of more special value to horticulturists.

In an introductory chapter Mr. Darwin describes the plans pursued, which were as follows. Confining his observations almost entirely to cultivated and conspicuous flowers, he protected by a net the parent plants. Several flowers were fertilised with their own pollen, the seedlings resulting being called "self-fertilised plants." Other flowers on the same plant, the stamens not being removed, so that Nature might be closely followed, were fertilised with pollen from a distinct plant of the same stock, growing, however, under the same conditions. Their seedlings he calls "intercrossed plants." I shall limit the word "crossed" to plants derived by a cross of an entirely new stock. As the two kinds came up, whenever one of each kind appeared simultaneously, they were planted one on each side of a pot. Proceeding thus until from six to twenty or more pairs were established, the remaining seedlings were planted thickly in a large pot or in the open ground, often thus having to struggle for existence, with results to be mentioned hereafter. Conditions of soil, light, moisture, &c., were made as exactly alike as possible.

To determine the results, the relative heights of the fully-grown plants were compared, and a long table in a chapter viii. gives the means for fifty or more species of thirty orders; the height of the intercrossed being fixed at 100—the mean of all the self-fertilised is 87. Mr. Darwin, however, omits certain cases which are more favourable to the latter kind; thus, while inserting all ten generations of *Ipomoea*, he omits all mention of the wonderful self-fertilising and tall variety he named "Hero." Again, of *Mimulus*, while inserting the first to the third generations, he omits the fourth to the seventh inclusive, when the self-fertilised exceeded the intercrossed in height; for while the average difference in the first three generations is shown by the proportion of 100 : 65, in the subsequent years the ratios were as 100 : 110, 100 : 126, and even as 100 : 137; neither has he inserted the second year's growth of *Eschscholtzia*, viz., 100 : 100, nor that of *Lobelia fulgens*, viz., 100 : 167—the self-fertilised being in these vastly superior to the intercrossed! Had our author added these—and I cannot see any good reason for their omission—the resulting mean ratio would have been as 100 : 118! Height, however, as Mr. Darwin confesses, is not always a satisfactory nor even trustworthy test; for it

shows only one element of vigour; and if a plant be unnaturally "drawn," as occurred with *Dianthus*, not even that. The weight of the entire plant, had it been possible to ascertain it in all cases, would have been more desirable. Some few plants were weighed, and a table (B) is added, and the difference is often striking. Thus the height of intercrossed plants of *Brassica oleracea* is to that of the self-fertilised as 100 : 95; that is practically the same; but their respective weights were as 100 : 37; giving a difference between the percentages of fifty-eight! That difference is exceptionally great; for if we take the eleven plants that were weighed, a similar difference between the weights and heights of the mean is twenty-six. Unfortunately weighing could not be always done; and as might be expected, the height in some cases gave adverse results, i.e., the self-fertilised grew exceptionally taller than the intercrossed. The reverse, however, was the general rule. Hence it is concluded that intercrossed plants grow under the same conditions have, at least for the first few generations, a decided advantage; unless the plant, like *Pisum sativum*, has been cultivated for many years and propagated solely by self-fertilisation, for in such a case intercrossing does no good. This advantage is shown in the greater vigour of the intercrossed, especially among the first few, though it does not always show itself from the very first; the self-fertilised seedlings being often equal to or taller than the others; but soon after the preliminary stage is past, then the intercrossed begin to surpass their rivals, and ultimately even greater luxuriance, darker foliage, greater fertility, and brighter tints in the flowers. But after several generations of close interbreeding, the latter become more uniform in colour. This fact is associated with another—viz., that although intercrossing is beneficial at first, subsequently it does no good at all; and then decidedly intercrossed and related plants become equal to, if not inferior to, plants of the same kind which have been repeatedly self-fertilised. Mr. Darwin more than once attributes the slight differences between certain self-fertilised and intercrossed plants to the deterioration of the latter through constant inbreeding; but he does not observe that actual self-fertilisation is a still closer form of inbreeding; hence such results tell in favour of the "lasting" powers of self-fertilisation—that they have not deteriorated, at all events, in the same ratio as the intercrossed. This, again, is analogous to the fact that intercrossing distinct flowers of the same plant often does no good, or the given results inferior to self-fertilisation; excepting in the case of some nearly self-sterile plants. Thus, Mr. Darwin speaks of *Ipomoea*—"That the self-fertilised plants grew a little taller, were heavier and generally flowered before those derived from a cross between two flowers on the same plant." A few cases, such as *Digitalis*, *Eschscholtzia*, *Corydalis* alba and *Oncidium* are mentioned, in which a slight advantage accrued to the offspring of flowers fertilised with pollen from others on the same plant. It is an observable fact that these four plants are nearly self-sterile, so that it would seem that the flowers on the same plant had become more and more highly individualised in some way, though it would be dangerous to generalise from so few cases, especially as it was not the case with some other self-sterile plants. An interesting case, not recorded by Mr. Darwin, is the *Victoria* regia, which is said to have yielded 25 seeds only when naturally self-fertilised; 60 when artificially self-fertilised; 100, when by pollen from a different flower on the same plant, and as many as 300 seeds when intercrossed with pollen from a separate one.

The third series of experiments brought out the most important result of all—that when either intercrossed or self-fertilised plants were crossed with pollen from plants raised from an entirely new stock, the ancestors of which had grown at quite different localities, then the resulting "crossed plants" vastly superseded the self-fertilised, and very greatly, though to a less extent, the intercrossed plants of nearly related origin. Every element of vigour was usually enhanced, and colours became much more varied and pronounced. These experiments thus strongly corroborate the value of seed growers and propagators, of introducing fresh seed from distant localities. Here, then, we may see how Nature brings to her aid various means to effect this. Insects do the first office in intercrossing the closely related plants growing in the same district; and the strong persistency in Nature would imply that all the individuals of a species growing in the same

locality were not only closely related, but were seldom crossed with pollen brought from a great distance. This is the first step in the progress of improvement. As the species spread into other areas, birds, especially, perhaps, "of passage," will carry about seeds from different stocks, and having introduced them into new areas, insects will then fertilise the old long-residents by means of the newly bird-imported seedlings; while the fact that insects and birds often feed more or less exclusively on one and the same kind of plant respectively, will favour such crossing. Illustrations will be hereafter given of the benefits which result from crossing distinct stocks.

It may be interesting to the reader to know that Dean Herbert long ago anticipated these results of Mr. Darwin, for he says (*Amateur's Notebook*, p. 371)—"I have inclined to think that I have derived advantage from impregnating the flowers from which I wished to obtain seed with pollen from another individual of the same variety, or, at least, from another flower rather than its own . . . and especially from an individual grown in a different soil or aspect."

Though self-fertilisation does not usually produce such marked results as intercrossing, nor the latter such benefit as crossing with a distinct stock, yet it must not be supposed that, therefore, plants cannot fertilise themselves. The known number of self-sterile plants is very small, i.e., plants in which the flower's own pollen is not a sufficient stimulus; and even these would probably become self-fertile under certain climatal conditions, as some are known to do, especially on the reduction of temperature. Moreover, in several instances amongst Mr. Darwin's experiments the self-fertilised were more prolific and more vigorous than the intercrossed and in some genera highly self-sterile forms appeared and transmitted their self-fertilising properties to their descendants; so that, as was the case with *Hero* in *Ipomoea*, they did not even profit from a cross with a distinct stock! Then again many plants possess "deistogenous" flowers as the *Violet*; i.e., minute nearly apetalous and closed flower-buds, which produce an abundance of good seed; while on the other hand conspicuous flowers adapted for intercrossing often set no seed at all in the absence of insects. Lastly, a considerable number of our wild genera with very inconspicuous self-fertilising flowers, such as Chickweed, Knotweed, Fumitory, &c., are abundant in individuals, prolific, and very rapid seeders, vigorous in growth for their size, and when transplanted into other regions of the globe, as *Polygonum aviculare* into New Zealand, grow to much larger dimensions, and, what is more remarkable, completely invert the rule, so that Mr. Darwin's observations on cultivated plant—[or for they set out the native population, and are wonderfully vigorous in the struggle for life! On the other hand Mr. Darwin's experiments on cultivated plants clearly show the great superiority of intercrossed, and especially crossed, plants when under competition with self-fertilised individuals. Mr. Darwin, though often speaking of the "evils" of self-fertilisation (a term which I hope to show requires a relative interpretation only), is obliged to confess "that self-fertilisation is in some measure more beneficial than 'crossing,' and under certain advantages, and this is only to be acquired by different constitutions in the parents."

Some horticultural importance lies in the fact that the colouring of self-fertilised plants always tends to become extremely uniform in successive generations. This tendency already appeared in the later generations of closely related intercrossed plants subjected to the same environing conditions; but it is even more marked in the case of self-fertilised plants; and an obvious fact issues out of this—that if horticulturists wish to retain and render permanent any particular "strain," they should carefully select it, and then endeavour to fix it by securing self-fertilisation as much as possible, accompanied by entire freedom from competition.

The first chapter of Mr. Darwin's work being introductory, is followed by five chapters in which are recorded the results of his experiments on a large series of plants, the seventh chapter containing tables and a summary of these results. I propose in the next communication to select some of the more interesting cases. The subsequent contributions to the *Gardener's Chronicle* will treat of the various matters dealt with by Mr. Darwin in the remaining five chapters of the book. *George Huxley.*

(To be continued.)

*Cross and Self-Fertilisation of Plants. By C. Darwin. Murray.

A PLEA FOR THE SPECIALIST.

IN your issue of December 16 you favour us with your views on the "number of special societies that are springing up on all sides."

With your opening paragraph I believe you will have an almost, if not quite, universal sympathy, and few so sensitive, or however obtunded, may discern their normal condition, will object to the gentle banter you bestow upon them; but to the closing propositions of your article I feel bound to take exception. Thus you say, "Let a man be a specialist by all means if he likes, but before he bands with others in what we may call a corporate capacity . . . let him be thoroughly well versed in general horticulture." This appears to me, unless interpreted in so narrow a sense, as liable to fritter away its meaning to involve a paradox. As well might we say "let no man study anything unless perfectly informed upon a subject to be studied." As a matter of fact in my experience the specialist, whether of horticulture or floriculture, becomes versed in general horticulture as the result of his specialism, not as a necessary introduction thereto; and he bands himself with others in a corporate capacity, not alone to extend his special acquisitions, but for the acquisition of that knowledge collateral to and lying around every point of his field of specialism, whether it be large or whether it be small.

Going back over a large number of years, I can recall few instances where the cultivators and development of special tastes have been injurious, and none where the really earnest, devoted florist, has not been catholic in his sympathies, though his circumstances utterly forbid his attempting "general horticulture;" and so far from assenting to your proposition that the cultivator of the Rose, the Tulip, the Auricula, or the Carnation, in the gratification of his tastes and opportunities is not "promoting some great and worthy object, such as horticulture, for instance," I holdily assert, that every one who adds aught to our knowledge of those subjects, or to the development of beauty in the subjects themselves, adds to horticulture, and may be said to deserve well of his country. Throw away the work of the specialist, and there, indeed, would be horticulture?

It is quite true there is nothing "in the cultivation of Roses, Auriculas, Carnations, Tulips, &c., that differs aught in broad general principles from the culture of any other plant," but I cannot admit that, because in the, as I hope, passing paralysis of the central body—which, if vital and vivacious, would make such action unnecessary—florists join together and organize shows of horticulture, they specially affect, they largely "degrade horticulture, with its widely beneficent aim, its hopeful future, its philosophic basis, into a mere affair of prize-money and flower shows." An acquaintance such as I have had with special shows and their results would lead the writer, I am confident, to a different conclusion. He would find no degradation of horticulture in them, and as for its being an affair of prize money, the florist who thought to make money by such means would be simple indeed.

But speaking with a commercial experience of upwards of forty years, and, therefore, of many men, I say to you, "I know many more matters of mercenary feeling!" It is his greatest delight to share the objects of his care and regard with his brother florists, no matter what may be the difference, for he knows none, no special degree, but he instinctively turns from the pretender.

For myself, and I doubt not I may assert the same for others taking action for the promotion of these special shows, I shall be indeed thankful when the necessity for such action has no existence. But where around London, save for this special action, can you point me to a field for a display of the Auricula, the Rose, or the Carnation, or a point for the gathering together of the growers thereof, and the interchange of kindly feeling beneficent alike to the man and the subjects of his regard? And surely, whilst it has hitherto been, and as I think is likely ever to be, that the mighty mass of workers in every direction must be specialists, you would not harshly deprive them of the delight which is their garden. Adopting a phrase from Macaulay, I may say the culture and study of the Carnation and Pictote has been "beaten in sickness, wearied in poverty, society in solitude" to me, and I doubt not a similar romance has been known to others—many others—of my brother specialists.

Work by all means, and with the utmost energy, to remove the occasion, and the developments of specialism; but do not involve the specialist in condemnation, because he refuses to stand still when, from its faults or misfortunes, or both, the central body is paralysed and helpless. E. S. Dodsoll.

THE NEW PLANTS OF 1876.

IN taking a retrospective view of the new plants of the past year, we find as usual that stove subjects predominate. This circumstance we suppose must be attributable to the generally more brilliant foliage and inflorescence of tropical as compared with temperate plants, and which fact we may believe induces the introducers of novelties to send their collectors into those countries which yield them subjects likely to be appreciated in these luxurious times. It is to the enterprise of these gentlemen—of whom Messrs. Veitch, Bull, Lowe, Williams, &c., in this country, and Messrs. J. & F. Hooton, Verschaffel and Jacob-Makoy in Belgium stand in the foremost rank—we are now mainly indebted for these introductions from foreign lands; and taking into account the enormous expense and the personal risks encountered in this adding to our home enjoyments, the horticultural world may well accord its heartiest thanks and warmest support to those who, at such risk, cater to enhance its pleasures.

FLOWERING STOVE PLANTS.

Of the flowering section of stove plants there is nothing very startling to record, though there are several of fully average importance. Taking them in alphabetical order, we have first to note *Aphelandra Smitzii*, a showy Peruvian *Acanthoid*, with the costa and main ribs white, and the branches surmounted each by a spike of dazzling scarlet flowers issuing from crimson bracts. In the same category come *Episcia Luciani*, a Columbian Gesneriad, with fascicles of bright red pubescent salver-shaped flowers; *Eranthem roseum*, an *Acanthoid* erect habit, with bell-shaped, pinkish-lavender, and spikes of purplish red flowers, having a long, slender arching stem introduced from the Amazon district; *Griffinia ornata*, a Brazilian *Amaryllid*, of winter-blooming habit, with broad, elliptic, petiole leaves, and large umbels of delicate purplish lilac flowers, on compressed scapes; *Hibiscus Collieri*, a shrubby Malvaceae from Polynesia, of the rose-stained type, with large double yellow flowers, stamens at the base with crimson; *Ixora regina*, a splendid variety, with bright orange-scarlet flowers passing to yellow, and growing in dense massive heads; and, finally, *Urthezia Endresti*, a West Indian *Lentibularioid*, remarkable, like its close ally, *U. montana*, for simulating when in blossom the aspect of an Orchid; in this case the leaves are lance-shaped, and the flowers freely produced, of a pretty lilac colour with a yellow paler, those of *montana* being white. Practically, Messrs. Veitch's splendid *Poinsettia pulcherrima plenissima* is a plant of 1876, since it is only distributed in that year, but its existence was made known sufficiently early in the previous year to permit of its being included in our summary of the novelties of 1875. We have heard of this plant having in some instances been disappointing, but, if really so, it may well be attributed to temporary weakness arising from the excessive multiplication which was found necessary to meet the demand for it.

FINE-FOLIAGED STOVE PLANTS.

The choice among stove plants cultivated for the beauty or interest in their foliage, is larger, but here again there is no one subject sufficiently prominent to be singled out for special remark, and we shall therefore take them in alphabetical order. This arrangement gives the precedence to *Aralias*, and certainly in numbers, perhaps in merit, they are entitled to this distinction. We have here first M. Linden's *Aralia gracillima* (doubtless a form of Veitchii), in which the toothletted leaflets of the slender digitate leaves are reduced to the narrowest dimensions; then come *Aralia elegantissima*, a plant of similar character, but with broader narrow lanceolate toothletted leaflets, which are slightly drooping, and of a deep green colour shaded with brown, the midrib being ivory-white; the New Caledonian *Aralia splendensissima*, a densely-leaved plant, with long pinnate leaves, having about eleven pairs of opposite entire or lobed shining undulated leaflets; and *Aralia ficifolia*, *alias spectabilis*, from

the South Sea Islands, a very handsome plant, having bright green pinnate-pinnatifid leaves, the leaflets lanceolate-ovate, and the segments lobulate. These *Aralias* are all extremely valuable decorative plants, and M. Linden's diminutive *A. gracillima* is indeed quite a gem, and must not be confounded with a simple-leaved plant sent out under the same name by Mr. Bull. *Alcaosia Johnsoni*, another acquisition of the year, shown at Brussels, is remarkable for its erect arrow-shaped dark green leaves, which are veined with red, and supported by purple-mottled stalks furnished with short prickles arranged in groups and spiral lines. *Cildemia vittata* is an erect-growing Peruvian Malvaceae, and the segments of its leaves of a rich metallic blue, with a central bar of white. *Carmeria Wallisii*, of which we intend to publish a figure shortly, is a remarkably elegant dwarfish plant from New Grenada, with the oblique oblong-elliptic leaves freely marbled with angular blotches of white. *Crotons* are still pouring in, but we are not able to report any that exceed in beauty those already known, or introduce novelty of character like the *C. Diemeil* and *C. trilobus* of last year. The best are *C. Macraecaeus*, *C. Mortii*, *C. Andreanus*, and *C. Mooreanus*. *Dieffenbachia* is still a favourite, and *Colandrea* plants, is of a distinct type from those in general cultivation, being of dwarf habit, with spreading lanceolate-oblong leaves of a satiny green, marked with a broad feather central band of white. *Draenas* have been well represented throughout the year by the novelties introduced by Messrs. Wills, Linden, Bull, Veitch and Williams, but unfortunately their number is embarrassing; and singularly enough those of a very distinct type, having a salmon or flame-red tint conspicuous in their variegation, giving them quite a novel, and, as it seems to us, a very ornamental aspect, have failed to win the suffrages of plant judges; but some of Mr. Wills' high-coloured narrow-leaved types will, however, be found invaluable as decorative plants both for tables and plant-houses. *Maranta Massangana*, a Brazilian species, is a beautiful addition to the dwarf forms of this ornamental family; its leaves are spreading, roundish-oblong, flat, of a rich velvety maroon, marked through the centre with a green silvery band and vein-like lines running out to the lower margin. *Philodendron Holtzmanii* is a striking plant with deflexed lance-lobed leaves, of a bluish-green, the young leaves of an beautifully puce-coloured (see 1876, p. 365, vol. vi). *Phyllanthus roseo-pictus*, a South Sea Islander—evidently of the same specific type as that called *P. nitrosus*, with much of the foliage pure white, and *P. atropurpureus*, with the growths similarly of a dark purple—is the prettiest of the triad, the stems of the young shoots being purple, and the small ovate leaves green, blotched with white, and suffused with crimson. The climbing *Smilax Shuttleworthii* is one of the plants sent home by Mr. Shuttleworth, who has just returned from the large country with his life in his hands (see p. 18); it has a green cordate leaves of a deep green colour, mottled with dull grey on the face, and of a purple hue at the back.

PALMS.

Certainly one of the most beautiful of the novelties among Palms is one which M. Linden calls *Kenia gracillima*, introduced by M. Linden from New Caledonia, and recently figured in *L'Illustration Horticole* (t. 253), and which, as it is, as it were, the true leaf, might well bear the name of *Kenia gracillima*. It is said to have a slender stem as that of an orchid's finger, and extremely elegant fronds about 2 feet long, with an ovate, pinnately-parted limb of about twelve distinct narrow linear, drooping, pointed segments, almost rivaling *Cocco Weddelliana* in graceful beauty, and at the same time very distinct. *Kenia Linderi* has the young leaves coloured red in *Welfia regia*, and is of stout and vigorous habit, the mature fronds being of a deep green, with reddish brown varnished stalks. Two handsome new Palms have been introduced by Mr. Bull from the United States of Colombia, *Prinz Geronimo Grantii*—named by Mr. Carder, who, as related at p. 18, comes home stripped of all his belongings, in company with Mr. Shuttleworth—has erect pinnately-parted leaves, with broad segments varying in width; the other is *Chamædorea formosa*, which is also pinnately divided in a more symmetrical manner with numerous narrow linear-lanceolate pinnae, 18 inches long. It may be noted that the Californian Fan Palm, introduced under the name of *Brahea filamentosa*, has now the generally accepted name of *Prinz Geronimo Grantii*, whatever name, it is a most welcome and ornamental plant, thoroughly adapted for greenhouse culture. T. Moore.

(To be continued.)

MRS. PINCE'S BLACK MUSCAT GRAPE.

I CAN hardly hope to accomplish the task which your correspondent "Enquirer" (p. 21) has assigned me, viz., pointing out the cause of this excellent late variety of Grape so frequently failing to take on the desired colour, or declining to appear in a "black dress," as your correspondent so well puts it.

I will, however, endeavour to answer some of the questions he asks, and will even venture to hazard a conjecture as to what I consider likely to be at least one of the causes of the non-colouring of the fruit of this useful and delicious variety.

"Enquirer" asks if the Vines are referred to "are of the same age similarly cropped, both having the same relative proportion of foliage and fruit, and especially are they from the same source?" As regards the first question, or as regards the first and last portion of this compound question, the Vines are of the same age, and are also from the same source, being each the produce of scions taken from the same plant, which was procured direct from Mr. Pince's establishment soon after the variety in question was distributed; each was grafted upon similar stocks, viz., the well-known West's St. Peter's variety. The two Vines are to all appearances equally healthy, and there is no perceptible difference in the condition of their leaves; but one of the Vines certainly bore a heavier crop than the other, and the Vine which bore the lighter crop was that which produced the best-coloured fruit. In stating that one of the Vines bore a heavier crop than the other I do not wish to infer that it carried an unduly heavy crop, more particularly when compared with the crops borne by other varieties in the same house, such as Lady Downe's, Alicante, and West's St. Peter's, of which ripened and coloured their fruit as well as could be desired. But a weight of fruit which might not be a too heavy crop for any of the varieties just named, might nevertheless be so for a Vine of similar dimensions with the Mrs. Pince's variety, which may inherit from its parents (one of which was the Muscat of Alexandria) some innate constitutional weakness, which prevents it from being able to properly colour its fruit when subjected to the strain of anything approaching to a very heavy crop; so that I feel constrained to consider over-cropping, or allowing the Vines to carry a greater weight of fruit than the health and strength of the plants appear to justify, as a fruitful cause of this fine variety so frequently failing to properly colour its fruit.

The weight of fruit which may with propriety be left upon any given plant must, of course, be left to the judgment of the cultivator, who ought to be guided in the matter by the more or less vigorous and healthy condition of the same; and I am inclined to think that in the case of the Mrs. Pince's Grape a moderately light crop will generally mean well coloured fruit, and *vice versa*. It is all very well to say that the fox-coloured fruit of this variety is equal in point of flavour to the black, which is in many instances really the case; but, as Mr. Gilbert very wisely says, it is quite as necessary to please the eye as it is to please the palate.

It has been suggested that this Grape may require a higher temperature, viz., the temperature of the Muscat-house, to induce it to ripen and colour to perfection. This may be so, but as far as my experience in the matter goes, this has not been found to be necessary; but it must be borne in mind that the natural soil here is light, and of a dry, warm nature, and this circumstance doubtlessly operates more favourably in the ripening of certain fruits than would those of a soil of a cold and wet character. Soon after Mrs. Pince's Grape was introduced I was engaged in planting a winery for the purpose of furnishing a late supply of fruit, and having formed a favourable opinion of this variety from what I had heard respecting its good qualities, I procured a plant of it, as I have already stated, direct from Mr. Pince. This I planted under the central rafter of the house, under each of the other rafters a plant of the Lady Downe's Grape was planted, the roots being placed in a prepared border outside. I am no advocate for giving the roots of Vines the option or choice of remaining inside or going out, but prefer to know for certain as to their whereabouts.

From the plant of Mrs. Pince's Muscat in the centre of the house two rods were taken, which, during the first, or, it may be during the second season, reached to the top of the house, and were then brought to a hori-

zontal position, along the front of the house, and from these rods a shoot was trained vertically under the centre of each light, and, as has already been said, a rod of the Lady Downe's variety was trained under each of the rafters—the object of this arrangement being that, in the event of the Mrs. Pince variety proving as valuable as was expected, the plants of Lady Downe's might be removed, and the one plant of Mrs. Pince's might be allowed to occupy the entire house.

This intention, however, has not as yet been carried out, as the two ladies continue to thrive so well in the company of each other, that it has not been thought advisable to disturb them. The house containing them is what we consider our latest, and the crop is still entire, and is what I suppose may be considered as a regular (but not a heavy crop) of medium-sized bunches, which as yet (January 9) shows no symptoms of shrivelling or decay. The fruit of Mrs. Pince's is in all respects as well-ripened and coloured as that of Lady Downe's, and I cannot perceive a fox-coloured berry in the house. A somewhat close inspection is necessary to distinguish the one sort from the other, the fruit of Mrs. Pince's being quite as black as that of Lady Downe's. The house they occupy is only furnished with a common fire-brick, which was only used for about ten days or a fortnight during the time the Vines were in bloom, and occasionally during the present wet and damp weather, in order to keep the atmosphere of the house as dry as possible; so that it does not appear that a high temperature is absolutely necessary to thoroughly ripen and colour either of the varieties in question. P. Griev, Cuford, Bury St. Edmunds.

THE CULTURE OF WOOD IN LINCOLNSHIRE.

THROUGH the courtesy of Mr. Fitzalan Howard, who, with his brother, Mr. Frederick C. Howard, carries on the growth and manufacture of this curious and now little known article of commerce, I early in December last, had the pleasure (although in a teeming rain) of walking over the farm and of inspecting the process of manufacture. Mr. Howard also kindly afforded me full information as to the course of culture, and the after-treatment adopted in preparing it for market.

For more than a century the cultivation of Wood (or "Woad," as it is called by the labourers) has been carried on by the Howard family, and some twenty years ago the father of the Messrs. Howard, who now conduct the business, purchased about 100 acres of land at Parson Drive, a village about 5 miles from Wisbeach, for the express purpose of growing Woad, to which place he moved the necessary mill, ranges, &c., required in its manufacture.

The plant itself (*Isatis tinctoria*) is a hardy biennial, with a fusiform fibrous root, and smooth branching stem, rising to the height of 3 or 4 feet when flowering; but it is the plant in its first year's growth with which I have to treat, and it seldom then attains a greater height than 12 inches. Mr. Howard says that it is on record that it has reached 15 inches on soil most unusually rich, and in a season favourable to its growth, but the average is to be put down at from 8 to 10 inches. Being a most exhaustive crop, none but the richest and best soils are suited to its successful cultivation; it is therefore never grown on any but the best old pasture land. From this fact, and that the demand for the manufactured article is very limited, the area annually devoted to the crop is not extensive; indeed, with the exception of some two or three growers in Lincolnshire, and one, the Messrs. Howard are the only persons engaged in the trade.

The first point, therefore, is to obtain soil adapted for its growth, and as landlords seldom will sanction the breaking up of old bullock pastures (the only land on which it can be grown to advantage), the Howards, as before mentioned, have been obliged to purchase land for the purpose at about £100 to £120 per acre. This point, taken in connection with the fact that after six years of cropping even the best soils become exhausted, makes the rent stand at a very high figure to start with.

Early in the spring the land is prepared by first breaking up the sward, and ploughing the land into stretches 12 feet wide, and by working it into a solid and fine condition. At the end of April the seed is drilled (about 3 bushels per acre), with an ordinary

6-foot corn drill with eight coulters, 9 inches between the rows, thus giving sixteen rows of the plant, or one round with the drill, on a stretch. Sometimes, when the land has been cropped for four or five years, and wants refreshing, about 4 cwt. of artificial manure per acre is drilled with the seed.

As soon as the plants have developed the third leaf-rolling is commenced, being most essential that the crop be kept clean. This work is carried out by families employed on the farm, to whom the several operations of weeding and cropping are put out at so much per acre. In weeding, a short-handled, broad spud, made for the purpose, is used, the labourer carefully chopping up all weeds and drawing them into the furrows between the stretches. It is a curious fact that, notwithstanding the utmost care, the small Nettle can never be entirely eradicated, and each year it gives an immense amount of trouble to the labourer. Chickweed, also, is a boon companion of the Nettle, and is almost as great a nuisance to the Woad grower.

At the end of July, or as soon as the plants are sufficiently ripe, which condition is known by the under leaves beginning to assume a yellow tint, the first gathering, or "cropping" is commenced. This operation is performed by persons upon their knees, who carefully twist off the leaves of the plant, and deposit them free from dirt into large wicker baskets—some what like overgrown Apple skeps—and they are at once conveyed by men to carts to be taken to the Woad-mill, where the following course of treatment is adopted. Before, however, I can fairly explain the operation of grinding, it is necessary that I should roughly describe a Woad-mill. First, then, imagine a small equineum circus, 30 feet in diameter, paved with Yorkshire slabs; beyond this circle upon a platform some 18 inches higher than the slabs, three horses, each yoked to a large wooden wheel, 8 feet in diameter, and about 2 feet wide, shod with iron bars, like the paddles of a steam ploughing engine, slowly walk round. The Woad leaves having been tipped from the cart into the mill, are thus placed in contact with the wheels which, weighing 10 or 12 tons, reduce them to a pulp, this being removed from the mill it is thrown into heaps to drain some of the watery juice away from it, after which the process of "balling" commences. This work is also put out, and is paid for at so much per ton of dried and manufactured Woad, the pulp being worked up into lumps about the size of Cocoa-nuts. These balls are then carried to the "range," or drying shed, which is a long and lofty wooden structure open on all sides, with a rough, weather-proof roof, under which five tiers of watted hurdles, called "flakes," about 3 feet under each other, are placed, and on these the Woad balls are laid out singly to dry. In ordinary seasons this is completed in about three weeks or a month, after which they are put into "pens" until they are crushed, the particulars of which process are described further on.

The first cropping over, the land is again carefully weeded, often twice or three times, and the second "cropping" is generally taken and "balled" before November 23, when "yard work" begins, and it is from this point that the chief art of the Woad-man is called to account, for upon the successful crushing and "balling" of the Woad the value of the product is estimated. The crushing (of the balls) is performed in the mill, in the same manner as the grinding of the leaves, after which the dried matter is thrown on to a floor, to the depth of about 2 feet, called "the couch," where fermentation is carried on, the process being completed in about eight weeks, a constant turning of the mass being necessary, and more or less water being added, as the heat may be excessive or otherwise.

The smell of Woad when "in couch" is very strong, and is so disagreeable, but I believe that it is not unhealthy, for I am told that "Woad-men live as long as they like," or, at any rate, to a good old age.

Mr. Howard says that many years ago the rector of the parish where his father was then growing Woad expressed his dissatisfaction at Mr. Howard's assessment of the value of the crop of Woad in his payment of tithes, so his father measured off a tenth of the field, and left it with "his reverence" to harvest and utilize as he thought well. Of course, the rector could do nothing with it, and in after years, when Mr. Howard's valuation was taken without question, Times have altered since then, and so have parsons, for Mr. Jackson, the present vicar of Parson Drive,

although his dining-room windows open on to the "range" and "couch" of Mr. Howard's Wood farm, from whence sometimes proceeds anything but a savoury odour, yet never complains, but counts Mr. Howard as his best if not his sweetest neighbour. *Wibeach, in the "Agricultural Gazette."*

THE ALGERIAN SPECIES OF CROCUS AND FRITILLARIA.

As far back as the *Flora Atlantica* of Desfontaines, the first volume of which was published in 1798, a Crocus has been recorded from Algeria. By Desfontaines the plant was referred to *vernus*. Of this, till the present year, I have never been able to obtain sight of a satisfactory specimen. Having been engaged lately at Kew in incorporating with the general herbarium the Algerine collection of the late Giles Munby, which after his death was presented by his family to the herbarium of the Royal Gardens, I was very

diameter, with thick tunics, which are entirely composed of fine parallel fibres. Leaves four, contemporary with the flower in December, rising up to a level with it at the flowering time, narrow linear, with strongly revolute margins and a distinct white central band. Top of the flower 4 inches above the top of the corolla. Proper spathe one-veined. Perianth-tube dull purplish, protruded $\frac{1}{2}$ —1 inch from the spathe. Perianth-lobes 1 inch long, the equal obovate obtuse segments $\frac{1}{2}$ — $\frac{3}{4}$ inch broad, whitish, with three faint lilac stripes all down; throat glabrous, concolorous. Stamens half as long as the limb; anther yellow, twice as long as the filit glabrous filament. Pistil rising to the top of the anthers, orange-yellow, the three short cuneate forks strongly toothed on the upper edge.

Mr. Munby's specimens were gathered by M. Pomel in December, 1855, at Rass el Assoua, near Gharrouban, and it is to be hoped that laying the matter before the readers of the *Gardeners' Chronicle* may be the means of the plant being refound and made fully known.

At the same time I should like to call attention to

and the same plant, which I would now name and describe as follows:—

Fritillaria Munbyi, Baker, n. sp.—Bulb globose, $\frac{1}{2}$ — $\frac{3}{4}$ inch in diameter, with membranous tunics. Primal leaves (produced before the flowering-stem appears) oblong, acute, $1\frac{1}{2}$ —2 inches long, narrowed to a distinct petiole, which is longer than the blade. Flowering-stem 1—1 $\frac{1}{2}$ foot long, slender, glabrous, ending in a single drooping flower. Leaves 3—5 to a stem, scattered over the upper half of it, all alternate, or the uppermost opposite or very rarely ternate, 2—3 inches long, the upper ones linear, the lower ones lanceolate, $\frac{3}{4}$ —1 inch broad. Perianth campanulate, 12—15 lines long, dark violet-purple, obscurely tessellated on the face, and sometimes banded down the back with green, the outer three oblong, $\frac{1}{2}$ — $\frac{3}{4}$ inch broad, the three inner obovate, $\frac{3}{4}$ —1 inch broad, all furnished with an obscure greenish oblong nectary above the claw. Stamens half as long as the perianth. Anthers oblong, a third as long as the glabrous filaments. Ovary clavate, under $\frac{1}{2}$ inch long; entire part of the style as long as the ovary; three subulate stigmatic forks half as long. Capsule obovate-oblong, under 1 inch long, furnished with a distinct neck, obtusely rounded on the sides. Seeds discoid,

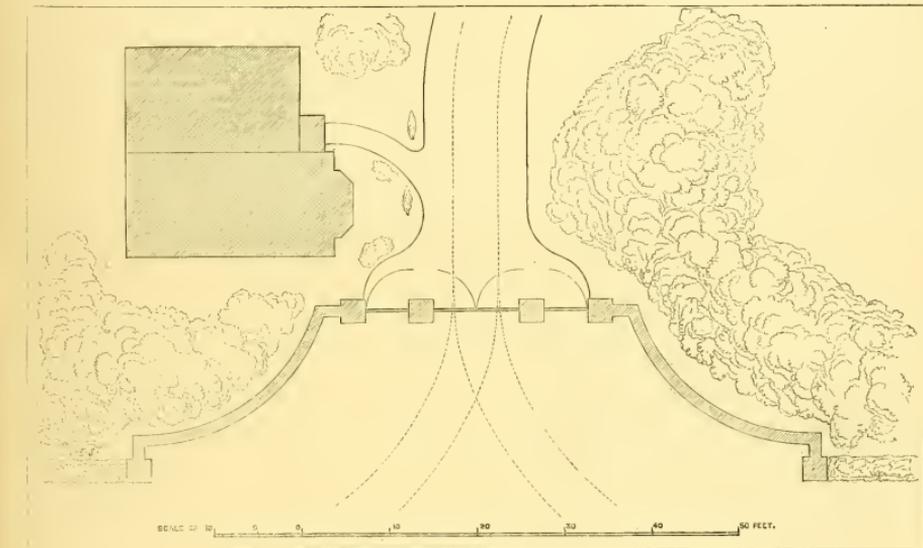


FIG. 7.—DESIGN FOR A PARK ENTRANCE.

pleased to find that it contained three intelligible specimens of an Algerine Crocus. In the second edition of Munby's *Algerine Catalogue* the genus is dealt with as follows:—

- "*Crocus vernus*, Linn. ? Ex Desfontaines.
- "*Crocus verticor*, Gawl. ? Regio Atlantis Provinciae Oran, rarissimus; Gharrouban."

The plant contained in the herbarium seems to have been lately regarded by Mr. Munby as *C. Salzmanni*, but the probability seems to be that these three names, as far as Algeria is concerned, all refer to one and the same plant, and that there is only one Crocus in the country. This plant I have no hesitation in regarding as a new and undescribed endemic species, which should be placed amongst the autumn-flowers of the section *Odonostigma*, next to *C. Salzmanni*, from which it differs materially both in corolla-coats and perianth-limb, resembling in the former *C. vernus*, and in the latter some of the forms of *C. biflorus* more than anything else. The following is as full a description as I can give without palliating the specimens in pieces.

C. algeriensis, Baker, n. sp.—Corm ovoid, $\frac{1}{2}$ inch in

the genus *Fritillaria* as represented in Algeria. The following is what is said about it in the last edition of Munby's *Catalogue*—

- "*Fritillaria montana*, Hoppe ? ; *F. pyrenaica*, Munby, Fl. Alg., non Gawl. ; *F. Melegria*, Desf. ? n. n. Linn. ; Oran, rather rare (*au nova species*).
- "*F. messanaensis*, Rafin. High plateau of the province of Algiers, rare (Boghar)."

In the second part of Munby's fasciculus of Algerian plants, published in 1851, under No. 33 are given specimens of a *Fritillaria* which is named *montana*. In my monograph of the genus, published in vol. xiv. of the *Journal of the Linnean Society*, I have described a plant under the name of *F. lusitanica* var. *algeriensis*. After studying the full material in Mr. Munby's herbarium, in the shape of specimens both in flower and fruit, and a coloured drawing evidently made from the living plant, I am led to conclude that all the specimens in his herbarium are identical with my *lusitanica algeriensis*, and that it is an endemic Algerine species, closely allied to, and intermediate between, *lusitanica*, *pyrenaica* and *messanaensis*, and to suspect strongly that all the foregoing names belong to one

$\frac{3}{4}$ —4 lines broad, pale brown, with a thick, distinct border.

The plant flowers in February. The specimens I have seen are from "Oran, in collibus herbosis" (Munby), "Oran, montagnes" (Dow), "Petite nord du Djebel-Santo, près d'Oran" (Balansa, Fl. Alg. 1852, No. 223), and "ad plantium Rass el Assoua, Gharrouban, Flemeun" (Munby, the same station as that of the Crocus). For garden purposes the more southern *Fritillarias*—*pyrenaica*, *lusitanica*, and *messanaensis*—and now let us add *Munbyi* (which I see from the herbarium that Mr. Munby had in his garden at Wood Green in 1874, and which therefore is very likely in existence in a living state somewhere in the country now, and not improbably may be in our Kew set of the genus)—are to my appreciation far less ornamental than our English *Melegria*. *J. G. Baker.*

A PARK ENTRANCE.

The annexed (fig. 7) is a plan of entrance well adapted to a first-class mansion. It was arranged for a gentleman living in one of the home counties. It faces a road running parallel to it; hence the necessity of setting the gate well back, so that an easy means of

ingress and egress might be obtained. In this plan there is a central entrance for carriages, and two side entrances for pedestrians. Should the gates be of iron it would be necessary to make the carriage gates in two parts. If wood be preferred, one gate will be sufficient.

It is quite lamentable to see so many fine domains in different parts of the country with entrances quite unsuitable and out of keeping with the surroundings; in many cases, indeed, scarcely fit for a modern farmyard. It is to be hoped that these sketches may induce proprietors, having entrances of this mean, unbecoming character, to improve them. An entrance should be a kind of preface to the place, and explain pretty well what we may expect to find, as to matters of taste and fitness in the park and the gardens. *G. Eyles, 44, Eardley Crescent, South Kensington.*

Forestry.

THE last number of the *Indian Forester* contains an article putting in a very clear way the views of those who advocate the sending of students to Germany or France to study in the forest schools. We extract a portion of the article, which is sure to arrest attention. We cannot, however, see any reason why a good grounding in theoretical and practical forestry may not be obtained whenever the proper organisation is established in Scotland or elsewhere within easy access of woodland. This obtained, the pupil would be in a better condition to profit by a visit to Germany than he is now. After all, in the case of youths of this description it is the training they receive, which, together with their natural intelligence, is the main point. The circumstances with which they have to deal in India are so different from those which they have to encounter in Europe, that a good grounding in general principles is all that can be effected here, whether in Germany or in Scotland.

"Of large areas of natural forest, often subjected to a long course of previous ill-treatment, and now destined to be used for a commercial trade, it is to be seen, the country is absolutely dependent (both as regards local and export consumption) for a variety of products, the British forester knows absolutely nothing. No such areas exist in the country, and consequently no forester in Great Britain has ever been called on to treat such areas either theoretically or practically.

"British foresters, and *d fortiori* British botanists who are not foresters, are therefore completely out of count when attempting to argue on the requirements of training in a service destined to deal with large tracts of forest land of this class.

"It is perfectly true that botany (systematic and physiological), surveying, the arts of draining, planting, thinning, felling, &c., are of the highest importance, but they are only detached parts of a subject, and do not cover the mere fact that the great points—the 'weightier matters' of the law, viz., the preparation of 'working schemes' for forests, and the treatment of forest on the system of natural regeneration, are not even alluded to in the curriculum of studies, is not only insufficient in itself to prove what I above argue regarding the necessary incapacity of foresters to only handle a subject, and understand our Indian requirements, but shows further that, if the forest officer came out ever so well trained in the proposed course, he would still be ignorant of his chief duties.

"It must not be supposed that I am casting any slur on the well deserved reputation of many English and Scotch foresters in their own line. It is not the British forester's fault that he is not a large student of natural forest to deal with, no rights and privileges to be provided for, no immense tracts once stocked with valuable timber which have to be led back into a condition of productiveness, and so forth, any more than it is the fault of England that it does not produce the silks of Lyons or the tobacco of Havana. And therefore I cannot conceive why it should be resented by any one as a hard saying that British forestry is incompetent for Indian requirements.

"We go to France and Germany, where there are schools teaching forest management (in the enlarged sense of the term), not because we love foreign things and despise those at home, but just as we go to foreign markets because there we produce what we do not. We do not think it a reproach in the one case, why should we in the other?"

"Of course I am fully aware of the difficulties of the New Forestry question and of the rights of common, &c., which have to be dealt with in proceedings under the Enclosure Acts; but that is quite a different thing from managing forests with a view to the yield of different classes of materials for right holders and communities having rights.

Foreign Correspondence.

MOTOLA, NEAR MENTONE: *Jan. 1, 1877.*—I send you a list of plants I find in flower here in my garden to-day, which may interest your readers; as I have no greenhouse they are all in the open air. Abundant rains have fallen during the month of December, and the weather being now sunny and genial, vegetation in the gardens and surrounding country here is very promising. The crops of wine and Olives have been poor, but Lemons are plentiful, though the price is low and unmercantable. *Thomas Hansbury.*

Plants Growing in the Open Air in the Garden of the Palazzo Orsini, Motola, near Mentone, in Flower on Jan. 1.

Abutilon var.	Geranium (many sp.)
Acacia leucophylla	Globularia alypum
" lophata speciosa	Gonolobus macranthus
" obliqua	Hardenbergia myosiphilis
" retinoides	Helleborus viridis
Aitonia cespitosa	Heliosiphon
Aloe africana	Helleborus sempervirens
" cilicaria	Helleborus cuneifolia
" futescens	Jasminum azoricum
Adiantum strimmaricum	" nudiflorum
Anthriscum var.	Juncus acrotes
Artemisia Andrachne	Klema nerifolia
" arvensis	Knautia sicula
Arum Arisarum	Lavandula multifida
Aster argophyllus	" pinata
" ciliatus	Lycium europaeum
" maritimus	Linum trigycum
Bougainvillea glabra	Malva sp.
Wartecucula	Loganum scandens
Borvordia leiantha	Lobelia fragrans
Borvordia leucantha	Malvastrum Barlayana
" madagascariensis	Mesembryanthemum aureum
" salicifolia	" perfoliatum
Celastrus andrewsii	Monticola arvensis
Cassia grandiflora	Narcissus (many sp.)
Cassipouira quindivilis	Othonna carnea
" crotolaria	" trigularis
Cestrum roseum	Pachyphorum bracteatum
Chamaecrista	Passiflora racemosa
Chimonanthus fragrans	" vesperitidis
Chrysanthemum frutescens	Petunia (var.)
Colonia scandens	Phytolacca decandria
Coletia spinosa	Plumbago capensis
Conyza glauca	Polygala virgata
Convolvulus africanus	Portulaca oleracea
" floridus	Rhoeo coccinea
" mauritanicus	Rosa (many sp.)
Correa alba	Commersonia oclinalis
" aurata	Salvia anapa
Cotyledon macranthum	" Grahami
" luridum	" leucorrhoea
" macranthum	" microcarpa
Cyperus strigosus	" semibrata
Cytinus ferox	" splendens
" glaberrimus	Sonchus oleraceus
Diplopappus filifolius	" angulatus
" glaberrimus	" longifolius
Echeveria metallica	" polycephalus
Eriophora japonica	Solanum robustum
Eriophora japonica	" verbasciforme
Euphorbia alata	Sporobolus africanus
Euphorbia globulus	Stapelia quinquerviridis
Euphorbia globulus	Taccaea maritima
Fabiana imbricata	" mollissima
	Terna capensis
	Tenifolium retusa
	Veronica (sp.)
	Vincis (sp.)

OUTACAMUND, Dec. 15, 1876: *Lilium neilgherrense*.—Mr. Elwes, in his notes on *Lilium neilgherrense*, which appeared in the *Gardener's Chronicle* of September 9 last, mentions that there are three varieties of this Lily. No less than four very distinct varieties are found within 15 miles circuit of this place. This difference in character is probably caused in a large measure by the different aspects and situations in which this plant is found. When it is explained that the hills on the western slopes of the Neilgherri range are frequently 400 inches, whereas on the northern side of the mountains the rainfall is often as little as 50 inches, the different circumstances under which the plant grows will fully account for it varying so much in character as to have been figured by Wight in his *Icones Plantarum Indiarum Orientalium* as three different Lilies.

Wight's figure, No. 2031-32, is the grand form of *Lilium neilgherrense*, colour pure white, found on precipitous rocks 8000 feet above the level of the sea, in situations where there is a heavy rainfall. It is not at all uncommon to find this with six flowers on a stem, each flower 1 foot long. It flowers a month earlier than the other varieties. Wight's figure, No. 2033-34, "tabularum," is also a very fine Lily, and is widely distributed. It varies in colour, the flower-tube is longer, and the leaves also are much longer than the leaves of the large variety. Of this plant there are two very distinct forms, one yellow and one white.

Wight's No. 2035 is a small variety, it grows at Kuthully, the driest part of the hills, and instead of choosing the crevices of the rocks it is found grow-

ing in loam on the sides of the hill, not more than 4000 feet above the level of the sea. The petals are very much recurved, and this led Wight to suppose it to be *L. Wallichianum*. The stem is very leafy, the leaves are very narrow, and it invariably bears a single flower on each stem. This variety does not form on the roots of the forest which are so numerous in the other varieties. Mr. Elwes seems to have some information regarding a pink variety; there is no variety which can be properly called pink. There is a fourth variety, with very dark stems, and the dark marks on the stems are carried up the exterior of the flower-tube, giving a pinkish colour to the outside of the flower, but the flower itself is pure white. It is a charming variety, and rather scarce.

These last two varieties flower very late, not beginning to flower until November; this is probably owing to their being found generally on the northern slopes, where there is little sun and a small rainfall.

At the Royal Horticultural Society's show on November 28, the Hon. and Rev. J. T. Boscaewen exhibited a plant of *Lilium neilgherrense* in flower. It would be interesting to those engaged in the culture of Lilies to note whether this was one of the late-flowering varieties above noticed.

Flowering, as this Lily does, from August to December, it will repay any trouble there may be in growing it. It remains to be seen whether the varieties given above will retain their distinct characters under cultivation, or whether the whole will become blended into one form when grown without the varying conditions of rainfall and climate which are peculiar to the different districts of the Neilgherry Hills. *E. S. B.*

Natural History.

THE GOATSUCKER.—As this locality is a favourite resort of the goatsucker (*Caprimulgus europaeus*) I have for a period of nearly fifty years had an opportunity of observing the habits of this very remarkable and interesting bird. It is to be regretted that the original name, "goatsucker," given to it by Aristotle in the days of old, is still retained, as it is apt to create an idea in the minds of the ignorant that the bird is one of destructive propensity, and ill-omened, whereas, if there is one bird more than another that ought to be fostered and protected it is the goatsucker, or, as we familiarly call it at home, and which is by far the most appropriate name, "nighthjar." It arrives every year about the last week in April, and leaves again the last week in September. Very few birds are of more service to mankind than the nighthjar, and of such value do I esteem them that I would rather give £5 than one should be destroyed. To sit and watch

their graceful flight, and quick gyrations during a warm summer's evening, when fades the glimmering landscape on the night, "is always most amusing to myself and to my friends, and is not very shy birds, and is usually undisturbed or shot at will take but little notice of persons moving about. They feed wholly on moths and insects caught on the wing, and during the season they must, of course, devour an immense quantity. They rarely voluntarily take to flight in the day-time, but immediately the sun sinks below the horizon the expected and well-known *chur-r* is heard, very similar to a spinning-wheel and quite as loud. This sound they continually emit for an hour after sunset, and at greater intervals during the night until sunrise, after which they are never seen unless accidentally disturbed, as they always rest on the ground in the day-time, when they fit a short distance and settle again. The very singular burring or spinning sound is sometimes sustained for many minutes together, and always when settling on a bank, post, tree, or other convenient perch, when the head is croached downward and almost brought on a level with their feet. It would not be possible for the same sound to be emitted while on the wing. During their aerial flight they utter a loud and distinct cry, which may be either playfulness, a love-note, or a warning of danger. They also produce a great and noisy rattling sound by clapping their wings smartly together over their back.

The nighthjar makes no nest, but selects a retired spot on the ground, generally beneath a bank of Furze, Heath, or Fern. The eggs, two in number, are a greyish white colour, singularly marked with dark irregular spots, and may easily be mistaken for stones of a peculiar character, which abound on heath-land. The young birds, too, when hatched, and until they

can almost fly, have a very peculiar appearance, not unlike speckled toads, which assimilates them with the colour of the soil, and, doubtless, protects them in a great measure from their natural enemies. Their favourite breeding haunts are decidedly "heath-lands, moors, and commons," but for food they affect cultivated grounds, "tree-studded meadows," parks, and places where it is easily obtained, and, among the ancients, *W. R. Rogers, Red Lodge Nursery, Southampton.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—It is time now to see about starting some Allamandas. If A. Henderson and A. Chelson are grown, begin with them first. In the case of full-sized specimens, the same may be cut back to the same point as last year. Allamandas ought to be repotted at the time they are pruned, and they should have one-half of the old soil taken away. There is no better way of doing this than by using an iron bar with a pointed stick, after which they must be soaked in tepid water for some hours, as if this is not done it is difficult to get them into the proper state as to moisture; let them drain awhile, and then pot them. Good loam is the best for them, to which add about one-third manure and rotten dung, and water, and will keep the whole porous. Make the soil very solid in the pots, as they like it firmer than most things. Put them near the glass, and syringe daily overhead. A plant or two of *Clorodendron Balfourianum* should also be started at once, in this case, however, unless more pot-room is required, the roots must not be disturbed, and when potting is necessary only remove the crocks from the bottom of the ball. It will be found to succeed best at the coolest end of the house, or in a night temperature of 55°; keep it well covered—close up to the glass; brought on in this way the flowers are very useful for cutting, being in both colour and form distinct. Of *Diplantheis* likewise a few plants should now be pushed on. Where it is desirable not to start at some time yet, the *Allamanda*, *Bougainvillea*, or *Clorodendrons* of the above-named section, it is much better to keep them dormant by putting them at the coolest end of the stove, and only giving them as much water as will prevent the bark from becoming so dry, and is sometimes better to subject them to a lower temperature. *Anthurium Scherzerianum* is frequently kept on growing all the year round, which is not a good plan. It is much benefited by a rest in a temperature of not more than 50° a night for six or eight weeks, when it is allowed growth, whilst here withholding water, but not letting the leaves shrivel. Any specimens that have completed their growth should be treated as described. A few *Achimenes* and *Gloxinias* which should now be started. As soon as they begin to grow they must have the light possible by putting them on shelves close to the roof, or in some similar place. If this is not done their flowers will be very soft, and worthless for using in a cut state. Where root climbers are grown they must not be allowed to keep too much light from the plants under them; this will be prevented by thinning the branches out and cutting back those that are to remain. Give a good light position to *Aphelandra cristata* and *A. nitens*, by so doing the colour of the flowers will be improved. Plants of *Gastonia*, *Strobilanthus*, *Strobilanthes citrodora*, which are the two most useful species, that are coming into bloom, should be put at the coolest end of the house, and have only enough water to the roots to keep the plants in a healthy growing state, and none overhead; the flowers will be more lasting treated in this way. *Eucharis americana* and *Amantophyllum minimum* ought also to have a place where their opening flowers will receive the least possible amount of moisture. Put *Hyacinths*, *Crocus*, early *Tulips*, *Ranunculus*, *Rubus*, *Primula*, *Hyacinthus*, *Scilla*, *Lily of the Valley*, and *Prunella* in heat regularly to keep up a supply. It is well to remember that these things last much longer in bloom when they are not brought on in a very high temperature. They will be saved further on if all insects are as far as possible kept under now. If dry weather it is not well to have much moisture in the atmosphere here at the present time; neither should the plants be excited into growth by being kept too warm; managed thus, they will make better growth later on. *Leuco-stegia* and *Avallaria*, that cast their leaves, ought to be kept a little drier at the root in the winter, but this must not be carried too far, or they will be injured, and consequently make weak growth. The entire stock should be gone over and thoroughly cleaned from insects before active growth commences. *T. Baint.*

FLOWER GARDEN.

The extremely wet weather we have is unfavourable for getting forward with ground-work, but much may be done with sweeping the lawns, raking leaves from

under the shrubs, &c. Where the turf has settled down in places and left the surface uneven, this is a good time to have it put to rights, as work of this kind is not so much to be feared as it is usually made out to be. It is also more favourable for the purpose than when the drying winds of spring set in. Proceed by cutting and rolling back the turf, and make the ground up to the level with sand or poor soil; this prevents the grass from growing too vigorously, and it always has a tendency to do. After the ground is made firm and levelled with a rake, roll back the turf and settle it down with the back of a spade, or the wooden beater, then run the roller over it, and all is finished. Let the grass and gravel walks be frequently rolled, and give a clean and finished appearance. Shrubby borders and clumps may be thinned where getting too crowded, and the thin places filled up with the plants that are removed, the ground dug over, and all left as orderly as possible. Where planting has to be done here have the ground well trenched; this requires more labour at the time, but plants and trees always succeed better and give more satisfaction to employer and planter. Roses expected to do well must be planted in well-prepared ground. If the soil is light, it will be necessary to make a good manure and planting much the surface with manure; this will enrich the ground and help to protect the roots. Any tender plants left unprotected had better have a covering of Fern litter, Spruce branches, or anything convenient, for the weather may be expected. *T. Blair, Strathall Park.*

FRUIT HOUSES.

STRAWBERRIES IN POTS.—A supplementary batch of these plants should be placed in heat of a similar nature to that recommended in the Calendar for December, but rather 50, in anticipation of having to meet the ordinary demand, and to make up for defective plants from amongst the early started ones. In order to keep up a good supply of ripe fruit through the spring months, a batch of these plants should now be introduced into heat every fortnight or three weeks. No time to introduce into heat other than those highly esteemed varieties, British Queen, Sir Charles Napier, and President. Let the former lots of plants have every requisite attention, an abundant supply of water being essential when necessary, and the pruning should be done in the usual manner. The fruit commences. The moist and suitable condition provided by the use of sods, or soil in well drained pans beneath the pots is one to be commended, inasmuch as it frequently sustains the plant when the weather is so drying and so hot. It is well to keep the plants which are in growth free from the attacks of the green-fly, either by fumigation or otherwise dipping the foliage of the plants in a solution of tobacco or quassia water. *George T. Miles, Myreside Abbey.*

VINES.—Early houses started in November and December will now require daily attention and care. The rules for disbudding, stopping and tying having been so frequently laid down in former Calendars, I will assume that all these operations have been regularly performed, and that there is still a considerable space of trellis available for covering with young growth. When Vines break and start away evenly, I prefer pinching back to the third or fourth joint beyond the fruit, and afterwards allowing the first set of leading laterals to grow unchecked until every portion of the trellis is covered with foliage, when the strongest shoots are again pinched, and prevented over-crowding. The dull, dark weather which has so long prevailed being unfavourable to hard forcing, the night temperature should be allowed to range low, until we have a change to brighter days. The supply of water should also be reduced, and the soil kept dry. Remove all surplus branches as soon as the best can be distinguished; assist shy-setting kinds by means of artificial fertilisation, and thin when the berries attain the size of No. 6 shot. The pruning of all house Vines, which the frost has been so far from being brought to a close, and advantage taken of the unfavourable weather for getting the Vines washed and painted with the usual composition, the houses thoroughly cleaned, inside borders cleared of all rubbish, and well watered, and the plants treated with good turfy loam and crushed bones. The outside borders, too, as a rule the worst managed borders in a garden, may also be exposed to the influence of rains by the removal of shutters or other means of protection, allowing a slight covering of litter or Fern to keep out frost. Look over late Grapes and remove all decaying berries. Do not allow the house to fall below 45°, and to prevent condensation on the berries always keep it a few degrees above the outside temperature.

MELONS.—To have ripe Melons in May need's should now be sown and plunged in the bottom-deep of 80, and the glass may be consistent, to prevent the young plants from becoming "drawn" when they appear above the soil. To specify kinds would be useless, as every grower now stakes his reputation on this or that hybrid or hero of his own raising. For

general purposes, early or late, in houses or in frames. I may, however, safely assert that I have not yet found anything better than *Victory of Bath* Improved, for the introduction on which every gardener is indebted to Mr. Gilbert, of Burghley. Those who have the convenience of especially heated hot-water pits will experience but little difficulty in raising sturdy plants; but where fermenting materials alone have to be depended on, with the exception of every garden, it is not to be devoted to their preparation. Assuming that a good supply of fermenting horse dung and Oak leaves have been thrown up into a heap, well-turned, worked, and sweetened, a bed should be made up for a single light frame, care being taken that the lining may be placed round it at once; a good body of old tan or leaf-mould, 12 inches thick, should be laid over the surface of the bed, and when warmed through the seeds may be sown in single rows, and plunged or otherwise. The best frame for this purpose are those made on the old McPhail plan, using 2-inch deal for the outside shell, with a lining of 4-inch boards tugged together to form a cavity 1 inch in width, open at the bottom for the admission of heat, but closely made up of inside boards, and the inside frames made upon this principle I have seen Cucumbers cut on March 9. The next point, equally important, is the preparation of the soil, and fortunate are those who, acting upon our advice, have laid up a good store of soil for this purpose, for which this has not been done, no time should be lost in getting a supply into a dry vinery, where it can be brought into condition by exposure to light and warmth. *W. Coleman, Eastnor Castle.*

HARDY FRUIT GARDEN.

Notwithstanding all that has been said and written against pruning hardy orchard fruits, most cultivators are agreed as to its necessity and the beneficial effects it has on the quality and produce. There is no one better able to form a sound judgment on matters of this kind than those who cater for the public, and I have to get a living profit out of what they grow, and if we go to the best managed establishments we there find, not trees and bushes left to themselves, but skillfully thinned and pruned and bristling all over with fruit-buds. It does not necessarily follow that the pruning should be done in the same manner as the branches, as in many cases that would have the effect of inducing a greater number of strong rank shoots to put forth, and no doubt much of the satisfactory state we see trees in the most notable market gardens arises in a great measure from the care and attention they undergo by the deep digging that takes place in the cultivation of the land within a short distance of their stems, the effect of which is to largely increase the number of their fibres; and as it is to these that we must look as a means to produce fertility, it often becomes necessary to attack the trees below. This being so, any that are of a gross, unfruitful habit should at once have their roots laid bare, and such as have penetrated the subsoil severed with a sharp knife, and then be raised and laid in a more horizontal position, so that what fibres they make may feed near the surface. In the case of trees that have been long planted, this interference with the main roots should not be carried to extremes so as to cause a severe check all at once, and to avoid this it will be better to operate on one side only, leaving the other to be effected at some future time, a twelvemonth or two years hence. If the natural soil appears to be too close and stiff, or of an unsatisfactory character, fresh cut turf loam should be in part substituted, but on no account ought leaf-mould or other decomposing vegetable matter to be used as a corrective, for sooner or later it is sure to produce fungus, and if this gets hold of the roots it at once brings on decrepitude and ill-health, and eventually destroys the trees altogether. would use the same care in proceeding with trees in an unsatisfactory state to examine them at once, and, if they find this destructive agent has got possession of the border, to clear away the soil as far as the roots extend and renew it altogether, clearing the fungus from them by the use of the preceding recipe. It is to be noted at the same time that have not plenty of young feeders attached. In shallow, light lands, resting on a sandy bottom, I have found an admixture of clay or marl of great value in sustaining the trees during dry weather, and in the case of trees that are going to fruit that they would otherwise have been unable to do, unless assisted by a free use of the water-pot. It is surprising how retentive of moisture clay is when buried in small nodules on ground of an opposite description. Many of the old-fashioned trees in a loam for renovating exhausted fruit trees may be able to substitute clay for it, which if used in moderation and properly mixed up with the soil in the lower portion of the border will have a most beneficial effect, and last for a great number of years. In regard to top-pruning of orchard trees, it is a thing to be done, and if they are properly thinned, that the main branches do not cross each other or become too crowded to shut out light and air and cause a weak spindly growth. *F. Shappard, Woburn.*

THE
Gardeners' Chronicle.

SATURDAY, JANUARY 13, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

Royal Horticultural Society. Meeting of
Wednesday, Jan. 17. { Scientific Committee, at 4 P.M.
Sale of Fruit Trees, Shrubs, and Bulbs, at
Stevens' Rooms.
Thursday, Jan. 18. { Meeting of the Linnean Society, at 8 P.M.
Sale of Orchids and Lilies, at Stevens'
Rooms.

WE have most of us in youth been told that the reason why policemen on duty wear a badge on the sleeve of their coats is to enable them to distinguish between their right hand and their left. At first sight it would seem as if this discrimination were no difficult matter, but the discrepancy of opinion on the subject that one meets with in books is soon calculated to un deceive one. Of course, in spite of the unvarnished policeman story, no difference of opinion exists as to which is the right and which the left side of one's own body. We do not hesitate for a moment in deciding which is the right and which the left hand of our neighbour. The starting point is certain, it is only when we come to the consequences that ensue from it, and from the different point of view taken by different observers, that the difficulty is met with; which way, for instance, do the hands of a watch turn, from right to left, or from left to right? What is a right-handed, what a left-handed screw?

The answers to these questions depend, of course, upon the position of the observer, or the way in which the object is viewed, and no common agreement exists as to viewing such objects from a definite point of view. Among plants we have, as every one knows, the leaves arranged in one or more series of spiral curves, beautifully exemplified in the leaves of the Screw Pine (Pandanus), in the scales of Fir cones, or in the rosettes of the House Leek, &c. Similarly we often see the lobes of the corolla in flowers twisted, some in one direction, some in another. Or, again, take the case of twining plants. Some twine regularly and constantly one way, others as constantly curve in the opposite direction.

In describing these curves writers make use of the expressions "dextrorse," or right-handed, and "sinistrorse," or left-handed, according as the direction is from the left hand to the right, or from the right to the left. This would be intelligible enough if those who use the terms would always specify in what sense they use them; but still better would it be if all would use the terms in the same manner. As it is, among those whose business it is to describe plants opposite practices prevail, and as these practices are carried out by authorities of equal reputation it is idle to point to Dr. So-and-so for justification because Professor This-and-that is exactly of the opposite persuasion. In the case of a twining plant, for instance, the observer may imagine himself in the centre of the coil—the stem around which the plant twines from his right hand, beginning from below, and going upwards across the front of the body towards the left hand. But as the coil winds round his back, it, of course, proceeds from left to right, so that here, unless the position of the observer be specified and well understood, confusion may arise. The other way of considering the matter is to suppose the observer standing in which direction the spiral lines ascend, whether from the right or from the left. Scarcely two books agree in this matter, and sometimes the confusion is intensified by some writers meaning by a right-handed or "dextrorse" spiral one that goes from the

right to the left, while others use the term in exactly the opposite signification; and so, of course, with the terms left-handed or sinistrorse. How difficult it is to secure agreement even on such simple matters is shown by the fact that such authorities as BENTHAM and HOOKER suppose the observer to be outside and opposite the coil, using, therefore, the terms dextrorse, or right-handed, and sinistrorse or left-handed, in precisely the opposite way to that intended by the great law-giver LINNÆUS. At a recent, or at least at a not very remote meeting of the Linnean Society, the question was discussed, and MR. BENTHAM then advocated the mode of using the terms we have just mentioned, and DARWIN in his *Climbing Plants* adopts the same course.

It was, therefore, with some interest that we observed that at the June meeting of the Botanical Society of France, M. A. DE CANDOLLE followed exactly the opposite plan, but, what is better, he gave his reasons for so doing. In accordance with many English writers, M. DE CANDOLLE supposes himself in the centre of the coil, and looking down in front of him, sees the coil ascend from his right to his left hand, or *vice versa*, as the case may be. His reasons for so doing are these:—That LINNÆUS adopted this rule, and has been followed by the elder DE CANDOLLE, MOHL, PALM, and A. BRAUN, and other observers. This rule, then, has at least the *prestige* of priority, however widely some may have departed from their allegiance. Another reason given by M. DE CANDOLLE is founded on the practice of the learned Professor of Berlin (A. BRAUN), to whose authority in such matters the highest deference is due. Professor BRAUN remarks that the best way to follow in determining the direction of a spiral is to follow the indications of the object itself. It is the animal or plant itself which ascends or descends, or goes to the right or to the left. Again, in the case of an animal, the position of the observer is of no consequence; we distinguish the right and left sides of the animal, not from our position with relation to it, but according to the conformation of the animal itself. The animal cannot speak to us and tell us which is his left and which his right flank, but we speaking animals are able to do so. A drill-sergeant, says M. DE CANDOLLE, in giving the command "right wheel" does not expect his men to turn to his own right, but he expresses himself as if he were in the position of the men whose movements he directs. So in the case of a river, the universal practice is to call the left bank that to the left hand of an observer supposed to be proceeding from the source of the stream to its outfall in the sea; following, therefore, the natural onward course of the stream. For these reasons, which appear to us to be sound, M. DE CANDOLLE advises those who have to deal with twining plants and other spiral growths to be guided in the use of terms by the direction in which the plant itself is growing, and the advice is so reasonable that we could wish it were henceforth universally followed, but so difficult is it to secure uniformity of practice that we do not look forward with any confidence to so desirable a result.

— OUR central illustration (fig. 8) represents two tropical Australian CYCADS growing in the Botanic Garden at Brisbane, under the charge of Mr. W. HILL. That opposite the right of the reader is *Macrozamia Mackenzii*, that to the left M. Miquelii. The two species are botanically similar, but for garden purposes are different in habit and general appearance. They are admirably suited for the decoration of warm conservatories, and would, like some of their allies, form noble plants in the subtropical garden. The fronds or leaves of both forms are elongate and deeply divided into very numerous linear segments, of a deep green colour, thickened at the base. The rachis or common stalk is slightly flattened, and more or less covered with hair downwards. We shall have more to say concerning them on another occasion.

— The gentlemen recommended by the COUNCIL of the ROYAL HORTICULTURAL SOCIETY to fill the vacancies for the ensuing year caused by the retirement of MR. ROBERT WARNER, the Hon. and Rev. J. T. BOSCAWEN, and Sir TREVOR LAWRENCE, Bart., from the Council, are Sir CHARLES STRICKLAND, Bart., Messrs. H. J. ELWES and T. M. SHUTTLEWORTH.

— The culture of Chicory as a salad under the Flemish name of WITLOOF has, strange to say, only recently been introduced among us. The Brussels market gardeners, it appears, grow it in trenches, covered with 6 to 8 inches of soil; but M. DE VENTER, as recorded in the *Monitor Horticole Belges*, grows it on what is called a *hatter* or quicker method. At the base of an east wall a bed of old tan is made, about 8 inches thick and 7 feet in width. In this tan are plunged, side by side, the roots, previously shortened to a length of about 5 inches. They are covered with the tan to the depth of 7 to 8 inches, and over the tan is spread a layer of dung, between 2 and 3 feet in thickness. In this manner longer and better heads are said to be produced in a fortnight than in double the time according to the ordinary method.

— We are much gratified to hear that our old correspondent, MR. WIGHTON, the gardener at Cossey Park, has lately been presented with a valuable purse of money by his employer, Lord STAFFORD, as a testimonial of respect for long service in his lordship's family. It is always pleasing to hear of such kindners, which exemplifies the good feeling that should exist between masters and servants, and we congratulate our correspondent on his success in having given satisfaction for so long a period to so kind-hearted and appreciative an employer.

— We have received from MR. STEPHEN BROWN, of Weston-super-Mare, a few sprays of an EUONYMUS, which he obtained a few years ago from a green sport of the variegated form of *Euonymus radicans*, to which it has clearly reverted. MR. BROWN states that it grows very rapidly, and soon covers a large space on a wall, where it must have a very pretty effect during the winter months, being covered with beautiful orange seeds. The foliage is in places very slightly stained with white variegation, but not sufficient to be noticed except by close examination.

— One of the most charming of all the Spruces is the COLORADO ABIES MENZIESII, of which some small examples may be seen in Mr. A. WATERERS' nursery at Knap Hill. Two very beautiful selected trees of this now Fir are growing in the garden of Professor C. S. SARGENT, at Brookline, near Boston. These trees are from 7 to 8 feet high, with the symmetrical growth of typical *A. Menziesii*, but specially remarkable for the bright blue glaucous hue of the entire plant, which as a blue is as bright and striking as is the green of the Knap Hill Cypress, *Cupressus Lawsoniana erecta* variegata. The tree is indeed, on account of its soft glaucous hue, and naturally symmetrical habit, one of the most lovely that can be imagined.

— The report of the Council of the ROYAL MANCHESTER BOTANICAL and HORTICULTURAL SOCIETY, to be read at the forty-ninth annual meeting of proprietors, to be held on Monday next, congratulates the shareholders on the improved circumstances of the Society. The financial statement shows that the mortgage to the Lancashire Insurance Company, which has stood at £5000 for the last twenty-five years, is now reduced to £1000. This favourable change has been brought about by means of donations, and the establishment of Life Memberships. The exhibitions held during the past year were very satisfactory from the horticultural point of view, the exhibits being very meritorious in nearly all the sections; but the depression of trade and the unfavourable weather prevented such a satisfactory financial result as the Council have had to lay before the shareholders in connection with previous exhibitions, and in addition to these circumstances influences have also been at work to draw visitors in another direction. For seven years prior to the opening of Manley Hall the average profits upon the Whitson week exhibitions were £600 per annum;

for the two years that Manley Hall has been open the profits on the Whitsun week exhibitions have been £300 per annum. The musical promenades formerly yielded a profit of from £80 to £100 per annum, for the last two years they have not paid expenses. The Town Hall shows have become an important feature in the Society's proceedings, and the increasing interest evinced has induced the Council to arrange for holding three exhibitions of the same character during the ensuing year. It is proposed that an exhibition of window plants and cottage garden

— Twenty sheep, the property of Mr. SAVILL ONLEY, of Stisted Hall, near Braintree, have been poisoned by eating poisonous shrubs in the garden, into which they got access on Saturday night last, in consequence of the park gate being left open. Nearly a whole flock of 100 entered the garden, and as they were all in lamb it is feared there may be still further losses.

— One of the sublimest things in Nature is found in the ROAR OF THE STORM amidst the branches of

and pastime of the raging storm. In her beautiful poem of the Pilgrim Fathers, Mrs HEMANS tells how the

"Woods against a stormy sky,
Their giant branches toss;"

perhaps in deciduous trees nothing affords more complete compensation for the loss of the summer foliage than the watching of the motion of the spray produced by the passing winds. With a background of deep blue cloud lit up by the lurid light emitted from a sun bathed in moisture, there is then



FIG. 8.—AUSTRALIAN SPECIES OF MACROZAMIA. (SEE P. 43.)

produce, grown in and around Manchester and Salford, be held in the gardens, on August 4 and 6 next, the prizes offered to consist mainly of articles for household use; and the Council desire to record their grateful acknowledgments to several ladies and gentlemen who have already promised useful articles to be competed for on that occasion. The suggested arrangements for the year 1877 are—Floral and horticultural meeting, Town Hall, March 20; Auricula show, Town Hall, April 27; National Horticultural Exhibition at the Gardens, May 18 to 25 (inclusive); special exhibition for cottagers at the Gardens, August 4 to 6; exhibition of Chrysanthemums and fruits at the Town Hall, November 27 and 28.

GIGANTIC TREES. Sometimes the sound resembles that emitted by an army of wild bulls, and anon it is lulled into a gentle and soothing murmur; but to all who love trees and woods the sounds alike are sweet music, varying like the notes of an organ from the sweetest symphonies to the crash and thunder of a grand chorus. Not less effective, however, is the motion excited under fine deciduous trees when leafless in winter, under the influence of a fierce and sweeping gale. An imprisoned giant lashing his mighty arms in impotent rage affords but a weak illustration of the magnificence and grandeur displayed by some lofty Oak or Elm, as firmly fixed in the earth it yet has its monster branches bent hither and thither, the sport

and elegance displayed that might well inspire some worthy poet. Wild, wet and stormy as the past weather has been, it has not left us without something to admire.

— Some idea may be gained of the extent of the disasters caused by the PHYLLOXERA by a recent report of M. DUCHARTRE, of the Central Horticultural Society of France, in which the learned Professor of the Sorbonne details the results of his examinations in various districts of France. Where the invasion of the insect took place first some years ago no traces are now left, for the Vine itself has disappeared! and no traces are apparent that the regions in question were

once wine-growing districts. Where the destroying influences are still at work the spectacle is heart-rending (*navrant*). In many places American Vines are being planted rapidly, these so far not being attacked by the *Phylloxera*, and on these it is intended to graft the European kinds. It must be remembered, however, that this immunity does not extend to all the American kinds, but principally, as shown by M. PLANCHON, to those Vines derived from *Vitis rotundifolia* (*alida vulpina*), from which the Scuppernon, Thomas, Flowers, and other American varieties have been derived. These Vines require much heat to ripen their fruit, and their juice requires the addition of sugar to be converted into palatable wine.

— Chance GROUPINGS OF PLANTS not unfrequently turn out to be more effective than combinations upon which much study has been bestowed. A case of this sort has been mentioned to us by Mr. WATERER as having been observed by him during his recent trip to America. A group of double white Primroses was surrounded by a broad belt of *Omphalodes verna*, and both were doing well, flowering freely and at the same period. Though this was associated by mere accident, the combination proved to be most beautiful.

— We are informed that Mr. ROBERT AUGUSTUS ARNOTT retired on December 31, from his engagement with Messrs. CHARLES SHARPE & Co., of Slensford, and is now associated with Mr. WM. BAXTER SMITH and Mr. JAMES WATT, the partners of the old established firm of LITTLE & BALLANTYNE, seedsmen and nurserymen, Carlisle.

— The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, January 15, when a paper will be read by Mr. W. T. MARRIOTT, entitled "Riparian Rights." The chair to be taken at 8 o'clock.

— The following SPECIAL EXHIBITIONS will be held on the dates given in the gardens of the Royal Botanic Society, Regent's Park:—*Clematis*, by Messrs. GEORGE JACKMAN & SON, of Woking, from May 22; Rhododendrons and American Plants, by Mr. ANTHONY WATERER, Knap Hill, from June 1; and flowering and fine-foliaged plants, by Messrs. JAMES CARTER & Co., High Holborn, from June 27 to July 12.

— We learn from Messrs. J. BLACKBURN & SONS' circular that the stock of RUSSIA MATS is quite cleared out in Russia, and, as a proof of this, the quotations for next year's shipments will be higher than last. Stocks are nearly exhausted in England, and they cannot be replenished for the next six to eight months; prices in the meantime must therefore advance still higher.

— The total number of bales of COTTON imported during the twelve months ending with December 31, are 3,615,627; comprising 2,098,078 of American, 315,835 of Brazilian, 759,508 of East India, 335,209 of Egyptian, and 106,097 of miscellaneous. The number of bales exported during the same time are 513,127, comprising 10,113 of American, 17,130 of Brazilian, 364,321 of East India, 9495 of Egyptian, and 13,039 of miscellaneous.

— There is this year promise of a more ABUNDANT BLOOM on the AMERICAN PLANTS than has ever before been known. At Knap Hill almost every plant is full of buds, so that, if no mishaps intervene, the blossoming period may be expected to be a glorious one—one to be made a note of.

— A correspondent of REGEL'S *Gartenflora*, writing from Nikita, in the Crimea, states that there is a tree of *XANTHO CERAS SORBIFOLIA* at Karasson which is at least fifty years old, and another in his own garden twenty years old, so that it cannot be regarded as a new introduction. In the Crimea this small ornamental tree flourishes admirably, producing annually a profusion of beautiful white flowers, and sometimes ripening its seed. It is strange that so distinct a thing should have escaped observation so long. If the writer is not mistaken—and he seems to entertain no doubt as to the identity of his trees—*Xanthoceras sorbifolia* was probably introduced by

some member of the Russian Embassy from North China, or possibly it has a wider range of distribution than was supposed. *Chamaerops excelsa* is also quite hardy in the same region, and ripens its fruit.

— It will be remembered that we published a short time ago an account of the vegetable productions of Japan; and Dr. VIDAL stated there that the JAPANESE always ate their PEACHES in an unripe state. In the *Gartenflora* Dr. REGEL says in some remarks on Japanese fruit trees, that Dr. MAKIMOWICZ informs him that the Japanese regard a ripe Peach as "rotten"! We remember eating with great relish in our younger days Green Gooseberries and Apples, and a variety of other equally delicious fruits; but only so long as there were no ripe ones. A green Peach, however, would have been about the place to draw the line, even then, when scarcely anything came amiss.

— The *Bulletin* of the French Society for Acclimatization for October contains a long account of the HISTORY and USES of the TRUE JABORANDI, *PILOCARPUS PINNATUS*. It appears that its introduction, or rather re-introduction, is due to a Brazilian, Dr. CONTINHO, who brought some leaves of it for his personal use about two years ago. He attended Professor GUELE's lectures, and when speaking of sudorifics the learned Professor of the Faculty of Medicine observed that no drug in use really deserves the name. This statement induced Dr. CONTINHO to bring the *Jaborandi* into notice. The report in the publication referred to is a lengthy one, giving the results of the most important experiments made with this drug by eminent physicians. The physiological action of infusions, chemical composition, and the physiological action of the peculiar alkaloid pilocarpine are detailed. P. simplex gave similar results. It is not only a powerful sudorific, but an equally active sialagogue.

— *RETINOSPORA FILIFERA GRACILIS* is one of those plants that has been much condemned because of its somewhat abrupt and mossy style of growth, and its sending forth the pendulous habit is graceful and elegant. It is a plant that cultivators have left too much to itself, and then it apt to grow bushy and ugly in appearance. A judicious employment of the pruning-knife would keep these bunches somewhat cut away, and when this is done the plant will put forth leading shoots which soon augment its height and elegant appearance. There are among the Japanese plants which Mr. FORTUNE introduced many things of an extremely interesting character that are in great danger of falling into oblivion. Their pigny appearance and slow growth are much against their recognition, but what an interesting group might be made of them were they arranged in a cold conservatory, either planted out in suitable soil or potted and cultivated in pots; or a collection might be made of them in a small garden, where they could not fail to be a perennial source of pleasure.

— The following extract is taken from a letter recently received by Messrs. THOMAS CHRISTY & Co. from Mr. CHARLES DRAKE, of the Culford Coffee Estate, Vythry, South Wynard, Malabar:—

"The Fricky Comfrey is doing remarkably well. Some of the forward plants are now larger round than a very large Cabbage. Next week I intend commencing to feed some of our stock on the leaves, which I might have done at least a month ago, but waited so long they might make roots as well as leaves. This fact speaks for itself, since I have not left England five months yet; six weeks of these were spent on the voyage, and it was quite a month after I arrived on the estate before the roots were all planted. I notice, as you remarked, that they flourish better in shade, where you are sure of a plant on all soils, but I dressed our land so well with manure that although you are in a cooler water after day to a tropical sun, little or no difference is noticeable between those in shade and those in the sun. I am sure if some of our English farmers knew of it, they would, neither they nor any cowkeeper would do without it. I have already fed some of our cattle occasionally with it myself, mixed with grass, and a decided improvement is noticeable, and much as cattle are averse to *Euphorbia*, they will follow me for it in preference to grass or grain."

— At a time when much interest is centred on the PRODUCTION and CONSUMPTION of SUGAR, owing to the rapid rise in the price of this most useful commodity, it is satisfactory to hear of the extension of the cultivation of the Sugar-cane in any country

where it is likely to succeed. Thus we learn from China that in the neighbourhood of Swatow the cultivation is extending, and is likely to continue to do so. Though the sugar is sent to the port of Canton, and to Britain, a large quantity is sent to other ports, and during the year 1875 the exports showed an increase of 170,000 piculs above those of the previous year.

Home Correspondence.

Lily of the Valley.—There has been a good deal said lately on the superiority of the French Lilies of the Valley over those imported from Belgium; but is this borne out by facts? My impression is that it is not so, and I am inclined to think that this cry in favour of the French variety is attributable only to the plan they have adopted in growing the fine early flowers we see so often. I have tried, you a few spikes from English-grown crowns, which I flatter myself are fair, and not so far-fetched. They were forced two years ago this season, and when out of flower were planted out. About five weeks ago they were taken up again, the flowering crowns selected and placed singly in boxes in order to be fitted for sale. I have not cut on the 1st inst. *George Thomson, Crystal Palace, Sydenham*. [The flowers received were quite first-rate. Eds.]

Bambusa Ragamowski.—Having examined the leaves sent by Mr. Wheeler's interesting notice, published in issue for Dec. 30, I have been able to identify them with *Bambusa tessellata* of my monograph. Consequently, I suppose that is the name which the plant ought to bear, as I cannot ascertain, after diligent enquiries, that the name of B. Ragamowski has ever been published. The Rev. Mr. N. ELIACOMBE of Eaton Vicarage, has also sent me specimens of leaves rather larger than Mr. Wheeler's, in fact, exactly corresponding in size with those described by me in my monograph, namely, 14 foot long and about 3 inches broad. The plants can readily be recognised by the tomentose line on one side of the midrib running nearly the whole length of the leaf on the underside, this line being always on the longer side of the leaf. *William Murray*.

The Web of the Embia.—The insect recently engraved in the *Gardeners' Chronicle* undoubtedly weaves a web which must not be confused with the web of the spider. The specimen illustrated was sent for engraving in a large pill-box, and on its arrival a web had been woven inside, attaching the lid to the body of the box. The insect was then very lively and rapid in its movements, ever and anon retreating into a small loose silken den or tunnel it had woven for itself at the bottom of the box. From this den it chloroform stifled the quick movements of the insect, and then the engraving was made direct from a camera-lucida reflection from the microscope. *J. G. S.* [Mr. Michael has favoured us with an inspection of the web. The insect does not doubt that the insect does spin a web. The whole matter is one of great interest, and we are glad to learn that it is being investigated by the most competent entomologists. Eds.]

Limelike Heating.—The Cowan Patents Company's advertisement fell into my hands the other day, and in it I find it stated that the piping heated at Emo Park is 2000 feet. In a letter from Mr. Ennis, the gardener, which appeared in the *Gardeners' Chronicle* of September 30, he stated that the kiln had heated 1000 and 1000 feet of 4-inch piping attached. How does Mr. Ennis explain this discrepancy? *Viri Amator*. [Mr. Ennis informs us that his statement is quite correct. The error rests with the Cowan Company, and it perhaps arose thus. Before the system was adopted there was about 200 feet of 4-inch piping in the range of plant and fruit houses at Emo Park, but finding that the heat was so powerful, a range 350 feet long, in which there is a flow and return 4-inch pipe, was attached. This added 200 feet more, and with another 150 feet, used for connecting the one range with the other, makes the total amount between 3000 and 4000 feet, as stated. After some fourteen months' trial, Mr. Ennis informs us that he cannot speak too highly of the system of heating, and will be happy to show the apparatus to any one who may call at Emo Park. Eds.]

The Glastonbury Thorn.—One of the discomfited consequent on a mild winter is that our attention is arrested by ridiculous lists of plants in flower. It is one thing to record, fairly and honestly, a successful season, and quite another to adulterate the record with details that prove the reporter to be destitute of the experience requisite to intelligent reporting. In a list of plants in flower at Christmas, lately published in an important daily paper, the first item mentioned was the "evil flowering" *Adonis vernalis* *Sensu vulgaris*. There was never a winter known

to the present generation in which the Grandseul did not flower in the intervals of frost, and even during an hour or two of summer. In the latter case the region is remarkably so, or so of frost. About one-third of the plants enumerated as having been in late wondrously in flower, may be assigned to the same category as the Grandseul, and amongst the remaining two-thirds very few indeed were of sufficient interest to require any special notice. What can it matter to any one that the common Chickweed, the common sow Thistle, and the red dead Nettle, were showing a few flowers at the close of the year? They range from here to 82° north latitude, and are always registered in flower, and in fruit, stiff as steel, and then only three or four days of a temperature somewhat above the freezing point will make them gay with flowers once more. Vegetation is at this moment remarkably quiet, considering the range of the thermometer for two months past; but in the latter days of December I saw young Lime trees brightly spangled with golden-green leaves, and a Horbeam under my sanctum window threatened to go ahead, but changed its mind in time, and is now as still as a stone.

Two things in the way of "focal phenomena" have, however, interested me an occasional "tour of my garden." On December 25, our new-fangled Christmas Day, I found a glorious sheet of the blue flowers of Scilla biflora in a very cold, damp corner; and on January 6, the red old Christmas Day, and only one Christmas Day in this connection, my Glastonbury Thorn was in flower. It is the first time in all my days that I have been blessed with the Christmas flowers of this holy tree. And I must say in the way of a particularly interesting to me remarkably buxom appearance, being more densely laden with flowers than I have ever seen it before, and with such a wealth of bright new leafage as makes a sheen of springtime in the cold, damp shrubbery wherein the tree is located. The sample sent me now says that the tree carried all the flowers of last year, a little the worse for wear, while the new leaves are conspicuously forward and of the most delicious tint of tender green, and every twig bristles with clusters of swelling flower-buds, the expansion of which is scarcely to be wondered at. As a matter of course the few flowers I found on Christmas Day were claimed by pious pilgrims, and as it was enough for me to have seen them, I could but hope those who obtained permanent possession would find it worth while to fruit them. It is, however, to be observed that this precocious Crataegus is so rarely met with, although there is not a more interesting garden tree in cultivation, and as regards its beauty it is an advance on the common Thorn in several respects, its leafage being much richer, so that if planted in a hedge, it would make a most beautiful one. It is, however, this "swallow dares." Having seen Joseph's Staff in flower on the festival of the Nativity I shall hope to see it in fruit some day, for hitherto I have never seen a berry on the Glastonbury Thorn. *Shirley Hibbard, Sole Newington, Jan. 8.*

The Rainfall of 1876.—I have been looking at Mr. McCombe's account of the rainfall in 1876 at Wallington, Northumberland (see p. 20), and the total amount for the year there appears to be nearly 11 inches in excess of what fell in this part of Suffolk. Thinking it possible that you may consider it interesting to your readers to know something of the rainfalls of various and distant parts of the country, I have appended a statement of the rainfalls of the various months as recorded at this place:—January, 1.80 inch; February, 2.50 inches; March, 2.25 inches; April, 2.27 inches; May, 3.00 inch; June, 2.75 inches; July, 4.39 inch; August, 1.71 inch; September, 4.45 inches; October, 0.84 inch; November, 2.59 inches; December, 3.97 inches; a total rainfall for the year, 27.16 inches. The rain gauge stands 16 inches in diameter, with a funnel 1 1/2 inches in diameter, which with measurer was supplied by Casella, of Histon Garden, London. The rain is measured each day at 9 A.M. *P. Grieco, Culford, Eury St. Edmunds.*

Cotonaster vulgaris.—This rare plant is still to be found on the Great Ouzes Head. In company with a friend a few days back I saw it growing in two distinct places. It is much resembled by sheep, who devour every leaf that it can obtain, which makes the plant now difficult to find. There is one fine plant growing in the centre of a White Birch, very healthy. *Thomas Shortt, Landisdon, Jan. 8.*

Erica codonodes.—This Heath has been very handsome here all through December. I do not remember to have seen it before February in previous years. Can you inform me if it is really a native of the West of Scotland, as stated in Paxton's *Flora*, or *cal. Dictionary*? *H. K. [No. South of Europe. Eds.]*

The Weather.—Up to the time I now write (January 9) the weather continues to be mild and wet. During the first week of the year upwards of an inch

of rain fell, and the minimum temperature seldom falls under 40°, vegetation is consequently in an unusually forward condition. The bloom-buds on Apricot trees are here about to unfold their petals, while the ends of young shoots are furnished with perfectly developed leaves; Filbert bushes are already in full flower, Roses are almost in leaf, and in covers the Elder has already made shoots of considerable length. It is much to be feared that a change in the weather, which will undoubtedly take place before long, may have a very serious effect upon fruit trees, more particularly the Apricot. *P. Grieco, Culford, Eury St. Edmunds.*

Winter Broccoli in Cornwall.—The market gardeners around here have been cutting their first Broccoli since November, and will finish before the end of the present month, when they will commence on their second variety, which will last until the end of March. I may say that from twenty to thirty railway trucks leave here daily for London and the northern markets—price in the field is from 1s. 3d. to 1s. 6d. per dozen. The seed of this Broccoli is sown in the end of February, and the plants are put out at the end of March. I believe that this variety would succeed further up if sown early enough, and the seed obtained from some of the growers, who, by-the-by, are very careful in parting with it. The variety is large, and perfectly white and distinct. *H. Roberts, Giddeford, Penzance.*

Premature Growth of Vine Roots.—I quite agree with Mr. Wildsmith that it is a bad practice to induce Vines or any plants to make roots when the plants are without leaves; I thus pointed out in your volume for 1874, p. 719. I have long known that Vines left to themselves do not make new roots until they have made leaves, but I cannot agree with Mr. Wildsmith that inside borders are the best for either early or late forced Vines. You cannot keep the soil so sweet and healthy for the roots in an inside border as when it is exposed to the influence of the outward air; but let the Vines decide the point. I assert that you cannot keep the roots of Vines in an inside border if they can get out, and they will overcome almost insurmountable difficulties to attain their purpose. If they find themselves so comfortable inside, why do they struggle to get out? *M. Henderson.*

Flowering of Agave schottigera.—It my interest some of your readers to know that in our collections we have fine plants of Agave schottigera—one at home, one at Regent's Park, and two at the Alexandra Palace, which are all flowering at once. The tendency to flower at the same time proves to me that they are all from one set of seeds, though we got them from very different sources. At first they were very different in their development, but with age they have lost these differences, and have assumed the common type. They are about seven years old. *F. Crawford, Gr. to F. T. Pocock, Esq., Salisbury House, Jan. 4.*

Paraffin and Carbolic Acid.—Your correspondent "F. C. N." does well in being cautious in recommending paraffin oil as a dressing for fruit trees, for nothing can be more destructive to the bark—it completely destroys it wherever it touches. I consider paraffin oil and carbolic acid equally dangerous. If your correspondent would try a bottle of Bridgford's Antiseptic Liquid, he would find nothing so effectual, and it is quite safe; it is a compound of sulphur, and does not burn the skin. It can be procured at any of the principal seed warehouses. *C. W. B.*

Fruiting of the Common White Jasmine.—Mr. W. Wilson has called your attention to the fruiting of this Jasmine at General Sir F. Gray's. I beg to be permitted to express my gratification in seeing the seeds, as Mr. Hamilton kindly gave me a few dozen, and every one of them grew. *Thomas Rixon, South Hill Park, Bracknell.*

Which are the Best Late Grapes?—In my opinion Mrs. Pince's Black Muscat stands first as a fine peeper. It is excellent for use, and, as a rule, those who do not succeed well with it, I would say, Don't overcrop, and use plenty of charcoal in the formation of the border, and it will colour all right. I use it quite fine from the bottom of the charcoal heaps after the burners have left a little dirt on the top. I think when you asked the name of the Grape she was eating into a flower-pot that the result would be as it has turned out—such a first-class Grape. Lady Downe's is the next best with me; but, singular enough, it never keeps so well as the former, and it has such a good flavour. West's is, perhaps, keeps pretty well, and is very fresh and brisk in flavour. Gros Guillaume should always be grafted on the Hamburg, when it is easily managed, and is a very useful late Grape. The finest I

ever saw of this [kind was at Chiswick, where the roots ran over an arch which covered the hot-water pipes, and was trained to a large house. White Lady Downe's I dug up, and so I have Royal Vineyard, for it neither set well nor kept well. Our soil is stiff, the rainfall considerable, and the situation 400 feet above the sea. Perhaps these three things had something to do with its failure, but White Tokay does very well, and is not bad eating after Christmas. Waltham Cross I have planted; it grows capitally, which is saying a good deal after the poor figure some of our new Vines have cut in growth. I have not fruited it. Snow's Muscat, a Hamburg, and its relative was preserved as an old variety, at Harrington House, Fulham; it was propagated by the late James Lane and the late Mr. Snow, of West Park, who sold it jointly to Mr. Henderson, Pine-apple Place, for an incredible sum. The late Sir Joseph Paxton and my late lamented friend, Mr. Thomas Osborn, of the Fulham Nurseries, and many others, believed it to be nothing more nor less than the old Black Muscat. It is a delicate Grape, only fit for a mid-season fruit, and then when grafted on the Hamburg. Gros Colman is a noble-looking Grape and keeps well, but is only third-rate in flavour. Raisin de Calabre is a late-keeping white Grape, and not bad as to flavour. *F. Rux, Eridge Castle.*

I was rather surprised to read in your last issue that Mr. Grieve had sown his favourite Grape, Black Alicante, third on his list. In my opinion it far exceeds other varieties in its late keeping qualities, but no doubt soil and situation have something to do with it. Mr. Grieve writes that it has become shrivelled long before there are any indications of this taking place in the fruit of Lady Downe's or Mrs. Pince's Black Muscat? I certainly cannot give it that character here, for I know of no Grape that will keep so long without shrivelling, or carry a bloom so long as it does. I am sure that it has the finest flavour. I cut a house of Grapes here on December 15, 1875, bottled, and hung them up in the Grape-room, and on May 17, 1876, I had bunches of Alicante hanging without a shrivelled berry in them, and the bloom as good as on the day they were cut. Mrs. Pince's Lady Downe's began to shrivel long before. *F. Brown, Lasham, Grantham.*

The results of the inquiry respecting the most useful varieties of late keeping Grapes best suited to the various localities, has been published in the *Gardener's Chronicle* of December 23, 1876, regarding spent Hops, I beg to make a few remarks on the results of a lengthened experience. I live near a farm 2 miles south of Edinburgh, of which my father is land steward, and have been engaged in agriculture as well as horticulture. I will briefly state two different trials I have seen spent Hops undergo. Four years ago, when Hops were first introduced on the farm referred to, it was spread over the ground at the rate of 35 tons per acre, and ploughed in in autumn, and the Potato crop was a failure, owing to frost, when lifted it was found, to the disappointment of all concerned, that the tubers were small in size, deficient in quality, and a remarkably poor crop, while the stalks, when measured, were found to be 4 feet in length. Another trial was made similar to that mentioned by G. A. Dains, was tried the following year: the ground was ploughed in autumn, and in spring, when the drills were made and the Hops spread in them, the sets were placed thereon and covered in; exactly the same result was witnessed when lifted as already alluded to, but ever since it was mixed with other composites it has done very well, so that in my opinion, and that of practical farmers, spent Hops by themselves, as a manure for Potatoes, are absolutely worthless. *F. H. C.*

Spent Hops for Potato Culture.—Being interested in reading the article by G. A. Dains in the *Gardener's Chronicle* of December 23, 1876, regarding spent Hops, I beg to make a few remarks on the results of a lengthened experience. I live near a farm 2 miles south of Edinburgh, of which my father is land steward, and have been engaged in agriculture as well as horticulture. I will briefly state two different trials I have seen spent Hops undergo. Four years ago, when Hops were first introduced on the farm referred to, it was spread over the ground at the rate of 35 tons per acre, and ploughed in in autumn, and the Potato crop was a failure, owing to frost, when lifted it was found, to the disappointment of all concerned, that the tubers were small in size, deficient in quality, and a remarkably poor crop, while the stalks, when measured, were found to be 4 feet in length. Another trial was made similar to that mentioned by G. A. Dains, was tried the following year: the ground was ploughed in autumn, and in spring, when the drills were made and the Hops spread in them, the sets were placed thereon and covered in; exactly the same result was witnessed when lifted as already alluded to, but ever since it was mixed with other composites it has done very well, so that in my opinion, and that of practical farmers, spent Hops by themselves, as a manure for Potatoes, are absolutely worthless. *F. H. C.*

shoots in their earliest stage of growth. And besides these, the crops of manure were not only good, but in successive years, and as a rule, remarkably free from disease. This is important. Perhaps Dr. Lindley's observation that the neighbourhood of fragrant oils prevents the growth of moulds, may have held good here. Some time ago, the frost of the present year, the Hops may remain after boiling sufficient to repel the attack of the mould. The refuse of distilleries where such plants as Lavender and Peppermint are boiled for the oil they yield, should, as well as spent Hops, be tried by those who have opportunity and the requisite skill. There is no doubt that a crop of hops in this direction, which may encourage further experiments. S. S. Steenoka.

A Vision of Poinsettias.—The practice at Acton certainly seems to be a very simple one. Would Mr. Reeves, or some one else, be kind enough to state the lowest degree of temperature for October, November, December, &c., to which the Poinsettias will thrive so as to come to a tolerable state of perfection? By so doing they would confer a great boon on not a few who are expected to grow the Poinsettias and have not much convenience in the way of heat. *Enquirer.*

The Weather at Ochtertyre, Crieff, in 1876.—The mean temperature during the various months, as computed from daily observations (the thermometer being shaded and 4 feet from the ground) were:—January, 38°·34; February, 35°·45; March, 37°·11; April, 43°·35; May, 51°·26; June, 56°·31; July, 60°·14; August, 58°·24; September, 52°·33; October, 49°·16; November, 38°·28; December, 36°·39. The highest temperatures recorded during each month were:—January, 49°; February, 49°; March, 51°; April, 62°; May, 67°; June, 78°; July, 81°; August, 76°; September, 61°; October, 66°; November, 54°; December, 48°. The lowest temperatures recorded during each month were:—January, 24°; February, 25°; March, 24°; April, 25°; May, 31°; June, 42°; July, 45°; August, 43°; September, 37°; October, 37°; November, 25°; December, 21°. With the thermometer exposed, the highest temperatures in the sun's rays were:—January, 103°; February, 105°; March, 111°; April, 122°; May, 109°; June, 123°; July, 118°; August, 121°; September, 111°; October, 103°; November, 100°; December, 76°. The lowest temperatures with the thermometer exposed on the grass were:—January, 19°; February, 17°; March, 14°; April, 14°; May, 22°; June, 30°; July, 36°; August, 32°; September, 27°; October, 29°; November, 14°; December, 21°. The number of nights on which the thermometer fell below 32° in each month were:—January, 28; February, 23; March, 28; April, 16; May, 13; June, 5; July, 0; August, 1; September, 3; October, 4; November, 10; December, 13. The temperatures at 3 inches below the surface were:—January, 37°; February, 35°·3; March, 37°; April, 44°·4; May, 53°·5; June, 58°·7; July, 63°; August, 61°; September, 54°·2; October, 50°·4; November, 41°·1; December, 38°·6. At 12 inches below the surface:—January, 38°·2; February, 37°·2; March, 38°·1; April, 44°·8; May, 53°·2; June, 58°·5; July, 62°·5; August, 60°·9; September, 56°·1; October, 51°·9; November, 44°; December, 39°·7. At 22 inches below the surface:—January, 39°·1; February, 38°·3; March, 38°·3; April, 43°·5; May, 50°·7; June, 55°·6; July, 60°·3; August, 59°·7; September, 56°·1; October, 52°·5; November, 45°·9; December, 41°·1. The greatest rainfall during the various months was:—January, 3·01 inches; February, 4·57 inches; March, 4·50 inches; April, 3·52 inches; May, 0·19 inch; June, 3·84 inches; July, 5·58 inches; August, 3·32 inches; September, 2·84 inches; October, 2·99 inches; November, 4·51 inches; December, 11·32 inches. The greatest rainfall during twenty-four hours in each month was:—January 20, 0·66 inch; February 27, 0·73 inch; March 4, 0·63 inch; April 26, 1·23 inch; May, 0·09 inch; June 22, 0·09 inch; July 1, 0·53 inch; August 3, 1·00 inch; September 5, 0·87 inch; October 12, 1·14 inch; November 15, 2·63 inches; December 31, 1·53 inch. G. C.

Autumn Planted Potatoes.—Having read Mr. Webster's letter at p. 816, vol. vi., in your number for December 23, I beg to say, with all respect to you, that I have nothing to retract or to withdraw in what I have written on this subject. I think Mr. Webster was easily discouraged from trying more than once, and further that his trying the experiment in a season when the disease was exceptionally bad was all against it, so that I have nothing to retract or to withdraw in respect of soil. Potatoes, and when the disease is very severe good seed is difficult to procure, and as he says his Ashleaf Potatoes produced small tubers without tops, it is to me a proof that diseased Potatoes were planted. Flant potatoes with tubers that were well-drained soil, and the result will satisfy the planter. R. Mather, *The Gardens, Boyne House, Trimbridge Wells.*

The Weather of 1876.—A few notes taken from the records kept here may be of interest to the readers of the *Gardener's Chronicle*. The total rainfall for the year was 32·98 inches, against 37·14 of 1875. The number of days on which 0·1 or more fell during the year was 144; the heaviest rainfall in twenty-four hours occurred on September 28, when 1·26 was taken; the four wettest months were April, 3·71, September, 5·07, November, 3·04, and December, 5·57, rain falling on twenty-three days during this month. The three driest months were May, 0·78, June, 1·04, July, 0·46, while January, February, March, August, and October, gave a steady average of 2·57 inches. The maximum temperature in the shade was reached on August 14, when 89° was registered; the minimum occurred on January 12, registering 17° of frost. The highest reading of the barometer was 30, the lowest 28·3. Two of the most winterly days experienced during the year were the April 13 and 14; the warm sunshine of the preceding week was succeeded by cold east winds and foggy mornings, and one of the heaviest snowstorms ever remembered in this neighbourhood, being 13 inches on the level, and in places drifted to the depth of as many feet. F. Clarke, *Barleythorpe, Oakham.*

Hatching Boxes.—In Christiania and its neighbourhood, and doubtless in other parts of Norway, the gardeners and proprietors fasten (with wire or nails) "Ruge Kasser," or "hatching-boxes," to the upper parts of the trees in their gardens and grounds, to which are regularly resorted to by such birds as build their nests in holes in trees (which are not frequently to be found in the young, healthy, growing trees in a

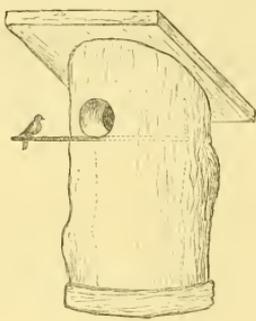


FIG. 9.—HATCHING BOX FOR BIRDS.

garden or plantation near a house), and broods are hatched and reared, safe from the depredations of *Felis domestica*. The presence of such birds in our gardens as the pied and spotted flycatcher, the redstart, timouze, wrenneck, starling, &c. (all of which would, I believe, build in such a "Ruge Kasser"), must be looked upon as an advantage, as they all feed upon insects, and they are pretty and interesting objects in the eyes of young students of ornithology. I send you a rough drawing of a "Ruge Kasser" (fig. 9), and beg to remind your readers that now, in the slack gardening season, is the time to make them, ready to be nailed or wired up in the beginning of February. S. Bryan Crovther, *Emery Down, Lyndhurst, Hants.* [The dimensions are:—Height at back, 16 inches; and of the front, 11 inches. Diameter, outside measure, 8 inches; inside measure, 5 inches. Length of sloping roof, 13 inches. Eds.]

Holly Berries.—It is perfectly true there is a great deficiency of Holly berries this winter, but that is not a very unusual occurrence after a fruitful year. The reason is obvious, that if trees bore largely every season they would soon become bare and worn out. In fact, a rest at times is essentially necessary, in order that the tree may regain its vigour, as an excessive fruiting year is not conducive to strong growth, and *vice versa*. With respect to the scarcity of Holly berries being attributable to the want of bee-fertilizing flowers on the female plant (the Holly being dioecious), I think Mr. Darwin's theory is wrong, as also that the common Holly (*Ilex Aquifolium*) is so very hardy, for I know it will not thrive in Canada, and is only indigenous in most parts of the middle and south of Europe. Although the blossoms in early spring are likely to be, and frequently are destroyed by frosts, which are so apt to occur at that period of the year, and which would account for a partial or total

failure of berries, I believe the present failure has been occasioned by an excess of moisture in the ground, followed by a warm spring temperature, which gave the Hollies an impetus of growth, which they had not had for several preceding years, and thus, instead of producing berries, an unusual growth was made. To prove this, I transplanted many large Hollies the year before last, which at the present time are full of berries, whereas similar plants, not transplanted, have not one; showing that when the redundancy of sap is checked, whether from removal, drought, or disease, fructification ensues without the intervention of bees. Hollies are particularly fine and plentiful in this locality, and so are bees, but still there are no berries. The failure is of too general a character throughout the country to be attributed to the death of bees, which I think must be more imaginary than real. *W. F. G. S.*

In my nursery there was up to Sunday night, December 10, a splendid bed of the common Silver Holly, pyramids, 5 to 6 feet, laden with berries, and joining it on the south side a bed of similar plants of the small-leaved Silver, male. In other parts of the nursery where the common Silver stands alone, there is not a berry, and the same is observable of the Aucuba plants contiguous to the males, being covered with green berries, while distant plants are without fruit. If bees are the chief fertilizers, I have six hives at present, as Mr. Darwin suggests, how comes it that the other beds are without berries, when all stand within an area of 17 acres? On the Sunday night alluded to thieves entered the nursery, and cut down to the stock fifty-nine of the berries, and, as they were all of the same looking as disconsolate as their owner, *George Handcock, Abbey Wood Nursery, Kent.*

The Fungi of "Whales."—In a recent number of the *Gardener's Chronicle* Professor M'Nab communicated an interesting and amusing paragraph, headed the "Flora of the *Sperm Whales* recently discovered by my friend, Mr. Charles B. Plowright, has published in *Grassill's* list of fungi found by himself in the dead carcase of a whale stranded near Kings Lynn. The "whale-fores," says Mr. Plowright, produced an "orange Fusarium" and various moulds, from a crack in the side of the whale's eye (the "Minerva from the brain of Jupiter) an Agaric very near to, if not identical with, *Agaricus bullaceus*—a fungus hitherto supposed to be confined in its ravages to horse-dung. But, strangest of all, "in the very centre of the brain, a curious, shining, yellow, thin stratum" of dry brains, grew, says Mr. Plowright, "a cluster of *Agaricus orestreus*!" (1) Note this disrespectful parasitism of the Oyster Agaric on the collapsed cetaceous brains can only be termed *ostreus* sauce to a whale! *W. F. G. S.*

Vicomtesse Héricart de Thury Strawberry (see p. 21).—The Vicomtesse and its synonyms, namely, *Marquise de la Tour Maubourg* and *Duchesse de Trevisse* or *Trévise*, were all raised by Jamain and Durand; but I do not know the parentage. I believe the "best" know more about hybridization than the guessing hybridizer. I may say in passing, that I believe Mr. Darwin's article on the Holly berries is right, but frost and excessive draughts may have had something to do with it. I saw some few green berries in our church, but not one "Coral Holly" in it. I am a Locke truly said "I saw a little, guess a great deal, and then jump to a conclusion." *W. F. Radcliffe, Jan. 8.*

The Weather at Hutton Hall, Guisborough, in 1876.—The rainfall last year at this place was:—In January, 0·96 inches; February, 2·23; March, 1·67; April, 2·45; May, 4·65; June, 4·25; July, 5·07; August, 2·31; September, 4·33; October, 1·72; November, 3·68; December, 5·15—total inches, 32·93, being in excess of the rainfall of 1873 by 12·05 inches, of 1874 by 7·38 inches, and of 1875 by 2·88 inches. *W. M'Indoe.*

Protection of Bottom Heat for Outside Vine Borders.—In the case of early vineries with outside borders, all growers will admit that the border ought to be protected. Now the common method of doing this is to put any amount of fermenting material on the border six or eight weeks before production commences, and at a time that this takes place, how often do we see the whole covered with snow, which in thawing together with cold rains forms a sad check to the previously, I doubt not, overbested border, and this at a time when fresh material is generally wanted for other purposes. For the sake of argument let us style this bottom-heat, and contrast it with the following plan of protection. Fix a framework to span the width of the border, and sufficiently strong to support shutters (exactly in the same way as lights or sashes in plantations). For the sake of argument should have their outside borders well watered by the end of September, or as soon after that time as a supply can be had. Next by in dry leaves,

as they can be obtained from time to time, till a good covering is on. A shutter or two will have to be removed for that purpose, but care must be taken to replace them again, as the object is to retain the heat by keeping off cold winds, rain, snow, &c. The leaves will check evaporation and the border moist, the latter being obtained soon after the roots pushed into growth, &c., after the first leaves were formed. I will only add that the border remained moist enough throughout the period of forcing, and that the shutters remained on till they were required for the protection of bedding stock, which had been cutting Sweetwaters, the first bunch being cut on May 3. *T. W. Bond, Weybridge.*

Unseasonable Christmas Cards.—Mr. W. G. Smith's "Fungus Card" are evidently quite unexceptional for the time of year, as the fungus is such a late autumn product that it shocks no sensibilities to find it allied to Christmas topics. With a large mass of Christmas cards, however, incongruities are abundant. Warm, sunny landscapes, flowers in the richest and most unatural of hues, Roses, Violets, and numberless unrecognisable kinds decorate these cards to such a large extent that they only serve to show how thoroughly wintery the Christmase is. On the other hand, the stereotyped snow and frost, and the intricate and unmeaning designs, and it seems to be very difficult for the ordinary designer to furnish much that is at once new, yet seasonable. *A. D.*

Florists' Flowers.

In noticing the new Azaleas of 1876, on p. 14, Duke of Edinburgh (Parsons), a finely formed bright coloured variety of good substance, was unfortunately overlooked.

Not only were new DAHLIAS somewhat numerously produced during the past summer, but there was a larger average than usual of thoroughly good flowers. The list of new show varieties obtained by the veteran Mr. John Keynes, of Salisbury, may appropriately lead the way, and perhaps the highest place should be given to Mrs. John Downie, pale ground heavily edged with rosy purple, perfect in form and petal; it is also a flower of great constancy, for it could be seen in fine condition at the Duke's exhibition, and it has failed to obtain a First-class Certificate. Next in order of merit should come Perfection of Primroses, beautiful primrose, slightly edged with rose, fine form and substance; John William Lord, shaded orange-buff, paler on the surface, a novel and pleasing flower of high quality; Minnie Bond, pale cream, charmingly edged with purple, a very taking flower, vivid self bright scarlet, fine petal and outline; John Wyatt, crimson-scarlet, extra fine form and petal; John Fraser, chocolate ground, shaded purple and buff, very novel and distinct; and Dauntless, dark orange shaded with buff. Other decidedly good flowers are Mrs. Drummond, pale lilac; Heron, rich yellow, rich shaded with purple; David Saunders, dark mulberry, fine quality; and Benjamin Crossland, rich dark purple, fine form. Mr. Turner's list, as usual, one calculated to maintain the great reputation of Slough as a Dahlia producing centre. Christopher Ridley, bright glowing crimson-scarlet, fully justifies Mr. Turner's remark that it "is the gem of the season for form," and the fact that it was so often seen testifies to its great constancy; Ariste, yellow, shaded with carmine on the edges of the petals, is a very pleasing flower, of fine form and substance, and is well companioned by Burgundy, rich dark purple, shaded with purple-maroon, a remarkably attractive colour in a show flower. Canary, clear pale yellow, fine form and substance; Drake Lewis, rich bright scarlet, very striking in point of colour, fine form; Figaro, yellow, edged and suffused with bright red; and Black Knight, rich dark maroon, a very near approach to a black Dahlia. The following appropriately bring up the rear:—Elsa, French-white, full-sized and good form; Mr. Urquhart, white, heavily tipped with purple; The Rover, pale buff, a fall flower of excellent form; and Vivian Grey, a quite new and very pleasing shade of colour, best described as a straw-coloured brown, fine form. Mr. Geo. Kewling's Earl of Beauchamp is a noble self of great quality, colour plain, heavily shaded with purple, and probably the best dark Dahlia to be distributed. Mr. Rawlings also has Countess Tasker, white ground, heavily tipped with lilac.

Of Mr. Keynes' new fancy flowers the best are Monsieur Chauvrie, lilac ground, striped and spotted with dark crimson, very fine substance, hold and striking; and Rosetta, a charming flower, white ground, beautifully striped with rosy-purple, most acceptable for exhibition purposes. They are well supported by Hercules, yellow ground, striped and speckled with crimson, a fine hold flower; Tippy Bob, yellow ground, striped with rose and purple, novel and distinct; Lucy Fawcett, straw colour, striped and speckled with rich crimson, and Lady Turner's Mar, salmon, tipped with white. Edith Turner and Mrs. Standish fittingly head Mr. Turner's batch: the former is pure pale yellow, delicately tipped with pure white, a charming flower of fine form—the latter pale amber-yellow suffused with carmine and tipped with white, a very pleasing combination; Mrs. Parris is deep yellow, tipped with white; Gameter, pale buff, striped with maroon; Oracle, deep yellow, heavily striped with bright crimson; and Peacock, dark purple-maroon, distinctly tipped with white. Mr. Rawlings' new Fancy Singularity is something of the character of Mr. Turner's Mar, salmon, but quite distinct from it; the ground colour is amber, edged with red and tipped with white; very novel, fine, and attractive.

So many new varieties of GLADIOLUS are being produced both at home and abroad, and so few are seen at the London exhibitions, that it is only of the latter some estimate can be given. Messrs. Kelway & Son were awarded Certificates for Dr. Hogg, white, suffused with rosy lilac, and feathered with crimson; Lady Aberdare, white, streaked with purple; and the Rev. M. J. Berkeley, salmon-red, the outer petals feathered with scarlet, spike very fine. Marquis of Tara's Mar, salmon, is a fine variety, colour rose, flushed with lilac, the lower segments cream, with crimson flame.

In regard to new HOLLYHOCKS, the paucity of them is explained by Mr. W. Chater, who states that the disease has played such havoc during the past three years that he has been prevented publishing his annual autumn catalogue of Hollyhocks, and so severely did the disease decimate the summer cuttings that up to this time he has not been able to send out a single plant so obtained. His new flowers are Crimson Queen, dark shaded crimson, the darkest flower of this colour yet offered; Her Majesty, bright rosy lilac, in the way of Victor, very large flower, extra fine spike; Le Grand, in the way of Mrs. Chater, but of a deeper salmon, very fine; Achievement, rosy red, flashed with buff in the centre, very pretty and distinct; Virgin Queen, pure white, a large hold flower of fine quality; and Vesuvius, glowing reddish crimson, very bright, and of the finest form. Of the foregoing, Le Grand and Virgin Queen have received First-class Certificates.

Messrs. Veitch & Sons have been remarkably successful in the production of fine new forms of HIPPEASTRUMS, and were awarded First-class Certificates for the following high-coloured flowers:—Agatha, vermilion, striped with scarlet, very fine held petals; Circus, rich blood-crimson, extra fine; Clo, bright scarlet, slightly shaded; Junius, deep crimson flushed with vermilion, bright and striking; Phoebe, glowing vermilion-red, very showy. Rev. T. Stanforth, deep red, striped with crimson; Sultan, deep crimson, very fine; and Thalia, rich blood-crimson. All the foregoing have large open flowers, and generally petals of great breadth and substance.

The new HYACINTHS of the past year were not of a character to excite much enthusiasm among the growers of this fine spring flower. Sultan, single bulb, dark violet-purple, good bells; Golden Lion, single yellow, clear primrose-yellow, large bold spike; and The Shah, single blue, purple, with a peculiar metallic lustre, were shown by Messrs. Veitch & Son, and received Certificates. Messrs. Cutsh & Son had the same award for Princess Louise, double red, bright deep salmon-red, close spike, and well-formed bells.

Mr. Bull's new double bedding *Lobelia coralæa* also macrorata is a double form of *L. speciosa* Paxton; but whether it will be any more effective or useful as a bedder than the first of the type remains to be seen. A deep indigo-blue single variety, named St. Mark's Blue, promises to be a great acquisition among the present selection.

Messrs. Harrison & Son's new *Mimulus moschatus* Harrison is an interesting hybrid, and while the scented character of the Musk is retained the flowers are considerably enlarged and nicely spotted.

The newer Zonal PELARGONIUMS have received so much attention of late in the *Gardener's Chronicle* that it is not necessary to particularise the varieties in this collection. The new flowers raised by the late Mr. J. R. Pearson, Mr. J. George, Mr. F. Miles, and Dr. Denny, among others, have proved to be inclusive of some very fine forms. The trials made at the Chiswick gardens of the Royal Horticultural Society year after year, by Mr. A. F. Barron, afford such valuable opportunities for collecting information and instituting comparisons that the results of these trials may be accepted as reliable. As so many new varieties are constantly being produced, it is well that their claims to value should be investigated and adjudicated on by a competent body like the Floral Committee of the Royal Horticultural Society. I, for one, sincerely hope these functions will not be abdicated in favour of the Pelargonium Society.

The show or large flowered PELARGONIUMS have not been so well represented as in former years; perhaps the new flowers were not in character at the time the meetings of the London horticultural societies were held, and the only ones, only Mr. Foster remains, Black, Foster, and Hoyle, only Mr. Foster remains working in the interests of this fine flower. Of the latter's raising the following Pelargoniums received First-class Certificates:—Bridesmaid, rosy purple lower petals, dark top petals, very fine form and substance; Purity, salmon-red lower petals, dark top petals, large white throat, a fine and striking flower; and Toby, orange-salmon, lower petals heavily veined with black, glossy dark top petals, a fine painted flower; Sappho (Turner), cherry-rose, suffused with purple, dark top petals, is a variety of dwarf growth, and extremel free. Of new varieties of Mr. Foster's raising Mr. Turner is distributing *Edith*, *Edith*, *Heperis*, Lord of the Isles, *Marchioness*, *Princess Donna*, *Rapert*, *Sovereign*, and *Viscount*, several of which received First-class Certificates in former years. The Rev. J. Matthews received the same award for *H. S. Ryder* and *Wallace*, two varieties of considerable promise and good character. The Rev. A. Rawson's striped variety, *Queen of Stripes*, is extremely distinct in character, and will make an invaluable decorative plant, the lower petals bright rose, striped with vermilion lines; the rosy upper petals flaked with glossy dark.

In the way of hardy PERENNIALS a most desirable break has been obtained in the cortoides anemone section by Mr. A. Dean, Belfont, as a result of crossing the forms already in cultivation. About a dozen seedlings have been selected, and two of them have received First-class Certificates, viz., *anæona laciniata*, a deep rose-crimson flower, with handsome lacinated segments, and *grandiflora maxima*, a greatly improved form of *grandiflora*. A fine yellow hose-in-hose Polyanthus, named *Golden Queen*, raised by Mr. J. Miller, Upwey, is a decided acquisition, and will be warmly welcomed by lovers of spring blooming hardy flowers.

Ficotee Princess of Wales is a fine sulphur-coloured self flower, raised by Mr. F. Perkins, Leamington, which is likely to prove very useful for forcing; it is charmingly scented, and supplies quite a new shade of colour.

Messrs. Veitch & Sons' hybrid greenhouse Rhododendrons of the javanicum type will be of great value for house decoration; and the worth of the strain is seen in the fact that not less than seven varieties have received First-class Certificates. A hybrid named *Fisher Holmes*, shown by the well-known Sheffield nursery firm, is remarkable for its large white sweetly perfumed flowers.

Finally, the ROSES claim attention. Lots of new Roses were exhibited during the past year, and Messrs. Paul & Son received certificates for Duke of Cornwall, H.P., deep velvety crimson, flashed with lively red; and *Duchesse de Vallambrosa*, H.P., a Continental variety, colour glossy rose, tinged with lilac; Mr. W. Paul for *Magna Charta*, H.P., a beautiful glow of rose, large and full; Mr. Laxton for Mrs. Laxton, H.P., bright rosy purple; Mr. H. Bennett, for *Comtesse de Séciénye*, H.P., a beautiful flower, delicate rose, tinged with lavender in the centre; and for *Madame François Jamin*, Teas, bright orange-buff, charming in the bud; and Mr. Noble for *Queen of Bees*, Bourton Rose, dwarf in growth, very free, colour bright reddish rose.

Such is the legacy left to floriculture by the year 1876. It is however incomplete without some reference to the interesting trial of bedding Pansies and Violas which took place at Chiswick, under the

aspices of the Royal Horticultural Society, during the past summer. The newer forms cultivated were, Dr. Stuart (Stuart), mauve-purple; Ilcinia (Dean), bluish lilac tinged with red; Peach Blossom (Dickson & Co), reddish or puce lilac, paler at the tips; Princess Teck (Dean), pale bluish lilac; Royal Blue (Dean), deep purplish blue; Sovereign (Dickson & Co), bright deep golden-yellow; White Swan (Dean), pure white; and Williams (Stuart), a greatly improved *Viola cornuta* Perfection. R. D.

MR. DEAN throws out a suggestion for *Auricula* growers in the last number of the *Florist* and *Pomologist*. It is that they should admit a class of SELF ALPINE AURICULAS as an equivalent to the self *Auriculas* admitted as a class amongst the show flowers.

"The first priority," he remarks, "in Alpines is the shaded corolla lobes or petals, *i.e.*, the bases of the marginal or ground-colour must be dark, with a paler edge, the dark hue shading off into the pale. Another important property is that, whether the centre or paste be yellow, or sulphuretyellow, or cream, or even white, it must be free from any trace of that meanness which forms the paste in the true self *Auricula*. But," he argues, "as every correct alpine, according to the Northern estimate, must have shaded petals, it is obvious that some of Mr. TURNER'S flowers, and those produced by other artists, though perfect in the centre, are yet inadmissible, because of their unshaded margins. But why not rather be a class for self alpine, as there is for self *Auriculas* in the show division? Take flowers like Black Prince, Colonel Scott, Diamond, Etna, John Leech, King of Crimson, Mercury, Perceval, and Spangle, out of many others which have been raised at rough, and they prefer in the place among shaded flowers, because almost entirely self-coloured on the margin; and yet, though they have large finely-rounded lips, with golden mealless centres, and brilliant marginal colouring, they are not allowed to start in the competitive race. By all means allow the shaded form to be characteristic of the true alpine, but let there be a class for self, so that they also may have a chance to make a reputation on the exhibition-table."

WE are informed that a most important general meeting of the members of the following FLORIST Societies—namely, the National *Auricula* Society, the Royal National Tulip Society, and the National *Carnation* and *Picotee* Society—will be held at the "Old Bull's Head" (off the Market Place), Manchester, on Wednesday next, January 17, at 2 o'clock P.M., for the purpose of arranging the dates of this year's exhibitions, the schedules of prizes, the plan of judging, and other matters and work connected with the management of the national florist societies.

PROPOSED SHOW OF CARNATIONS AND PICOTEES.—The undersigned get to be allowed to state that, in consequence of the uncertainty as to the action of the Royal Horticultural Society, they intend to promote a show of Carnations and Picotees, to be held in London during the season (July), and they will be glad of the co-operation of their brother florists in the work. A meeting to arrange preliminaries and commence a subscription for the needed prize funds will be held at the rooms of the Horticultural Club, 4, the Terrace, Strand, on Wednesday, Jan. 31, at 1 for 2 o'clock, when the attendance of all interested will be greatly esteemed. *Charles Turner, Royal Nursery, Slough; J. Smith Douglas, Loxford Hill Gardens; E. S. Dowell, Larkhall Rise, Clapham, S.W.*

The Villa Garden.

GENERAL OPERATIONS FOR JANUARY.—The kitchen-garden is practically closed to the Villa gardener. The soil is waterlogged, it is so completely saturated with the rain that falls with such persistence—as if Nature were tremendously in arrears in the matter of moisture, and was making rapid haste to pay off the debt—that to move it with advantage is almost impossible. It cannot be dug except under the most favourable circumstances, if they exist, and therefore it is best not to get on it, for who does so will only tread it into a kind of quagmire, and thus increase the difficulties of getting the soil into workable condition when fine weather comes. If the rain be accumulating on the surface in puddles, and especially near the roots of newly-planted trees, some

effort should be made to draw it off by cutting little channels, and causing it to flow towards some lower spot, where it can pass away altogether.

If he can get at pyramidal and espalier fruit trees from the path, or by laying a short plank on the soil about them, and from such reach the trees, let him prune them by cutting away from the main shoots any small thin growths that are not likely to form blossoms, but being careful not to deprive the tree of any quota of its glory of flower in spring by cutting away blooming buds or fruiting spurs—*i.e.*, short spur-like points that will bear blossom and fruit. They can be readily dealt with by the long tips. Pyramid trees, when planted in a small garden, have to be pretty freely pruned to keep them within bounds; and whether severe pruning be or not a practice to be condemned, space is of first importance, and, if the Villa gardener desires to have several kinds of fruits growing on a given space, he must prune to keep his trees well within their proper dimensions. But there is such a thing as judicious pruning, as opposed to erroneous pruning. The summer pruning of these trees, as recommended by Mr. Rivers and others, practically keeps the trees clear of redundant wood, though it will be necessary to cut back the lateral shoots, thrown out in late summer, but the leading shoots—the tall upright growths which are more or less strong, according to the nature of the soil in which the plants are growing—can be cut back at the end of the summer, as recommended by some, or left on till mid-winter. Our practice is to leave them on Apple, Pear, Plum, and Cherry trees till this time of the year, and then shorten them back to six eyes or so, according to the height required by the tree. This is what we do; and these leading shoots, having become quite hard by Christmas, prove useful as tying sticks to support plants, as Carnations, Pinks, &c. This work can then be proceeded with, even if the soil be wet, so that the plants can be reached from the garden-path on a piece of board laid on the soil as above recommended.

Then wall trees may receive some attention. In many Villa Gardens of oblong shape and restricted dimensions, the garden paths are frequently so arranged as that there is a warm border of 2 feet or so in width, in which the wall trees are planted. These trees can be reached from the path, or at least by placing one foot on the border, keeping the pivot foot on the walk. The weather being so mild, advantage may be taken of it to get all the leading shoots of Peaches, Nectarines, Apricots, and Plums into position, fastening them permanently and securely to the walls by shreds, or to the wires by ties, and by croaking about the joints, as these will have to be shortened back later on. The wet season being so hostile to gardening operations generally, it is well to get such work as the training of fruit trees as farward as possible, so that when the long-hoped-for fine weather comes, the attention of the Villa gardener may be devoted to clearing up arrears of ground-work.

Creepers on walls and on trellises, and also those growing over wire archways and against pillars, should be pruned and trained, and made neat and trim. They are all more or less getting quite active; and how can they be less than active while the weather is so mild as this. In the case of the climbing vegetables, it is his true of Roses and Clematises. The latter are moving forward rapidly, and such strong growing sorts as rubella, Jackmann, tumbidgensis, and others are making a remarkably free growth. It is from the extreme points of the ripened wood of the previous summer that the greatest activity is manifested (shoots that were shortened back to 4 or 5 feet at the end of the summer). If it be requisite to cut back the Clematises close to the ground let it be done at once, and if the wood quickly breaks out again at the points at which it was pruned back, then a few sprigs of evergreens can be placed against them when they are in the flowering state. The Clematis is among the hardiest of hardy plants, but sappy young growths are certain to be injured by frost, and they should be protected accordingly. Roses must be left to the tenderness of Mother Nature. In the case of climbing Roses, thin out the wood rather than cut the leading shoots back hard, unless it is necessary to cut back hard to reelete naked spaces near the ground. Place some manure and leaves about the roots of the creepers after the plants are pruned and trained; it will afford protection in frost, and be an invaluable fertilising agency when, in obedience to the moving

influences of a clear, bright, warm spring, all plants and trees will break forth into a renewed life.

Here, then, are a few of many matters that may fittingly occupy the attention of the Villa gardener during the present rainy season. But the winter is none the less a time for active operations in the garden because it is wintry and dull, and the weather is sunless and the days short. There are many things to be done. All necessary outdoor work should be got forward in suitable weather; and house work, such as cleaning, repairing, &c., can be attended to when rain keeps the gardener within-doors. Care is requisite in affording protection against extremes of heat and cold and sudden changes of temperature, to tender plants in the open air—being very careful not to uncover too soon or too early in the day after severe frost, and never failing to bear in mind that dryness is always an invaluable help in these matters. Another matter of importance is to refrain from potting and repotting plants in a state of rest, except it be those that are being aroused from a dormant state, and when a little heat can be given them. Fuchsias, for instance, are commencing to grow fast, but it is far better to let them alone, and keep them pretty dry at the roots till lengthened days bring more sunlight, and the necessity of repotting cannot be avoided. Their duties will suggest others, for the gardeners' occupation is one requiring a continuous, unceasing, and endless round of attentions, and the more faithfully and intelligently these are rendered, the more are they likely to become so many guarantees for success in the future.

Notices of Books.

AMONG the principal contents of the *Gardener* for the present month are the following:—Forthright Needed by the Gardener. Conservatory Decoration. On Dwarfing Chrysanthemums; Horticultural Boilers; Ornamental Trees and Shrubs—Betulas; Lessons in Drawing, &c.; Market-garden Vegetables; Atmospheric Humidity; The Chrysanthemum and its Culture; Mr. Shirley Hibberd on "Natural Fruit Culture"; Wright's Patent Endless Flame-improving Hot-water Boiler; Flowering Pelargoniums in Winter; White Banksian Rose as a Stock for Maréchal Niel; The Famous Vine Spout; Scorched Leaves.

—Among the principal contents of the *Villa Gardener* for the present month are:—Water Boquets; Embellishing Villa Residences; Gardening for Beginners—Drainage; The *Auricula*; Lilies, Anemones, and Ranunculi; Delphiniums in Pots; Epiphyllums—Leaf-flowering Cactuses for Villa Gardens; The Currant, and its Cultivation; Bush Fruits; Notes on a Few Useful Vegetables of Recent Introduction; Winter and Early Spring Cucumbers; The Treatment of Annuals; The Villa Gardener's Plant Houses; Greenhouse Climbers; Artificial Heat for Small Greenhouses or Plant Stoves; Grafting and Storing Dahlia Root.

PUBLICATIONS RECEIVED.—Journal of Botany.—Journal de la Société Centrale d'Horticulture de France.—The Royal School of Mines Magazine, a new publication, conducted by students of the establishment in Jernyn Street, and largely consisting of the adventures of former geological students in India, Brazil, &c.—Le Moniteur Horticole Belge.—Revue Horticole.—The Gardener.—Villa Gardener.—Westnik.—Belgische Horticole.—Illustration Horticole.—American Agriculturist.—Hamburger Garten Zeitung.—American Agriculturist.—The Horticultural Directory for 1877.

Obituary.

MR. PETER STEWART, gardener at The Glen, Peebleshire, for the last five years, died at Langton, near Dalkeith, on December 22, at the early age of thirty-three, leaving a widow and young family to mourn his untimely loss. He was a native of Dalkeith, and served in the Duke of Buccleuch's Gardens there for about twelve years, afterwards going to the Tweed Vineyard, Clovenfords, with Mr. Thomson, and then to The Glen. His career has been a comparatively short one, but few young gardeners have displayed more energy and ability, or been more successful during the few years he has been at The Glen, and it is pleasant for his friends to know that to the last his services have been most highly appreciated by

Mr. and Mrs. Tennant, his kind and generous employers. Under his able management the gardens at The Glen have become one of the most noteworthy places in the South of Scotland, and during the last three or four years he has been a keen and very successful exhibitor at the "International" and other horticultural shows in Scotland, exhibiting Pines and Grapes in particular in such remarkably fine condition as to have won many of the leading 1st prizes with almost all the best growers in the country. Although cut off so early in life, his fame as an energetic and successful gardener will not soon pass away, nor will he be readily forgotten amongst his acquaintances as a most kind and warm-hearted friend, whose loss they deeply regret.

— We regret to record the death on December 9 last of Mr. F. G. WILKINS, of The Poplars, Leyton. The deceased gentleman had been in ill-health since August last, but as his ultimate recovery was looked forward to, his death at the age of thirty-nine years was rather unexpected. Mr. Wilkins was a great lover of plants, and a warm supporter of flower shows, as his contributions to all the leading metropolitan exhibitions for the last ten years bear witness. Thirteen years ago he began to form the collection of plants which ultimately was destined to become so famous. The first things taken in hand were Pelargoniums, and then, shortly afterwards, Heaths, stone and greenhouse plants, and Orchids were added. Of the manner in which one and all of these subjects were cultivated and exhibited by his gardener, Mr. J. Ward, we were not now easy to speak, so well were his specimens known to most of our readers, and so well did they always stand in the prize lists. We regret to say that the entire collection is to be sold, and that Mr. Ward has to seek a new employer, but we trust, from his abilities as a plant grower, he will not be long in finding a suitable position.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON. FOR THE WEEK ENDING WEDNESDAY, JAN. 10, 1877.

Table with columns: MONTH AND DATE, BAROMETRICAL TEMPERATURE OF THE AIR, WIND, RAINFALL. Includes data for Jan. 1-10 and a monthly mean.

- Jan. 4.—Dull and wet till 10 A.M. fine afterwards. Cloudless at night. Very mild.
5.—Fine and bright till 3 P.M.; dull with occasional rain after. Mild.
6.—Dull with occasional rain; fine at intervals. Strong gale in evening. Mild.
7.—Rain till 7 A.M., cloudy after. Frequent rain throughout. Heavy gale in early morning. Mild.
8.—Overcast, dull, and wet throughout. Mild.
9.—One fine day, but occasionally dull and rainy, with slight showers of rain. Cloudless at night. Mild.
10.—Overcast, dull, and foggy day. Heavy rain fell after 4 P.M.

The rainfall of this winter is very remarkable as following the very unusual fall in December. Beginning with December 1, 1876, rain has fallen on every day, with the exception of December 9, 10, 13, 14, 17, 22; and on two days in December, viz. the 24th and 25th, the falls were very heavy, amounting to 6.8 inch, and 1.1 inch respectively. Since the beginning of this year rain has fallen every day; on January 9 and 10 the amount was nearly an inch on each day. The amount of rain from January 1 to the present time is 11.5 inches, the average fall for the whole month of January is 2.9 inch. The amount from December 1 to the present time is 5.02 inches, the average fall for December is 2.2 inches, and I believe that so large a fall at this time of the year is unprecedented.

LONDON: Barometer.—During the week ending January 6, 1877, in the suburbs of London, the reading of the barometer at the level of the sea decreased from 29.50 inches at the beginning of the week to 29.10 inches by the morning of January 1, increased to 29.76 inches by the afternoon of the 2d, decreased to 29.17 inches by the afternoon of the 4th, increased to 29.35 inches by the morning of the 6th, and was 29.08 inches at the end of the week. The mean reading for the week at sea level was 29.29 inches, being 0.43 inch below that of the preceding week, and 0.69 inch below the average.

N.B.—The mean daily readings of the barometer have been all below their averages from Nov. 25, 1876, to Jan. 1, 1877, with the exception of January 4, and 4 days in December, when they were a little above their average values. The mean amount below the average for this period of forty-six days was 0.507 inch.

Temperatures.—The highest temperatures of the air observed by day varied from 50° January 1 to 44° on the 10th; the mean for the week was 52½°. The lowest temperatures of the air observed by night ranged from 33½° on January 2 to 49½° on December 31, 1876; the mean value for the week was 42°. The mean daily range of temperature in the week was 18° on the 1st, 16° on the 2d, 16° on the 3d, 16° on the 4th, 16° on the 5th, 16° on the 6th, 16° on the 7th, 16° on the 8th, 16° on the 9th, and 16° on the 10th. The mean daily range of temperature in the week was 16°.

The mean daily range of temperature in the week was 16°. The mean daily range of temperature in the week was 16°. The mean daily range of temperature in the week was 16°. The mean daily range of temperature in the week was 16°.

Wind.—The direction of the wind was S.W., and its strength strong. The weather during the week was generally dull and wet, and exceedingly mild. The wind was S.W. on Monday, January 1, and also on Saturday, the 6th inst.

Rain was again measured on every day in the week; the amount collected was 1.37 inch.

ENGLAND: Temperature.—The highest temperature of the air was 50° at Blackheath, at Bradford 50½° was the highest temperature; the mean value from all stations was 53½°. The lowest temperature of the air was 26½° at Ecles, 24° at Plymouth, 25° at the lowest temperature; the mean value from all stations was 32½°.

The mean of the seven high day temperatures was the highest at Truro and Plymouth, both 53½°, and the lowest was Bradford, 44°; the general mean from all stations was 48½°. The mean of the seven low night temperatures was the lowest at Manchester, 34°, the highest at Brighton, Plymouth, and Portsmouth, all about 44½°; the mean from all stations was 39½°.

The mean daily range of temperature was the least at Brighton, Portsmouth, Leicester, Norwich, Hull, and Bradford, all about 7½°, and the greatest at Manchester, 15½°. The mean daily range of temperature from all stations was 12½°.

The mean temperature of the air for the week from all stations was 44°, being 7° higher than the value for the corresponding week in 1876. The highest was 49° at Plymouth, and the lowest 39½° at Sunderland. The mean of the 7 days of rain in the week were large everywhere, and varied from 4 inches nearly at Truro, 21 inches at Plymouth, Portsmouth, Birmingham, Sheffield, and Bradford, to 1 inch at Cambridge and Norwich; the average fall over the country was 2½ inches, nearly being 2 inches above the value for the corresponding week in 1876.

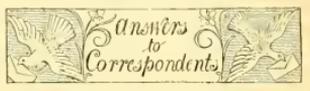
The weather during the week was cloudy and wet and very mild, though fine at intervals. There was still a continuance of floods in the provinces, and in the Thames they have caused great loss of property. The Heavy Gale of Monday, January 1, exceeded any previous for a long time, and was felt all over the country, as well as in Scotland, doing great damage everywhere. Shipwrecks were numerous.

SCOTLAND: Temperature.—The highest temperature of the air ranged from 50° at Leith to 44° at Dundee; the average value from all stations was 47½°. The lowest temperature of the air ranged from 41° at Perth to 25½° at Greenock; the mean value from all stations was 22°. The mean range of temperature from all stations was 25½°.

The mean temperature of the air for the week from all stations was 53½°, being 9½° lower than that of England, and 5½° below the value for the corresponding week in 1876. The highest occurred at Edinburgh, 56°, and the lowest at Perth, 33½°.

Rain.—The amounts of rain measured at the several stations were large, and varied from 31 inches at Edinburgh to 1¼ inch (scarcely) at Aberdeen; the average fall over the country was 2½ inches nearly.

DUBLIN.—The highest temperature of the air was 53½°, the lowest 30½°, the range 23°; the mean for the week was 43°, and the fall of rain was 1.58 inch.



RED SPIDER: LIQUID CARBOLIC SOAP (Pp. 156, p. 25). We have not used the article for the purpose mentioned by Mr. Mark Gardner, but have done so for American Blight on Apple Trees. The article is Liquid Carbolic Soap, and can be obtained of the Cyldestale Patent Company, Three Mill Lane, Bromley-by-Bow, E. P. & M.

ROSE: R. Robinson. The experiment might be worth trying if you first drain the ground. You might also try Osiers.

CHRYSANTHEMUS FRAGRANS: Quenella. This is a sweet scented winter flowering wall plant, common in gardens. You can obtain it from any of the nurseries.

CRANBERRIES: J. V. P. Cranberry Culture, by Joseph Whitwell. Published by Orange Judd & Co., New York.

GRAPE: W. W. We cannot recognise the Grape in the condition in which you sent it. Send again when fresher, and with soil and foliage.

HARDY PLANTS FOR WINDOW CONSERVATORY: J. C. The various forms of Aucuba japonica and himalaica; the variegated varieties of Euonymus japonicus; several of the smaller Retinosporas; Myrtles; Olea fragrans; Osmanthus Aquilifolius; various forms of the Ivy, grown both as creepers and bushes; and the golden forms of Camellias and Thuja.

INSECTS: I. A. Peterborough. The galls on the Swede Turnips are caused by the puncture and deposition of eggs of the wasp, which is the cause of the Curculio pterostigma, the larva of which feeds within the gall, and changes first to a pupa and then to the perfect insect. Marl or chalk has been proposed as the best preventive.

NAMES OF PLANTS: D. M. The fruits of the Gladwyn, or Stinking Iris, I. fetidissima, sometimes called "Wagga-wagga Holly,"—S. P. O. Asplenium bifurcatus (Acrostichum bifurcatum, Sw.); Corallorhiza innata; the mean value from all stations was 32½°. The range of temperature in the week was the largest at Ecles, 25°, and the smallest at Brighton, Plymouth, and Portsmouth, all about 17°; the mean range of temperature from all stations was 26½°.

PLANTING CORNUS ALBA: G. F. M. It depends upon the use it is intended to make of the plantation of Cornus alba, whether it is to be used as a hedge or as a plant. If for cover, 3 feet apart would be a good distance, but if to be grown for its wood to be used in turnery it should be planted from 6 to 10 feet apart. It is propagated from seeds chiefly. Cornus alba produces much better timber wood than C. alba.

TEA PLANTATION: H. M. Write to Mr. Smith, the Royal Botanic Gardens, Kew; or to Dr. Forbes Watson, the Forestry Commission, South Kensington.

TESTING OF NOVELTIES.—A correspondent writes to suggest that the Royal Horticultural Society should undertake this duty, and not only refuse to certificate inferior varieties, but prohibit, by statute for that purpose enacted by Parliament, the sending out of such varieties! Our correspondent overlooks the fact that the best practical work done at Chiswick of late years has been in this direction, though it is pity it could not be greatly extended, and the results made more accessible. As to statutory powers, we are afraid the principles of free trade would prevent any such law being enacted.

••• Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editor would also be glad to be kept by such communications being sent as early in the week as possible. Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.

FOREIGN SUBSCRIBERS sending Post-office Orders, payable at the post-office, King Street, Covent Garden, London, are requested to be good enough to state in the address the number of the Paper, and the number of the issue, and to send the order to 41, Wellington Street, Covent Garden, at the same time, to inform them of the fact.

CATALOGUES RECEIVED.—Messrs. J. Jefferies & Sons (Market Place, Cirencester, Gloucestershire), Descriptive Catalogue of Vegetable and Flower Seeds, &c.—Messrs. W. Drummond & Sons (Stirling, and 58, Downson Street, Dublin), Descriptive Catalogue of Vegetable and Flower Seeds, Tools, &c.—H. & F. Sharpe (Wisbeach, Cambridge), Special List of Seed Potatoes, also Wholesale Catalogue of Garden and Agricultural Seeds.—Messrs. C. Sharpe & Co. (Stea-ford, Lincoln), Spring Catalogue and Amateurs' Guide.—Herrmann A. Frommer (Budapest, Hungary), General Catalogue of Garden and Agricultural Seeds.—Andrieux & Co. (La, Quai de la Mégisserie, Paris), General Seed and Plant Catalogue.—Ed. Puyfaut-Van Geert (142, Rue de Bruxelles, Ghent, Belgium), Catalogue and Price List, 1876.—S. C. Williams (Upper Holloway, London, N.), Descriptive Catalogue of Flower, Vegetable, and Agricultural Seeds, Implements, &c.—Messrs. Webb & Sons (Wardley, Stourbridge, General Catalogue of Flowers, Vegetables, &c.—Messrs. Haage & Schmidt (Erfurt, Prussia), Trade Seed List.—Messrs. William Cutbush & Son (Highgate, London, N., and Barnet, Herts), Descriptive Catalogue of Flower, Vegetable, and Farm Seeds, &c.—Messrs. J. C. Wheeler & Son (59, Mark Lane, London, E. C., and Gloucester), Little Book, or Special Seed List.—Messrs. Brook White & Galton (155, Western Road, Brighton), Catalogue of Vegetable, Flower, and Agricultural Seeds.—John Cattell (Westerham, Kent), General Catalogue of Garden and Agricultural Seeds.—Messrs. J. Dickson & Sons (108, Eastgate Street, Chester), Catalogue of Vegetable and Flower Seeds, Tools, &c.

COMMUNICATIONS RECEIVED.—J. B.—J. W. (many thanks).—R. M.—S. W.—N. E.—J. W.—S. C.—Y. M.—M. D. (many thanks).—W. B.—G.—Corrigenda.—C. G.—O.—A. F.—G.—H.—J. J., Ken (yes, please).—R. H.—S. D.—T. H.—J. C. B.

DIED, on October 25, at Bankside, Manchester, Charles HUBBARD, 65 years of age, of the firm of Dickson & Robinson, Seed Merchants, Manchester.

—On the 11th, suddenly, at Chappell, Essex, Mr. WILLIAM MORLEY FARROW, aged 38.

Markets.

COVENT GARDEN, January 11.

As American Apples are now nearly off the Market, good table home-grown fruit is realising better prices. Good samples of Grapes are selling well, but inferior ones are very dull. There are very few transactions in Cobs. James Webber, Wholesale Apple Market.

FRUIT.

Apples, per Mowbray 1 6-6	Oranges, per 100	8 0-10 0
do, per lb.	Peaches, per doz.	0 0-0 0
Grapes, per lb.	Pears, per doz.	0 0-0 0
Lemons, per 100	Pie-apples, per lb.	1 6-4 0
Melons, each		1 6-3 0

VEGETABLES.

Artichokes, per bush	1 0-0 0	Herbs Radish, per bush	5 0-10 0
Asparagus, per doz.	4 0-6 0	Leeks, per bush	0 2-0 4
Asparagus, 1/2 doz.	2 0-4 0	Lettuces, per doz.	1 0-2 0
Beans, French, per bush	2 0-4 0	Mint, green, bush	1 0-2 0
do, per 100	3 0-6 0	Mushrooms, per pot.	1 0-2 0
Beet, per doz.	2 0-4 0	Onions, per bush	5 0-8 0
Brussels Sprouts, bush	2 0-4 0	do, young, per bun.	0 8-0 10
Cabbages, per doz.	1 0-2 0	Parley, per bush	0 4-0 8
Carrots, per bunch	0 6-0 8	do, Spanish, doz.	1 0-1 0
Cauliflowers, per doz.	1 0-2 0	Rhubarb, per bundle	1 0-2 0
Celery, per bundle	1 6-2 0	Spinach, per doz.	1 0-2 0
Corn, per doz.	0 8-0 8	Spinnage, per doz.	1 0-2 0
Cucumbers, each	1 0-1 0	Stalks, per panet	1 0-2 0
Endive, per doz.	1 0-2 0	Shallots, per lb.	0 6-0 8
Eggs, per dozen	0 6-0 8	Spinage, per doz.	1 0-2 0
Garlic, per lb.	0 6-0 8	Tomatoes, per doz.	2 0-3 0
Herbs, per bunch	0 2-0 4	Turpin, per doz.	4 0-6 0
Potatoes.—Kent Regents, 4s 100			
do 4s; Kidneys, 4s 100			

PLANTS IN POTS.

Azalea, per dozen	24 0-60 0	Heliotropes, per doz.	6 0-12 0
Boxwood, per doz.	12 0-24 0	Hieracium, per doz.	0 18-0 24
Bouvardias, doz.	12 0-24 0	do, Roman, per doz.	0 9-0 18 0
Cineraria, per doz.	0 18-0 24	Hyacinth, per doz.	0 18-0 24
Crocuses, per dozen	0 18-0 24	Myrtle, per doz.	3 0-9 0
Cyclamen, per doz.	12 0-30 0	Pelargonium, scarlet,	6 0-12 0
do, white, per doz.	12 0-30 0	do, white, per doz.	6 0-12 0
Dracena terminalis 30 0-60 0		Primula, per doz.	4 0-8 0
do, variegata, per doz.	18 0-36 0	Prunella sinensis, doz.	4 0-8 0
Eggs, per dozen	0 6-0 8	Primula, ditto, per doz.	4 0-8 0
Erica cafra, per doz.	6 0-12 0	Tulips, per doz.	0 6-0 8
Ferns, in pots, per doz.	0 18-0 24	Valotta purpur., doz.	12 0-18 0
Flax elastica 12 0-24 0			
Heaths, variety, doz.	0 18-0 24		

CUT FLOWERS.

Anemone, 12 sprays	1 0-4 0	Lily of Valley, 12 spr.	1 6-0 9
Bouvardias, 12 spr.	4 0-9 0	Mignonette, 12 buk.	1 0-2 0
Camellias, 12 blooms	2 0-4 0	Narcissus, 12 sprays	3 0-6 0
Carnations, per dozen	0 4-0 8	Primula, ditto, per doz.	4 0-8 0
Chrysanth., 12 blooms	0 12-0 24	do, zonal, 12 sprays	1 0-4 0
Cyclamen, per doz.	0 3-0 6	Poinsettia, 12 sprays	4 0-12 0
Eggs, per dozen	0 6-0 8	Primula, ditto, per doz.	4 0-8 0
Eucliaris, per doz.	0 6-0 8	Roses, indoor, per doz.	0 12-0 24
Eschschol., 12 sprays	0 6-0 8	do, Christmas, bun.	0 6-0 8
Exochorda, per doz.	0 6-0 8	St. Andrew's, per doz.	0 12-0 24
Heliotropes, 12 sprays	0 6-0 8	Tropaeolum, 12 bun.	9 0-6 0
Hyanth., Rom., 12 sp.	2 0-6 0	Violets, 12 bun.	1 6-4 0

SEEDS.

LONDON: Jan. 10.—A noteworthy feature of the present week is an inquiry from France for Red Clover seed. In addition to the orders sent to this country, the French have during the last few days made extensive purchases by cable on the American markets. From some figures received this day it appears that the shipments from the United States have continued on a most limited scale during the last few days, and that the total exports from New York to London amounted to only 16,186 bags, equal to about 1012 tons. As respects our home-grown Red Clover the supply to hand is good, especially so when we take into consideration the late unfavourable weather. Provincial houses, in despair of buying in their seed stocks on lower terms, are now beginning to operate. The Trade shows some improvement; quotations in France are 3 francs per boll dearer. For Alsike and white Clover the demand is small; currencies unchanged. More attention is now given to spring Tares, without, however, resulting in transactions of any importance. Rape seed sells at stiffening rates in Canary Seed, the movement, for a while, was moderate; terms on which fine samples are now obtainable naturally induce some speculation. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday trade was dull from obvious causes. There was a small supply of English Wheat offering, and not much foreign. Fine dry parcels were firm, while inferior and ill-conditioned produce were cheaper when pressed for sale. The same remarks apply to Barley, the demand being chiefly confined to the better descriptions of grinding. Malt changed hands at about 10s. Canary Seed, Oats, the movement, for a while, was moderate; terms on which fine samples are now obtainable naturally induce some speculation. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CATTLE.

At Copenhagen Fields on Monday the weather operated much against the beast trade; choicest qualities were not much lower, but they were with more difficulty disposed of. There was a large supply of sheep and trade was dull; prices were, however, well maintained. The demand was good for choicest qualities. Calves continued scarce and dear. Quotations: Best, 41s, 6d. to 51s, and 51s, 6d. to 51s, 6d. to 71s, 6d. to 71s, 6d. to 6s., and 6s. 6d. to 7s. 4d., pigs, 41s, 4d. to 51s, 4d.—On Thursday, the few cattle offering being mostly of the rough classes, which were not in request, quotations were lower, and the market of much alteration. Prime calves were scarce and sold at high prices, whilst inferior were very unsaleable.

HAY.

At the Whitechapel market on Tuesday trade was rather quiet. Prices were without change; prime Clover being quoted at 100s. to 144s.; inferior, 85s. to 95s.; prime meadow hay, 95s. to 120s.; inferior, 75s. to 85s., and straw, 60s. to 50s. per load. Thursday's market was scantily furnished with good dry qualities of provender, which were very firm. Quotations: Clover, best, 100s. to 144s.; inferior, 85s. to 95s.; hay, best, 100s. to 135s.; inferior, 65s. to 75s.; add straw, 44s. to 54s. per load.—Cumberland Market quotations: Prime meadow hay, 132s. to 140s.; inferior, 108s. to 120s.; superior Clover, 120s. to 130s.; inferior, 120s. to 132s.; and straw, 58s. to 65s. per load.

POTATOS.

The Borough and Spitalfields reports state that sound Potato continue in request, while a dull trade prevails for others. On previous quotations, the following estimation from a week ago:—Kent Regents, 100s. to 140s. per ton; Essex, doz., 100s. to 120s.; rocks, 60s. to 90s.; Hakes, 150s. to 180s.; and Kidneys, 100s. to 120s.—Last week's imports into London comprised 2972 bags from Hamburg, 3589 bags 131 tons from Brussels, 1349 bags 10 tons from Louvain, 1056 bags 125 packages from Antwerp, 400 barrels 279 bags from Harlingen, and 273 bags from Rotterdam.

COALS.

In the market on Monday the best house coals were unchanged, but seconds advanced 6d. per ton. Wednesday's market was firm, and house coals advanced 6d. per ton on previous quotations. The following are the West Hartley, 16s. 9d.; West Hartley, 16s. 9d.; Walls End—Hetton, 10s.; Hetton Lyons, 16s. 9d.; Lambton, 18s. 6d.; Hartlepool, 18s.; Kilmory, 17s.; East Hartley, pool, 18s. 9d.; Tees, 18s. 9d.; Trindon Grange, 17s. 6d.

To Purchasers of Large Quantities, Market GARDENERS AND OTHERS.

SUTTON AND SONS

Our own stocks of the following Peas at very moderate prices:—

SUTTON'S IMPROVED EARLY CHAMPION, the best and most productive of all cultivations.

Sutton's Kingender Advance
 Daniel O'Rourke Sutton's Racehorse
 Scrimiter Sutton's Choice of England
 Scimitar Yeitch's Perfection,
 and other leading kinds.

SUTTON AND SONS, Seedsmen, Reading.

CHARLES NOBLE, the following, Bagshot, can offer the following:

ROSES, Dwarf, 4s. per dozen, 25s. per 100, 25s. per 100.
 PEACHES and NECTARINES, 25s. per doz., 25s. per 100.
 RHODODENDRONS, Hybrid named, fine, with buds, 6s. forcing or grouping, 1/2s to 1 foot, 21s. per dozen, 25s. per 100.
 do, for immediate effect, 2/2s to 4 feet, and same length, 22s. per dozen, 200s. per 100.
 do, Seeding, 1/2s to 3/2s feet, 14s. per dozen, 200s. per 100.
 do, PONTICUM, 1/2s to 2 feet, bushy, 6s. per dozen, 35s. per 100.
 KALMIA LATIFOLIA, 1 to 1 1/2 foot, buds, for potting, 75s. and 100s. per 100.
 ANDRORHIZA CAROLINA, buds, for potting, 75s. and 100s. per 100.

American Plants Without Fee.

WILLIAM MAULE AND SONS beg to announce that they have received from Continental BIRD DODDENDRONS, with BELGIC and other AZALEAS, at 35s. per dozen, or 410s. per 100.

The above are all grown in stiff loamy soil, on an exposed and elevated situation, and will thrive in almost any soil, free from iron, lime, or chalk.

Having standard RHODODENDRONS, with fine heads, well set with bloom, 2s. 6d. to 2s. 12d. and 4s. 6d. each.

Large bushes of PONTICUM, CATAWBIENSE, and other common varieties, 1/2s. to 1s. 7s. 6d. per 100.

The Nurseries, Bristol.

CHARLES BUTLER, The Nurseries, Wellington, Salop, has to offer the following:—

LARCH, 1 1/2 to 2 feet, 45s. per 100.
 FIR, Spruce, 1 to 2 feet, 45s. per 100.
 Scotch, 1 1/2 to 2 feet, 45s. per 100.
 BEESON, 1 1/2 to 2 feet, 45s. per 100.
 ASH, Mountain, 3 to 6 feet, 45s. per 100.
 SYCAMORE, 3 to 6 feet, 45s. per 100.
 BEECH, 1 1/2 to 2 feet, 45s. per 100.
 PINE, Austrian, 2 to 2 1/2 feet, 45s. per 100; 3 to 4 feet, 45s. per 100.
 Corsican, 12 to 18 inches, 10s. per 100.
 CUPRESSUS LAWSONIANA, 4 to 5 feet, 50s. per 100.
 YEW, 1 1/2 to 2 feet, 45s. per 100.
 YEW, 1 1/2 to 2 feet, well furnished plants, 40s. per 100.
 LAUREL, 1 1/2 to 2 feet, 45s. per 100.
 LARIX, 1 1/2 to 2 feet, good plants, 2 to 2 1/2 feet, 16s. per 100.
 do, bushy plants, 2/2s to 3s. doz., 20s. per 100.

New Cauliflower.

DICKSON, BROWN, and TAIT, SEED MERCHANTS, 43 and 45, Corporation Street, Manchester.

DICKSON, BROWN, and TAIT'S "ECLIPSE" CAULIFLOWERS, which are the best and most productive varieties ever offered, the flutting reports of its usefulness given by many of our customers, &c.

It comes into use about the time of Yeitch's Autumn, but has this advantage over that well-known variety, that it is much more self-protecting, the leaves being white, and stands dry hot weather better than any other Cauliflower.

SHURLEY HIBBERD, Esq., gives the following report in the *Gardener's Magazine*, October 21, 1876:—"Dickson, Brown & Tait's Eclipse Cauliflower.—This is a superb variety for late supply, and is turning in well at the present time. It grows to a large size, and forms a fine close pure heart, being in respect of appearance a first-rate variety for exhibition. It has the merit also of holding its leaves over the crown, so that it is not so much injured either by strong sunshine or sharp frost. The past season's trial Cauliflowers severely, and Eclipse came through the trial so well that cultivators may be properly advised to give this variety a trial. Late Cauliflowers are of immense importance, and those that best bear extremes of weather are the most useful of all."

A CORRESPONDENT in the *Gardener*, October 25, 1876, reports as follows:—"I have tried the 'Eclipse' Cauliflower, and find it to be against all other sorts I find this Cauliflower to be in every way excellent, and a most useful autumn vegetable. The flavor is sweet and delicious, and the plants are perfectly free from any insect pests, and are very large, and very compact. Even averaged heads of it are very large, and its compactness and color are all that can be desired. Its foliage, too, is self-protecting."

Mr. W. UPHORN, The Gardens, Worsley, says:—"Another season's trial has convinced me that Worsley Eclipse Cauliflower is one of the best Cauliflowers I have ever seen. It is so early, and is especially useful in the autumn, coming into use just when the weather is best for planting. It is so early, and is so much appreciated. We are using it, yet, and expect to do so until Christmas."

Our General Descriptive CATALOGUE of Vegetable and Flower Seeds is published, and may be had free on application.

AVENUE TREES.

PLATANUS OCCIDENTALIS (true), 10 to 18 feet high, and girthing 4 to 10 inches at 4 feet from the ground.

LIMES, 12 to 20 feet high, and girthing 6 to 12 inches at 4 feet from the ground.

POPULUS CANADENSIS NOVA, 15 to 16 feet high, and girthing 5 inches at 1 foot from the ground.

ANTHONY WATERER

Has to offer many thousands of the above. They are straight, handsome, and of the best quality. They are also the finest Trees of the kind to be found in any nursery in Europe.

KNEAP HILL NURSERY, WOKING, SURREY.

HARRISON'S NEW DWARF LATE BROCCOLI,

A VALUABLE INTRODUCTION.

We have much pleasure in introducing our NEW DWARF LATE WHITE BROCCOLI, which is undoubtedly the best variety of its class. It is the hardest Late White Broccoli extant. The heads are close, compact, and beautifully white, remaining longer fit for use than any other variety known, coming into use the beginning of May. The footstalk being so remarkably short (the heads almost resting on the ground), affords greater protection from frost, and also enables a much larger quantity to be grown on a given space of ground; thus proving a great acquisition to those possessing small gardens. The quality is excellent, and embraces everything to be desired in a Broccoli, either for a Gentleman's table or for Market purposes. We have received numerous flattering Testimonials from all parts of the kingdom, where it was grown last season, testifying as to its invaluable merits, a few extracts from which we subjoin:—



TESTIMONIALS.

From Mr. T. RABONE, *Gr. to the Earl of Shrewsbury,*
May 10, 1876.

"Broccoli thus far north has not done well this season, but yours has done the best. Nice compact heads, very white and tender, and worthy of a place in every garden, as it takes so little room."

From Mr. G. BRIGHTON, *Gr. to Earl Mount Edgcumbe,*
May 11, 1876.

"I have no hesitation in pronouncing your Dwarf Late Broccoli as being the best late Broccoli I have ever grown. I have had it planted with other late varieties, and it has proved infinitely superior to them all. At the present we have some splendid heads."

From Mr. J. SIMSON, *Gr. to Lord Wharnclyf,*
May 5, 1876.

"We have been cutting your New Broccoli for the last week or ten days, and find it an excellent variety, and one which I shall add to my list in future. There is not a single plant of yours injured; it may, therefore, be put down as the hardest. The heads are good sized, of a clear, creamy white colour, compact, and in flavour excellent."

From Mr. J. RENSHAW, *Gr. to the Marquis of Anglesa,*
May 30, 1876.

"Your New Dwarf Late Broccoli is very good. Dwarf compact habit, with remarkably solid heads of medium size—just the thing for a gentleman's table."

From Mr. GRIMSDALE, *Gr. to the Duke of Somerset,*
May 9, 1876.

"Your New Dwarf Broccoli is the best I ever had. I never saw anything to equal it. It is perfectly hardy, with fine flavour. I cannot speak too highly of it, and am thankful to get it. All that have seen it growing have greatly admired it, with many others."

From Mr. GEO. BRECH, *Gr. to the Marquis of Northampton,*
May 2, 1876.

"I am now cutting your New Broccoli. It is a very late one. I have had it cooked, and pronounce the flavour all that can be desired in a Broccoli. The heads are very firm and of average size, quite hardy, and calculated to stand the winter well. The footstalk of the leaf is very short, it is exceedingly dwarf, and the most compact Broccoli I am acquainted with."

The Stock being limited, we would impress upon our Customers the necessity of sending in their Orders early to ensure a supply for this season.

Price, Retail, 1s. 6d. per Packet,
or may be had of HURST AND SON, 6, Leadenhall Street, E.C.

HARRISON & SONS, Seed Growers, LEICESTER.

T. H. P. DENNIS & COMPANY.

Motto, "Art with Economy" as applied to Conservatories.

HORTICULTURAL BUILDINGS OF ALL DESCRIPTIONS & HOT-WATER HEATING APPARATUS
ERECTED AND FITTED IN ALL PARTS OF THE KINGDOM. ESTIMATES GRATIS.

Show Rooms: MANSION HOUSE BUILDINGS, LONDON, E.C.,
where full-sized Specimens of Greenhouses, &c., and Hot-water Apparatus at work can be inspected.

Works: CHELMSFORD.

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A CENTURY.

NOW READY,
WM. ROLLISSON & SONS'

NEW AND GENUINE

Flower Seeds, Vegetable Seeds, Farm Seeds,

CAREFULLY SELECTED FROM

THE BEST ENGLISH AND FOREIGN STOCKS.

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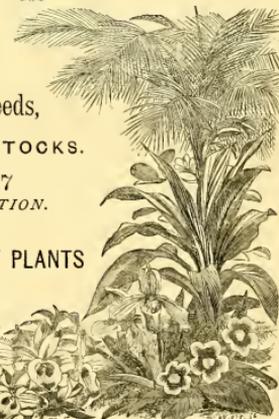
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OF EVERY DESCRIPTION ARE ALWAYS TO BE SEEN AT

THE NURSERIES, TOOTING,

LONDON, S.W.



Fibrous Peat for Orchids, &c.
BROWN FIBROUS PEAT, best quality for Orchids, *Sole Plants, &c.*, 26s. per truck, 500 lbs. net weight. **BLACK FIBROUS PEAT**, for Mosses, Heath, American Plant Beds, 17s. per ton. Delivered on rail at Blackwater, S. E. K., or Farnborough, S. W. by the London-Blackwater Railway, 25s. per cart. **FRESH SPHAIGNUM**, 10s. 6d. per sack. **WALKER AND CO.**, Farnborough Station, Hants.

COCONUT FIBRE REFUSE, newly made—Reduced price, as bushels, 6d.; 100, 5s.; 200, 10s. Truck-load, 40s. Delivered free to any rail in London. **J. STEVENS AND CO.**, Fibre Works, High Street, Battersea, S.W.

COCONUT FIBRE REFUSE—Brussels from Cold. Fresh. No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. **MANURE**,—Composed of the blood, bone, &c., of animals, which are boiled down and carefully manufactured into a splendid manure on the premises of a large slaughterhouse. This now famous manure, as it indisputably does all the properties essential to a first-class manure, has been used with success by the Royal Horticultural Society, Florists, Nurserymen, Market Gardeners, and Farmers. Many testimonials. Sent in stout bags free to rail or wharf, 11s. per ton, 100 lbs. net weight. **M. H. BENTOTE**, Lausanne Road, Nunhead (near Junction), London, S.E.

CLAY'S FERTILISER or PLANT FOOD, for Concentrating the Culture, is composed of the richest ingredients, and contains all the elements which enter into the composition of plants, in such proportions as are best for luxuriant vegetation. It is prepared and approved by the principal Florists, Nurserymen, and Gardeners, and is the most economical and reliable Manure for Flowers, Fruits, Vegetables, &c. Sold by Seedsmen, Nurserymen, and Florists, in packets, 1s.; in 100 lbs. bags, 7s. 6d.; 200, and 500 lbs. Works: Temple Mill Lane, Stratford, London, E.

ODAMS' MANURES, FOR ALL CROPS. Manufactured by the FERTILIZING and ODAMS' CHEMICAL MANURE COMPANY (LIMITED), consisting of Tenant-Farmers occupying upwards of 150,000 acres of land. **Chairman**—ROBERT LEDS, Knowlton Old Hill, Norwich. **Managing Director**—JAMES ODAMS. **Sub-Manager and Secretary**—C. T. MACADAM. **CLAY'S OFFICE**—100, Finchchurch Street, London, E.C. **WESTERN COUNTIES BRANCH**—Queen Street, Exeter. Particulars will be forwarded on application to the Secretary, Or may be had of the Local Agents.

GISHURST COMPOUND—Used by many of the leading Gardeners since 1810, against Red Spider, Mildew, Thrips, Greyness, and other blights, in solutions of from 1 to 2 ounces to the gallon of soft water, and from 10 to 40 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. Sold Retail by Seedsmen, in Boxes, 1s.; 2s.; and 10s. 6d. Wholesale by FRIGG'S PATENT and CANNON STREET COMPANY (Limited).

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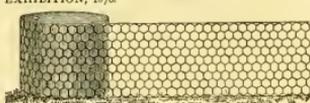
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FOR NEATNESS—Because all the Wires are kept perfectly tight, without the use of the Raisidiser.
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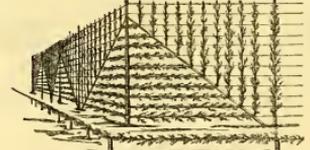
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Size of Mesh.	Mostly used for	Gauge, or Light.	Gauge, or Medium.	Gauge, or Strong.
2 in.	Dogs or Poultry.	19	3 1/2	18
2 1/2 in.	Small Rabbits, &c.	19	4 1/2	17
3 in.	Small Rabbits, &c.	19	5 1/2	17
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* Price Lists, with further particulars of WIRE NETTING, IRON FENCING, POULTRY FENCES, DIAMOND and other TRELIS WORK, on application.

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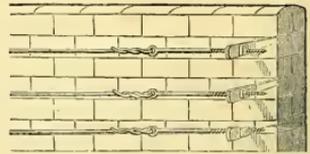


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"FRIGI DOMO" NETTING, 4 yards wide, 12. 6d. and 22. 6d. per yard. "FRIGI DOMO" CANVAS, 2 yards wide ... 11. 6d. per yard. 3 yards wide ... 12. 6d. per yard. 4 yards wide ... 13. 6d. per yard. **ELISHA T. ARCHER**, only Maker of "Frigi Domo," Brockley Road, Forest Hill, London, S.E.; and of all Florists and Seedsmen. All goods carriage paid to London. **NOTICE—REMOVED FROM 3, CANNON STREET, CITY.**

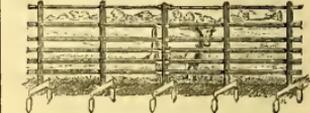
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It is constructed with **POWERFUL WIRING STRAINING PILLARS, RIGID INTERMEDIATE IRON POSTS, STRONG AND DURABLE WIRE CABLE STRANDS,** Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

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Which has secured by Mr. Morten's Patent Self-locking Joints, which effectively prevent the uprights being pushed aside, and are independent of loose pins, wedges, or straps.

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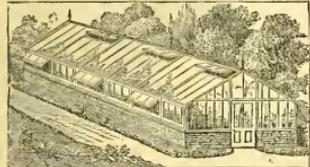
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HORTICULTURAL WINDOW GLASS.
A large variety of sizes, 15 cts., 12, 6, 3, 2, 1, 1/2, 1/4, 1/8, 1/16, per 100 feet. Larger sizes in Cases. For cutting up, 15 cts. 4 lbs., 36s. 1/2, 30s. 1/2, per 100 feet. Prices forwarded for large and special quantities.

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Estimates given on application for GREENHOUSES and CONSERVATORIES of all kinds, and to any design.
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3 feet by 4 feet Light unpainted nor glazed 3 6
Ditto glazed, good 1/600. sheet glass, painted 4 coats 10 0
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Oil Paint No Longer Necessary.



HILL and SMITH'S BAC
WARNISH for Preserving Ironwork, Wood, or Stone.
This Varnish is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitations, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.
Sold in casks of about 30 gallons each, at 12. 6d per gallon, at the Manufactory, or at 8d per gallon carriage paid to any Station in the Kingdom.

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Apply to HILL and SMITH, Briery Hill Ironworks, near Dudley; or 118, Queen Victoria Street, London, E.C., from whom only it can be obtained.

CAUTION.—It having lately come to the knowledge of HILL & SMITH that spurious imitations of this Varnish are being offered by unprincipled dealers at a slight reduction in price, they would especially draw attention to the fact that every cask of their Varnish is legibly marked with their name and address, without which none is genuine.



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BELGIAN GLASS for GREENHOUSES, &c.,
Can be obtained in all sizes and quantities, of
BETHAM & SON
9, LOWER THAMES STREET, LONDON, E.C.
B & S. have always a large Stock in London of 20-10, by train, 20-10, by 14 in., 20 in. by 16 in., in 16-oz and 22-oz.

THE PATENT EXCELSIOR LAWN MOWER,
The simplest and best ever introduced.

Waite, Burnell, Huggins & Co.,
223, UPPER THAMES STREET, LONDON, E.C.,
Sole Consignees for Great Britain, Ireland and France, have pleasure in submitting the “Excelsior” as possessing the following advantages over other Mowers:—
It cuts longer grass, It needs less repairs, Its adjustments are more perfect, It mows in all weathers, Its work is all cut, It cannot clog, It cuts the hardest, It is a perfect mower.

Has never been beaten in Competitive Trials.
PRICES
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To cut 8 inches . . . £5 10 0 To cut 14 inches . . . £5 15 6
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Larger Sizes for Pony and Horse Power.

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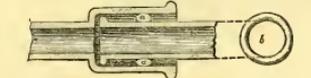
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PATENT PORTABLE SMOKELESS SToves and PATENT FUELS
For Heating Conservatories, Greenhouses, Halls, Passages, 10 d places without Chimneys, from 12d. 6d.
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For particulars apply to JOHN FOWLER and CO, 71, Cornhill, London, E.C., and Steam Plough Works, Leeds.

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These Rings are made any size to order. All ordinary sizes are kept in stock.

Illustrated Price List on application.

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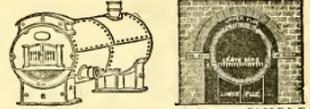


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STEVENS' TRENTHAM GREENHOUSE BOILER.



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Castle Hill Works, Newcastle, Staffordshire.
Our Boilers are the only ones made with the sanction and under the inspection of the inventor, Mr. STEVENS—all others being base imitations.

AN EXTRAORDINARY BOILER.
During the Great Boiler Contest at Birmingham, in 1872, all Boilers were severely tested to prove their respective merits. One test was, “How long could each Boiler go without Night Attention?” However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 100 feet of 4-inch pipes, and yet had more than a haul of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners. This was THE CHAMPION, Deard's Patent Close Coil Boiler, for Drawings and Prices of which send two stamps to

Messrs. DEARDS, Boiler Works, Harlow, England who now have their Boilers at work in every country, except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly “the best thing” out. Awarded five First Prize Silver Medals.

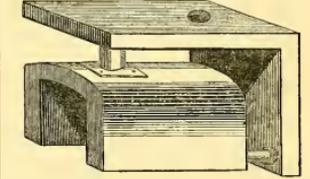
AGRICULTURAL LOCOMOTIVES, STEAM FLOURING MACHINERY, ROAD LOCOMOTIVES, TRAMWAY LOCOMOTIVES, STEAM ROAD ROLLERS.

For Prices, Description, and Reports of Working, apply to the Manufacturers,

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AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the last trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 55-horse power, with a consumption of three and one-half pounds of coal per horse-power per hour.

JONES'S PATENT “DOUBLE L SADDLE BOILER.”



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

Sizes.	To heat of 4-in. Pipe.	Price.
High. Wide. Long.	Feet.	£ s. d.
30 in. 18 in. 18 in.	300	7 0 0
30 “ 18 “ 24 “	400	8 0 0
30 “ 18 “ 30 “	500	9 0 0
24 “ 24 “ 24 “	700	12 0 0
24 “ 24 “ 30 “	800	14 0 0
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Larger sizes if required.

From MR. CHARLES YOUNG, *Nursery, Baldon Hill, S.W.,*

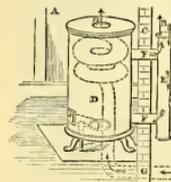
“Having given your Patent ‘Double L’ Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best I ever used and without doubt the best economical of all boilers; they will burn the refuse of other tubular boilers I have in work.”

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FOR
Warming and Ventilating Small
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The only Gas Stove in which the product of combustion is entirely excluded from the Conservatory.
Made in Wrought Iron, £3 3s.
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Height, 25 inches; diameter, 14 inches.
It will be found very valuable in the Nursery or Sick Room, Damp Buildings, Conservatories, Offices, &c. Exhibited at the Exhibition of 1871 (Department of Scientific Inventions).

Illustrated Prospectuses and Testimonials on application.
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This Stove introduces a strong current of warmed (not burnt) fresh air.

LIMEKILN HEATING.

This System of HEATING WINTER GARDENS, CONSERVATORIES, ORANGERIES, FERNERIES, VINERIES, FORCING HOUSES, PINERIES, CUCUMBER, MELON and MUSHROOM HOUSES, STOVES, PITTS, &c.—also for WARMING MANSIONS, PUBLIC BUILDINGS, FACTORIES, &c., is steadily making progress in public estimation, effecting as it does

Great Economy of Fuel and Steadiness of Heating Power,

and rendering the hitherto onerous duties of Stoker comparatively light—no night stoking whatever being necessary.

List of Places where the System is in Operation, with full address in each case, will be sent post-free on application.

Gentlemen and Gardeners wishing to adopt this System will then be enabled to view the Apparatus nearest to their own Establishments, or write to the Gardener, and thus get independent testimony as to the value of this method of Heating.

Estimates will be submitted, on receipt of particulars, free of charge.

FULL PARTICULARS POST-FREE.

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and THE VINEYARD, Garston, near Liverpool.

**GREEN'S PATENT
Wrought-iron Hot-water Boilers,
With Shelves and Hollow Grate Bars.**

Specially adapted for heating Greenhouses, Conservatories, Churches, Chapels, Schools, Public Buildings, Entrance Halls, Warehouses, Workshops, &c.

They are the neatest, cheapest, most effective, and durable of any extant.



Descriptive Illustrated Price List may be had free on application to
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**THE THAMES BANK
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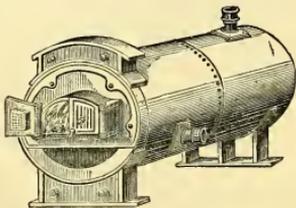
Old Barge Wharf, Upper Ground Street, London.



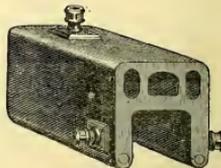
HOT-WATER BOILERS.

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PIPES, CONNECTIONS.



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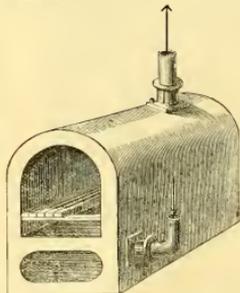


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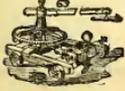
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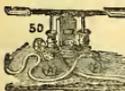
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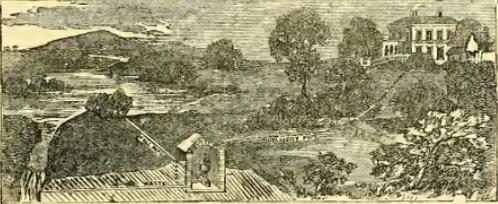
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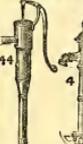



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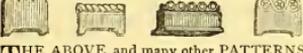
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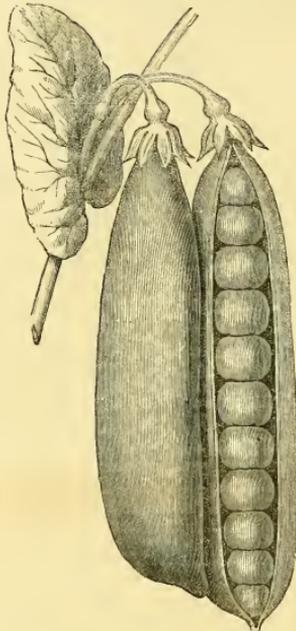
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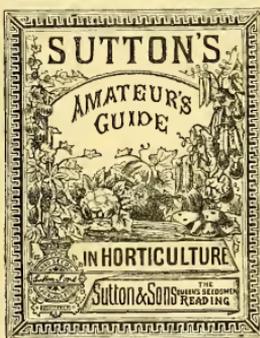
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No. 160.—VOL. VII. { NEW SERIES }

SATURDAY, JANUARY 20, 1877.

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 Begonias, tuberosa, to name, 9s. per dozen; B. Forbesii, 1s. 6d. each; Begonias, flowering, of sorts, 10s. per dozen; 4s. per dozen; Fuchsias, twelve sorts, 2s.; Chrysanthemums, twelve sorts, 3s.; Colours, twelve sorts, 3s.; Pentstemons, twelve sorts, 3s.; Phloxes, twelve sorts, 3s.; Heliotropis in variety, 4s. 6d. per dozen; Argemones, 2s. per dozen; Lantanas, in variety, 2s. per dozen; Solanums, in sorts, 2s. per dozen; Camellias and Ficoxes, 6s. per dozen; Show Finks and Pansies, 4s. per dozen; Mimulus, in variety, 3s. per dozen; Saxifrages and Sedums, in variety, 2s. per dozen; in variety, 2s. per dozen; Paeonies, Delphiniums and Potentillas, 9s. per dozen; Pyrethrums.—*Lord's London News.*

WILLIAM CLIBERAN and SON, The Oldfield Nurseries, Atricham.
CHARLES LEE and SON (Successors to Messrs. John & Charles Lee), of the Royal Vineyard Nurseries, Hammersmith, W., beg to announce that in consequence of the Retirement of Mr. John Lee from the business, they have **TAKEN OVER the ENTIRE NURSERY and SEED TRADE**, as successfully carried on for many years by the late Firm, and they trust the same liberal patronage so long given to Messrs. John & Charles Lee will be continued to the New Firm.

Charles Lee & Son pledge themselves to devote all their energy to raising the best Stocks in every department, which the large resources at their command will enable them to supply with considerable advantage to the Public both as regards quantity and price. With a view to a more extensive production of Stone and Greenhouse Plants of the best quality they intend to almost entirely discontinue the raising of Plants in Glass on a new site, a portion of the old Nursery being taken up for building purposes. All orders to be addressed to **CHARLES LEE and SON, Royal Vineyard Nurseries, Hammersmith, W.**, where the general business of the Nursery and Seed Trade will be carried on; or to **Mr. DIGNON, Edinb. Nursery, 11, CANNON, Edinb. Nursery, Mr. WEBB, Arboretum, and Mr. MARSHLEN, Wood Lane, Isleworth.**

NEW SEED CATALOGUE
For SPRING, 1877.

All intending Purchasers of choice Kitchen Garden or Flower Seeds should send for a copy of the **Illustrated Guide for Amateur Gardeners**, which will be found the most complete, useful, and beautiful Seed Catalogue ever published.

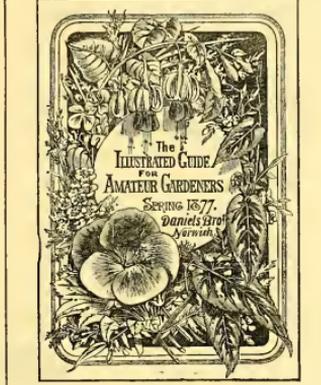
Price 1s., Post-free.

Gratis to Customers or intending Purchasers.

The Illustrated Guide for Amateur Gardeners, Spring, 1877,

Containing 125 pages of beautifully illustrated Letterpress, with two superbly finished Coloured Plates, Original Articles on the Rearing and Cultivation of various Garden Crops and Flowers, and complete Instructions for the successful Management of the Kitchen and Flower Gardens throughout the year, together with a Select List of choice Kitchen Garden and Flower Seeds, Seed Potatoes, &c.

The most practical and comprehensive Guide for the Amateur yet issued, and should be read by every one having a garden.



OPINIONS FROM THE PRESS.

"The inside is quite in character with the beauty of the exterior, and we do not know of a more useful or beautiful garden guide to lie on the drawing-room table."—*Villa Gardener.*
 "This is the most tasteful and best executed thing of the kind that we ever remember having seen, and would be an ornament to any room."—*The Country.*
 "This superbly illuminated and handsomely illustrated annual is something more than a mere catalogue of seeds and plants, inasmuch as it contains the most copious and carefully written instructions for horticulture. The Guide is quite a work of art as well as a compendium of garden work."—*North's News.*
 "The calendar for the kitchen garden will be found most useful. The hints for the raising of crops are at once comprehensive and practical."—*Land and Water.*
 "The most choice and beautiful catalogue we have ever seen."—*Lord's London News.*
 "The flower garden calendar, written especially for this publication, will be especially useful for all lovers of flowers."—*The Record.*
 "Profusely illustrated, and the coloured plates are clearly beyond the average of book illustrations."—*Liverpool Mercury.*

DANIELS BROS.,
 The Royal Norfolk Seed Establishment,
 NORWICH.

SPECIMEN AZALEAS (Winter flowers)—An abundance of splendid flowers can be had in a week or two, or at once, by purchasing a few Specimen Azaleas, now opening flower. The plants are from 2 to 1 foot over, perfect shape, some hundreds of flowers and buds, which will last for months at this time of the year. All new and valuable sorts, 21s., 31s., 6d. each; 50 specimens of two bushy plants, 50s. Eighteen plants only are for Sale. They are all worth double the money. Packages gratis for cash with order.
JOHN LEE, Royal Nursery, Croydon.

LILIUUM AURATUM.—Fine Bulbs of this "Queen of Lilies" can now be supplied at 6d., 1s., 1s. 6d., 2s., and 2s. 6d. each; splendid English-grown Bulbs, 1s., 1s. 6d., 2s., and 2s. 6d. each; 50 specimens of two bushy plants, 50s. All new and valuable sorts, 21s., 31s., 6d. each; 50 specimens of two bushy plants, 50s. Eighteen plants only are for Sale. They are all worth double the money. Packages gratis for cash with order.
WILLIAM GORDON, Lily, Bulb, and Plant Importer, 10, Cullum Street, E.C.

To Exhibitors and Others.
THE following SPECIMEN PLANTS, in fine health and condition, from the plant-houses of a Gentleman relinquishing their growth for the cultivation of Grapes, will be sold cheap. Height and widths given in feet, or in case of trellis:—

- 15-inch pot, 18-inch stem, 150s.
- Bougainvillea speciosa, 2 1/2 by 2 ft.
- Clerodendron Balfourianum specimen, 2 1/2 by 2 ft.
- Chromolaesca eximia, 2 1/2 by 2 1/2 ft.
- Cissua crumena, 2 by 2 ft.
- Cissua discolor, 2 1/2 by 2 ft.
- Euphorbia splendens, 2 1/2 by 2 ft.
- Farosella, 2 by 1 1/2 ft.
- Hoysa corana, 3 by 1 1/2 ft.
- 1 1/2 by 1 1/2 ft.
- STEPHEN BROWN, Seed and Plant Establishment, Weston-super-Mare.
- Livistona australis, 4 1/2 by 5 1/2 ft.
- Livistona rotundifolia, 2 1/2 by 4 ft.
- Lantana floribunda, 4 by 6 ft.
- Psychospora Cunninghamii, 1 1/2 ft. stem, 3 to 4 feet fronds.
- Phorixia dactylota, 3 feet stands 5 feet.
- Shaukuasia major, 1 1/2 by 1 1/2 ft.
- Thunbergia laurifolia, 2 1/2 by 2 1/2 ft.

STEPHANANTIS FLORIBUNDA.—Strong specimen plants of a very free-flowering variety, 50s. 6d. each; smaller, but fine half specimen, which will produce abundance of flower early, the buds just appearing on some, 2s. 6d. each, 50s. per dozen; in 4's-pots (flowering), 20s. per dozen, 10s. per 100 (flowering), 2s. per 100 (not flowering), the plants being twice the money.
JOHN LEE, Royal Nursery, Croydon.

To the Trade—Sandringham Early Kidney Potato.
H. AND F. SHARPE have secured a fine stock of the above excellent POTATO, which is pronounced to be not only the earliest, but the most prolific, and the finest quality in cultivation. Being very short in the haulm it is peculiarly adapted for forcing purposes. Price and further particulars may be had on application.
Seed Growing Establishment, Wisbech.

To Purchasers of Large Quantities, Market GARDENERS and OTHERS.
SUTTON'S IMPROVED EARLY CHAMPION, the best and most productive in cultivation.
 Sutton's Ringleader Advance
 Daniel O'Rourke Sutton's Racheover
 Furfyford Champion of England
 Semitar Veitch's Perfection.
SUTTON AND SON, Seed Growers, Reading.

Rhododendrons.
J. MATTHEWS and SON, Milton Nurseries, Stoke-on-Trent, Staffordshire, have to offer the following:
RHODODENDRONS, 10,000, fine bushy plants, thinly grown and well-rooted.
 " **SPLENDIDUM**, 10,000, white, 2 to 1 1/2 foot, 37s. 6d. per 100.
 " **CAUCASICUM PICTUM**, 10,000, light scarlet, 2 to 1 1/2 foot, 30s. per 100.
 " **JACKSONII**, scarlet, 1 foot, 40s. per 100; 1 to 1 1/2 foot, 15s. 6d. per 100.
 " **HYBRIDS**, from all the choicest named varieties, 1 foot, bushy, 40s. per 100; 1 to 1 1/2 foot, 30s. per 100; 1 1/2 to 2 feet, 40s. per 100.
 " **PONTICUM**, 20 to 22 inches, 50s. per 100; 22 to 23 inches, 20s. per 100; 15 to 18 inches, 15s. per 100; 18 to 21 inches, 40s. per 100; 2 to 3 feet, 30s. per 100; 3 to 1 1/2 foot, bushy, 10s. per 100.
YEW, English, clean, well-grown plants, 6 to 9 inches, 40s. per 100; 8 to 12 inches, 30s. per 100; 1 to 1 1/2 foot, 10s. per 100.
CUPRESSUS LAWSONIANA, fine Ornamental tree for Lawns or Wood Planting, as shelter for Game, also for Garden Fencing, 2 to 3 feet, 30s. per 100; 3 to 4 feet, 30s. per 100.
ASH, Mountain, 2 1/2 to 3 1/2 feet, 25s. per 100.
BOX, Tree, 1 1/2 to 2 1/2 feet, 40s. per 100; 2 to 3 feet, 30s. per 100; 2 to 3 feet, 30s. per 100.
CURRANTS, quantity of extra strong Black Grape, 10s. per 100.
CATALOGUES of all other Nursery Stock free on application.

SURPLUS STOCK.
CUPRESSUS LAWSONIANA, green and well-rooted, 6 feet, 75s. per dozen, 75s. per 100.
THUJOPSIS, extra fine, well-rooted last spring, 2 to 3 1/2 feet, 7s. per dozen, 50s. per 100.
YEW, common, 4 feet, 30s. per 100.
LIMES, straight, green and well-rooted, 6 feet, 4s. per dozen, 25s. per 100.
HOLLIES, Green, bushy, and well-rooted, 1 1/2 to 2 feet, 25s.
SKIMMIA JAPONICA, extra transplanted, nice bushes, 10 inches high, with flower-buds, 4s. per dozen, 55s. per 100.
RHODODENDRON PEXOCOS, bushes, covered with flower-buds, 15s. per dozen, 150s. per 100.
AZALEA MOLLS, seedlings, about 6 inches, very bushy, 6s. per dozen, 42s. per 100.
RHUBARB, extra fine large roots, for forcing, 25s. per 100.
GREENHOUSE AZALEAS, small, 7 to 10 inches; in fine flowering plants (including many novelties), 15s. to 24s. per dozen.
DAPHNE INDICA RUBRA, with flowers, 15s. per dozen.
ISAAC DANIELS, Nurseryman, Crumkirk.

TO THE TRADE.

HURST & SON,

6, LEADENHALL STREET, LONDON, E.C.,

Beg to announce that they have again secured the ENTIRE STOCK OF SEED OF THE PRIZE QUILLED ASTERS, so successfully exhibited for several years past by Mr. G. WHEELER, Warminster, and now offer the same in Collections of 12, 18, and 24 varieties. For Prices see Addenda to CATALOGUE, which will be forwarded to our Customers. Those whom it may not reach will oblige by applying for a copy.

The Gardener's Chronicle of September 4, 1875, remarking on the Royal Horticultural Society's Exhibition, says:—"Amongst the Asters shown was shown equal to the samples staged by Mr. G. Wheeler, of Warminster, which were grandly finished flowers. He took the First Prize easily in the Classes for 24 French and 24 German or Quilled varieties."

HURST & SON,

6, LEADENHALL STREET, LONDON, E.C.

Complete Liberal Collections of CHOICE VEGETABLE SEEDS,

1875, 21s., 42s., 63s., and 105s. each, carriage paid. As my new and choice seeds are now in large demand, please order early.

CAULIFLOWER, Veitch's Autumn Giant, 12s. 6d. per packet.

LEAF, Alexander Cox, true, 12s. per packet.

ONION, Castello's Prize, true, 12s. per packet.

BROCCOLI, Leanington, finest late, 12s. 6d. per packet.

CABBAGE, Alpha, fine, large, and early, 12s. per packet.

CATALOGUE of New and Choice Seeds on application.

R. M'COMBIE, Grower of Choice Seeds, &c., Christchurch, Hants.

Yewill Nursery.—Late E. Pierce.

B. R. DAVIS, having taken this Nursery, offers the following—Extra fine, well-rooted BEECH, 1 to 4 and 4 to 10 feet; LIME, CHESTNUTS, ELMs, &c., 10 to 12 feet; MAGNOLIA GRANDIFLORA, Exonshire variety; IRON, Minnesota, Tree, and variegated, 3 1/2 to 5 feet; Figs, Spruce, 2 1/2 to 3 1/2 feet. Prices and particulars on application to B. R. DAVIS (late E. Pierce), Yewill Nursery and Seed Warehouse, Yewill.

A. M. C. JONGKINDT CONINCK, Rotterdam Nursery, Defensvaart, near Zwolle, Netherlands, has to offer the following—

YUCCA AUGUSTIFOLIA, large strong, 12s. per doz. per dozen, 12s. 100, per 200. In my nursery this beautiful new Yucca without, without the slightest protection, has the seven winter of 1876.

APPLES, strong 2-yr. Palmettas and Pyramids, 42s. per 100, 10s. 100, per 200.

HARDY AQUATICS at the lowest prices.

MESSRS. JNO. STANDISH AND CO'S CATALOGUE for Autumn, 1876, and Spring, 1877: is now ready, and may be had, post-free, on application.

It contains the following—

Plants of Recent Introduction, Hardy Climbers, Clematis, &c. Stove and Greenhouse Plants, &c. Plants for Winter Forcing, &c. Rhododendrons, Azaleas, &c. Azalea indica and Camellias. Kalmia, &c.

Tree Carnations and Ericas. Roses, Standards and Dwarfs, &c. Ferns and Lycopods. also in pots.

Hardy Trees and Shrubs. Fruit Trees. Transplanted Forest Trees. Grape Vines. Dutch Bulbs, Flower Roots, &c. Royal Nurseries, Ascot, Berks.

Superb Ridge Cucumber.

CUCUMBER, Foster's X.L. Superb Ridge. This variety is a remarkably fine kidney, long, dark green cucumber, and one that can be recommended with the greatest confidence. It is very prolific, and keeps its colour to the last; all who have seen it growing are satisfied that it cannot be surpassed, and those who have tried its flavour are convinced of its excellent quality; length, 2 to 18 inches. Price 6d. and 1s. per packet: prices to the Trade on application.

EDMUND PHILIP DIXON, the Yorkshire Seed Establishment, Hull.

CABBAGE PLANTS, SEEDS, ROOTS, &c. of all kinds, for the Farm or Garden. G. Gee's superior, Bedfordshire-grown Plants and Seeds have attained much celebrity.—Vide Bedford Mercury, July 29, 1876.

The soils of the district offer facilities for growing all the plants for bringing away plants, &c., and under the skill and perseverance of Mr. F. Gee they are turned to good account.—Vide Agricultural Gazette, July 31, 1876. See other opinions of the Press, also a Treatise on the Cabbage. CATALOGUES, howers prices, &c. on application to FREDERICK GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

Public Notice.

For Information upon the Planting, Pruning, and general Managements of Fruit Trees, see

SCOTT'S ORCHARDIST, free, 3s. 6d.

At the Royal Nurseries, Mermaid, Somerset, every description of Nursery Stock is grown ready for sale. Scott's Royal Seed Stocks, Yewill, choice Seeds, Bulbs, and every kind of Garden Requisite may be obtained.

Monro's Duke of Edinburgh Trade.

J. MONRO begs to inform his Trades, &c., that he has SOLD the ENTIRE STOCK of seed of the above named Cucumber to

Messrs. CARTER AND CO., The Queen's Seedsmen, 237 and 238, High Holborn, London, W.C.; and as no other Cucumber is grown by J. Monro, those having it from the above-named Firm are desired to have it traced.

Potter's Bar, January 8, 1877.

Special Offer of SEED POTATOS, until the Present Stocks are Sold.

Table with columns: Name, Subject to be sold out of (Per lb., Per 14 lb., Per Sack of 16 Stones), and a column for price (s. d.). Lists varieties like Alpha, Magnum Bonum, Snowflake, Imported Snowflake, American Early Rose, etc.

GIANT ASPARAGUS SEED, 4s. per oz., 2s. 6d. per lb. CONOVER'S COLOSSAL, 6d. per oz., 4s. per lb. net weight of 1876.

1 lb. 4 bushel sacks, 1s. 2 1/2, and 8 peck bags, 6d. each. New

Orders taken in rotation. Remittances to accompany all orders.

TANNED GARDEN NETTING, 1d. per square yard, 7s. 6d. per 100, 35s. per 500, 65s. per 1000 do. Carriage paid to any station on the Great Northern, London and North-Western, Midland, and Great Western Railways, for orders of 2000 yards and upwards. Wholesale Price LIST on receipt of Card.

CHRISTMAS QUINCEY, Potato Grower and Merchant, Peterborough.

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

ESTABLISHED 1785.

SPECIALITIES. ROSES, FRUIT TREES, CONIFERS.

Descriptive Priced Lists on application.

VINES, VINES, VINES.

F. & A. SMITH, THE NURSERIES, WEST DULWICH, S.E.

Offer for a large Stock strong well-grown fruiting and planting Canes, all low prices.

List on application.

To the Trade Only.

SAM DYER has to offer to the Trade fine SEEDLING POTTERBERRIES, Standard 1 1/2 ft. from layers, 8 to 20 and 20 to 12 feet, very fine; GOOSEBERRIES, best named sorts; CURRANTS, Red, White, and Black; THORN, grafted, extra strong. Prices per 100 or 2000 on application.

The Nurseries, Bridgewater.

FRUIT TREES.—One of the largest Stocks in the County, consisting of Standard, Pyramid, and Espalier APPLES, CHERRIES, PEARS, and PLUMS, from 200 to 2000; CURRANTS, 4-yr. old, from 5s. per 100; GOOSEBERRIES, 3-yr. old, from 10s. per 100. CATALOGUES of T. EVES, Gravesend Nurseries.—Established 1820.

RICHARD SMITH'S GUINEA COLLECTION OF VEGETABLE SEEDS

Contains the following excellent sorts (Carriage Free):—

- PEAS, Kingelder, 1s. 1 qt. 100
Improved Sangster's, 1s. 100
York's Perfection, 1s. 100
Fortyfold, 1s. 100
Priestley's, 1s. 100
Improved Spring, 1s. 100
BEANS, Johnson's Wonderful, 1s. 100
Broad Windsor, 1s. 100
Howard French, 1s. 100
Scarlet Runner, 1s. 100
Improved Astringent, 1s. 100
BET, Watling's Red, 1s. 100
KALE, Asparagus, 1s. 100
BRUSSELS, green curled, 1s. 100
BROCCOLI, Adams' Early, 1s. 100
Snow's Winter White, 1s. 100
Purple Sprouting, 1s. 100
Walcheren, 1s. 100
CABBAGE, Early Nonpareil, 1s. 100
Enfield Market, 1s. 100
Worcester Incomparable, 1s. 100
Red Pecking, 1s. 100
CARROT, Early Horn, 1s. 100
James' Intermediate, 1s. 100
Purple Sprouting, 1s. 100
CAULIFLOWER, 1s. 100
CLEVERLY, fine Red, 1s. 100
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Australian, 1s. 100
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MUSTARD, 1s. 100
Early Redtop, 1s. 100
MELON, 1s. 100
ONION, White Spanish, 1s. 100
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PARSELY, Extra Curled, 1s. 100
FARNSHIP, Hollow-crowned, 1s. 100
RABBIT, Wood's Early Frame, 1s. 100
Loise Scarlet, 1s. 100
White Turnip, 1s. 100
SALVON, Green Curled, 1s. 100
SPINACH, Boursain, 1s. 100
Prickly, 1s. 100
TURNIP, Early Snowball, 1s. 100
Early Redtop, 1s. 100
TOMATO, Large Red, 1s. 100
VEGETABLE MARROW, 1s. 100
SWEET BASIL, 1s. 100
SWEET MARJORAM, 1s. 100

SEED WAREHOUSE, 61, HIGH STREET, WORCESTER.

SEEDS OF SUPERIOR QUALITY.

WM. PAUL & SON

(Successor to the late A. Paul & Son—Established 1806)

PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, N.,

REG TO ANNOUNCE THAT THEIR

ILLUSTRATED CATALOGUE

OF SELECT VEGETABLE AND FLOWER SEEDS, &c.,

Will be ready shortly, and will be forwarded, post-free, on application.

Many sorts are home-grown, and all are selected with the utmost care from the most celebrated stocks at home and abroad, in order to secure for their Customers the best quality that can be obtained.

IMPORTANT—Observe the Christian Name,

WM. PAUL & SON, WALTHAM CROSS, N.

SPEED'S VINE AND ROSE MILDEW ANNIHILATOR.



JAMES VEITCH & SONS,

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.,

Have much pleasure in offering this excellent preparation for the destruction of Mildew. It proves to be perfectly harmless to the Grape Vine, the Rose, and the Peach when applied to the youngest and most tender foliage, and the fruit itself may be dressed with perfect impunity in any state, even before the thinning period, and there are few things more sensitive than the cuticle of young Grapes in the early stage of their growth.

It kills the Mildew instantaneously, and can be rinsed off within a few minutes of being applied, leaving no smell or sediment, or other traces of its application.

It is not poisonous to Animals, although it is instantly death to all Fungi. Experiments were made on a piece of Mushroom spawn, and one puff of the spray distributor on its little active thread-like mycelium shrivelled it up as if charred. As it kills the fungus in a resting state as well as in an active state, there is every reason to hope that it may be found useful in checking diseases of the Potato, the Hollyhock, &c., that are caused by Fungi.

The following Testimonials have been received:—

From ROBERT HOGG, Esq., LL.D., F.L.S., &c., Pymology Director of the Royal Horticultural Society.

"I have great pleasure in bearing my testimony to the magical effect which your mixture has upon the Mildew of the Vine. When I was at Chatsworth, a few months ago, the application of the mixture, through a spray distributor, on the foliage of the Vine, was so destructive and so instantaneous as to leave no doubt on my mind as to its perfect efficacy in destroying the Mildew. On examining the foliage with a magnifying glass after the application, I could find no trace of the disease."

From Mr. WILLIAM THOMSON, Tweed Vineyard, Cleveford.

"I tested Mr. Speed's remedy for Mildew this last summer, when staying for a few weeks at Chatsworth, and in my life I never saw a more radical remedy for any such pest. One puff of the spray distributor cleared the leaf of a Vine badly affected with Mildew, doing the leaf no harm, and I believe it can be safely applied to the most tender plant, as well as the fruit of the Vine. I believe it will completely supersede the use of sulphur for destroying Mildew on Peaches, Roses, Heath, and all other plants liable to attack by Mildew, and that it will prove a great boon to horticulture."

Sold in Bottles, at 2s., 3s., 6d., 6s., and 10s. each; to make 1 Quart, ½-Gallon, 1 Gallon, or 2 Gallons, ready for use.

Price to the Trade on application to J. VEITCH & SONS, Sole Wholesale Agents.

GARDEN AND FLOWER SEEDS.

THOMAS METHVEN & SONS

REG TO INTIMATE THAT THEIR DESCRIPTIVE PRICED

CATALOGUE OF KITCHEN GARDEN AND FLOWER SEEDS, IMPLEMENTS, &c., for 1877,

Is now ready, and may be had post-free on application.

EAST LOTHIAN INTERMEDIATE STOCK (true), in three colours. In packets, 1s., 2s., 6d., and 5s. each colour.

SNOW-WHITE WALL-LEAVED EAST LOTHIAN INTERMEDIATE STOCK. This is a sterling novelty. The purity of the white shows up well upon the grassy green foliage, and it bears the large trust of the East Lothian varieties. In packets, 1s., 2s., 6d. and 5s. each.

SEED WAREHOUSES:

15, PRINCES STREET, and NURSERY GATE, LEITH WALK, EDINBURGH.

THE HUNTINGDON NURSERIES.

WOOD & INGRAM'S CATALOGUE OF SEEDS FOR THIS SEASON

Is now ready, and will be forwarded free on application.

THE NURSERY AND SEED BUSINESS

So successfully conducted for a number of years by the late Mr. JOHN INGRAM, will be continued to be carried on in its various branches, as heretofore, by his Widow and Two Sons, in the name of WOOD AND INGRAM, who respectfully solicit a continuance of the kind and liberal patronage which has been given for a lengthened period to their Establishment.

THE NURSERIES, HUNTINGDON.—January, 1877.

Dissolution of Copartnership of Peter S. Robertson & Co., Seed Merchants.

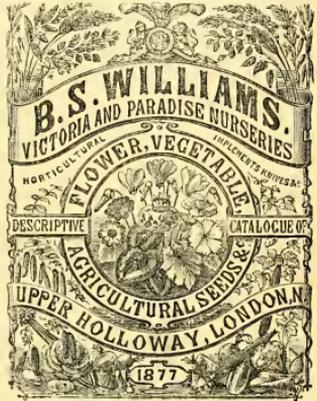
WILLIAM THOMSON,

For many years connected with the Seed Establishments of Messrs. Peter Lawson & Son, Edinburgh and London, and latterly Managing Partner of the Firm of Peter S. Robertson and Co., Seed Merchants, begs to intimate that he has secured commodious premises, No. 16, Saint Giles Street, where he will carry on the business of Seedsmen and Nurseryman, under the Firm of WILLIAM THOMSON & CO., and he respectfully solicits a share of the patronage of his friends and the public.

CATALOGUES OF GARDEN and FLOWER SEEDS, and IMPLEMENTS, &c., are now ready, and will be sent on application.

WILLIAM THOMSON & C^o,

Seed Merchants and Nurserymen, No. 16, SAINT GILES STREET, EDINBURGH.



The above Catalogue is now ready, gratis and post-free to all applicants.

P. S. W. begs to intimate that in the event of any of his Customers not receiving this Catalogue, if they will communicate with him a copy will be sent.



WM. PAUL & SON,

(Successors to the late A. Paul & Son, Established 1864.)

ROSE GROWERS,
TREE, PLANT, BULB, AND SEED MERCHANTS,
WALTHAM CROSS, HERTS,

Adjoining the "Waltham" Station, Great Eastern Railway.

Inspection of Stock invited.

Priced Descriptive Catalogues free by post.

AVENUE TREES.

PLATANUS OCCIDENTALIS (true), to 20 feet high, and girthing 4 to 8 inches at 4 feet from the ground.

LIMES, 12 to 20 feet high, and girthing 6 to 10 inches at 4 feet from the ground.

POPULUS CANADENSIS NOVA, 15 to 26 feet high, and girthing 6 inches at 4 feet from the ground.

ANTHONY WATERER

Hus to offer many thousands of the above. They may be seen growing at Knapp Hill. They are straight, handsome, and well rooted, and altogether the finest Trees of the kind to be found in any nursery in Europe.

KNAP HILL NURSERY, WOKING, SURREY.

TO THE TRADE.

NEAPOLITAN ONION SEEDS:

**NEW QUEEN,
MARZAJOLA,
GIANT ROCCA,**

**GIANT FLAT RED TRIPOLI,
EARLY WHITE TRIPOLI,
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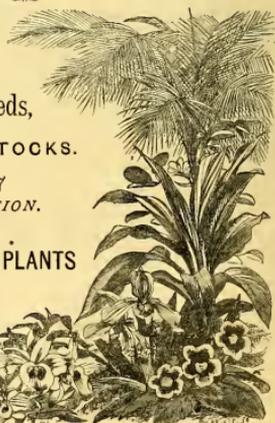
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SATURDAY, JANUARY 20, 1877.

THE SWILCAR LAWN OAK.

LEAVING the train last autumn at Sudbury, and passing from the fertile valley of the Dove to the high ground of Needwood Forest, we soon observed the towering head of the Swilcar Lawn Oak on some high ground 2 miles distant. This venerable old tree is the patriarch of the forest. Strutt says, in his *Portraits of Forest Trees*, 1824, that this tree measured 19 feet in circumference, at 6 feet from the ground, fifty-four years previously, and that it then measured 21 feet 4 inches at the same height from the ground. It could not now be measured fairly at the same part of the trunk in consequence of an excrescence, which has been many years growing, and has now attained large dimensions; but at 5 feet from the ground it now measures 27 feet. The trunk runs up to a great height, and still carries an imposing top and some widespread lateral limbs.

A lover of trees cannot but feel emotion on finding himself for the first time beneath this towering specimen, the grandest in the forest. Its gigantic size reminds me that some Oaks, as well as some men, be predestined to distinction. You may stumble over a future Lord Chancellor in a village-boy at marbles with his companions, and there are inherent qualities conferring marked individuality on trees as well as men. At first it may seem extravagant to compare even the most wooden men with timber trees, but it will be found on examination that they have much in common. For example, they are both built up by food, and that is a substantial similarity. On the other hand, there are differences. A young fellow hovered about a park-keeper's lodge on an errand connected with a young domestic residing there; the bloodhounds were loosed, and he was brought to bay in a Holly tree. Here is an example of the wear and tear of life in the higher class of animals, and of hereditary tendencies. The Oak is without a nervous system, but it possesses life and hereditary tendencies, and its growth is not purely mechanical. There are both Oaks and men in Needwood Forest possessing unusual vitality, size, and strength of fibre. There was an old deer-stealer, who could throw a fat buck over his shoulders, and who lived to the age of 100. His son mowed the grass around the Swilcar Lawn Oak at eighty-eight, and died at ninety of an epidemic. There is a grandson who closely resembles the portraits of the deer-stealer, and seems likely to live as long. This, then, is a tough and long-lived breed of men. Some Oaks may be constitutionally tough, too, beyond the average. Gardeners have frequent opportunities of observing the individuality of plants under cultivation, whose reproductive organs are subjected to special disturbance owing to the artificial circumstances of their growth. The Oak is not subjected to the same disturbing causes as garden flowers and fruits, yet every acorn buried in the ground has its family disposition planted with it, and it may turn out a Swilcar or prove a pigmy by comparison, even with equal opportunities. There is an old Oak growing near the Swilcar Lawn Oak, on the same yellow clay, and differing from it in size, toughness of fibre, and other respects. Both are English Oaks, and both are of the same variety, with stalked Acorns, their differences being merely individual peculiarities, such as the offspring of two Apple pips might

exhibit if sown side by side. Mr. Jesse mentions the anomaly of an English Oak in Windsor Park producing sweet fruit, closely resembling the acorns of the sweet fruited Oaks of Spain and Arcadia. Climate may have rendered our acorns bitter, but it may be that our Oaks are derived from the same primeval parents as the sweet-fruited species of Spain and Greece, and in Mr. Jesse's specimen we may suspect the reproduction of an ancestral characteristic. The Swilcar Oak has small round acorns, those of its near neighbour are more than an inch long. Not far off, in Bagot's Park, there is a variegated Oak called the White Tree, and producing leaves marked with white and occasionally blotched like those of the Aucuba. The effect of such foliage on a large tree in a park devoted to the growth of the English Oak is very striking. The whiteness of the leaf seems a peculiarity rather than a disease. Perhaps this ornament of the leaf may be another example of a quality latent in the s.c.d.

From our present point of view, it does not appear irrelevant to speak of the inherited tendencies of men in connection with our subject. It has often been remarked that the courage of the Plantagenets has descended to the Queen, and a courtly Dean discovered, by examination of a mural painting in Westminster Abbey, that a singular graciousness of aspect in the handsome face of Richard II. had reappeared in a remarkable degree in one of the Queen's children. Such inherited tendencies certainly exist in royal and other families, and also in Oaks. In many woods *Quercus Robur* exhibits its two varieties with acorns of several shapes and sizes, and with long stalks and short stalks or none, and with leaves whose foot-stalks present similar variations. The fibre, too, differs in texture in the same varieties of the tree. And these differences are inherent, and their causes untraceable; they are individual peculiarities, as size and longevity are to some extent. We are dealing, however, with exceptions, which only prove the rule that "like produces like." Oaks may be improved, no doubt, and rendered more uniform by selection, and therefore Lord Bagot, whose breed of Oaks is a good one, and similar to that of the Swilcar Lawn Oak, is a benefactor in the distribution of good Oak seed from his famous woods amongst his friends.

The Swilcar Lawn Oak was poetically named the "Chief Mourner," on the occasion of the destruction of Needwood Forest. On that occasion it was protected by being enclosed with a pale fence, and a few years since the man who set up the first post of this fence was still living. It is a satire of the small sort on human affairs that this person who assisted in the enclosure of the forest was one of the most notorious deer-stealers who ever walked its paths by moonlight with a flint-and-steel gun. Several acres of Needwood have been preserved around the old tree, and immediately around it is a screen of the greenest Holly, which was encouraged here for the winter feeding of the deer, and kept bushy and vigorous by constant chopping. A poet of Needwood sings pleasantly of a "green robed nymph with a buskined leg and a bosom bare," who was accustomed to linger in this spot. Her name was Zephyr, and she still breathes among the branches of the patriarch, faithful to him as in his youth, and so sweeps the grass-plot on which he stands. So sings the poet in old-fashioned verse, just a little too long, his buskined maiden in the *decoeur* attire still lingering to pause and breathe, and so forth, till you fear a fainting fit or worse. The classical names and notions imported so unnecessarily into English poetry in the last century are not so popular as they were. Fashions alter, ideas only are immortal—*avivata*—Oaks change from day to day, H. Everaugh.

New Garden Plants.

ACER VAN VOLKEMII.*

It is unquestionably a rather unsafe proceeding to establish a new species of Maple with such imperfect material as we have yet been able to obtain. Nevertheless, its discoverer, M. Van Volckem, who knows trees well, assigns its complete description, and we have been quite unable to refer his specimens to any living plant in the nurseries, or in the arboretum at Kew, nor have we been more successful in identifying it with any of the specimens described in books or catalogues of the arboretum at Kew. We are therefore obliged obligingly forwarded for the purpose by M. Boissier. On these grounds, coupled with the fact that whether a seedling variety of the *Sycamore*, *A. Pseudo-Platanus*, or entitled to specific honours, it is simply deserving a separate name for garden purposes, we have named it in honour of its discoverer. It is evidently a handsome quick growing tree, the light green upper surface and silvery under surface of the leaves being very effective. It will be well to give the history of the tree as far as we know it, in M. Van Volckem's words:

"A few years ago I discovered in the Caucasus (and imported) a Maple entirely different from any in the collection of more than eighty species and varieties of hardy Maples in my collection. I think, but am far from sure, I want a plant of it in Kew last year or in 1875 under the name of *Acer* spec. nova (*de Kakhobé* (Georgia, Caucasus)). I found the tree on the southern slope of the Caucasus, in the valley of the Jora, or Yora, a tributary stream of the Kur, about 1000 feet above the level of Lagodechi. It climbs up the slope till the forest ends. It is a very large tree, very distinct from *A. Pseudo-Platanus*, which grows intermixed with it, in its larger and its pale green colour, by which it is recognizable hundreds of yards away. The winged fruits are also smaller. It grows intermixed with *A. Pseudo-Platanus* in the same forests, with no intermediate forms, hence it is not a hybrid form, nor would a mere tree very much distinct in its wild state. It does not grow to so great a height on the slopes of the Caucasus by at least 1000 or 1200 feet, so far as I was able to observe. The form of the tree is more columnar. The light green colour of the leaves makes the difference between the two conspicuous and unmistakable. The colour of the bark and the shape of the buds are different, even in the winter time."

"The country around Lagodechi is very fertile. Near the place is a very large forest of Juglans regia, certainly wild there. Near the river are extensive swamps, and the trees are here growing sometimes as an enormous tree, and sometimes as a large shrubby bush. The two forms are intermixed with each other; so that no condition of soil or exposure can account for their difference. I have seen an intermediate form, and I could not detect any difference between the two forms except as to their habits and size."

So far M. Van Volckem. We find the leaves differ in shape from all the forms of *Acer Pseudo-Platanus* being more oblong, with shallower oblong-lanceolate lobes, and very acute wedge-shaped sinuses between the lobes. The margins are very coarsely toothed, the texture thin, the colour light green above, silvery and quite glabrous beneath. In all the forms of *A. Pseudo-Platanus* the nerves are much more prominent beneath than in this plant, and always more or less hairy towards the base. In this plant the under surface is perfectly glabrous. *Acer* insigne of Boissier, of which, thanks to the courtesy of M. Boissier, we have seen the type specimen, is also quite different. We must await the flowering of M. Van Volckem's tree with much interest, and in the meantime commend it as a distinct and valuable addition to the arboretum. (See fig. 10, p. 73.)

DENDROBIUM (DENDROCYBNE) TIFULIFERUM, n. sp.†

Until now we had only one single truly Pleurothalloid Dendrobium, *Dendrobium longicellum*, Lindl., from Singapore. Our species is much more slender, narrower leaf, on a very long slender, shining stem. The spider-like flower, whose sepals and petals end in long bristles, is purplish in lieu of being straw-coloured, with the points only purplish, as in *D. longicellum*. The lip, too, is much more broken up in long side lacinate. It is nothing to excite the wonder—

* *Acer Van Volckemii*, Mast.—Arbor excolta, foliis (synanthi) palmato 3-5 lobis subnatis argenteo-glaucis omnino glabris nervis parvis prostratis, sinibus inter lobos jorum pte fundis oblongo-lanceolatis ovato-ovatis cuneatis basi acutis; fructibus siccis quadrifloris, lacinis dispositis, albis, multis subvergetibus; foribus adnatis non visis.—Hab. in silvis ad Kakhobé in Georgia Caucasus ubi legit D. Van Volckem. Ab *Acer* spec. insigne differt statu, habitu, nervis, sinibus, glaucis, nervis omnino glabris nec secus nervos albis hirsutis, nervisque minus prominentibus.

† *Dendrobium Tifuliferum*, n. sp.—Aff. *D. longicellum*, Lindl. creule; spathulato tereti caule; basi ovato-oviginato; stemmate tereti, nervibus, sinibus inter lobos jorum pte; vagina lacinate; foribus paucisimis aggregatis virgatis; antibus; meato angustissimo ovato pedicellato quadrifloro; lacinis subvergetibus; lacinis dispositis, albis, multis subvergetibus. Flores purpurei.—Viti, P. Vellozo.

of Orchidists, but botanically speaking it is very curious. It was discovered in the Fiji Islands by their latest explorer, Mr. Peter Veitch, who sent it to Messrs. Veitch, Royal Exotic Nursery, H. G. Rehb. f.

SORBALIA CATLEYANA, n. sp.*

All travellers in tropical America are unanimous in praising the charms of the Sorbalia and the large Eleanthus (Evelynas). I have heard the same glowing description from Humboldt and Pöppig as from Linden, Roez, Warszewicz, Wallis, Wagnier, Bruchmüller, and others. The Sorbalias are accused of being the most beautiful flowers, of the highest value, and best exhibition plants. This may all be true for the species generally grown, but I remember that in 1874, at Florence, an exhibitor, I think Prince Demidoff, sent two or more magnificent masses of Sorbalia macrantha in competition for the highest prize for specimens of flowering Orchids. The buds had not opened at the moment of judgment, owing to the cold and dry air, and the majority of the jurors (who had declared themselves to be able to judge Orchids) did not even take notice of these plants, which were probably untrivial in Europe.

There are, however, Sorbalias with flowers of a firm, fleshy texture, like those of *Cattleya*. I have only met with one species of that kind, the true Sorbalia ligustrum, at the late Mr. Rucker's, at Wandsworth, who was very proud of it. Yet even this is not the firm as one would like it to be, and as they are in strong *Cattleyas* or *Vandas*. The species long known to me, but only now published, has very strong, thick flowers, which ought to last a good while. The stout stem has shining oblong acuminate pointed leaves, and bears several rather slightly flexuose inflorescences with splendid *Cattleya*-like flowers. All my herbarium specimens are described as bearing purplish-brown sepals and petals and a beautifully purplish lip. I have now at hand a sketch of the flowers of the Sorbalia which I have in my plant, which shows the same colours with a white column and three yellow lines over the centre of the lip. No doubt the gold parts are the raised crested keels. The lip appears to form a sharp angle by its lateral lobes overlapping the column, so that it may be compared to a rose. It is represented three times in the same very unusual manner.

It may well be compared to *S. Roezii*, a species I published with some doubt, but which I now regard as a very distinct, beautiful thing, quite worthy to bear Mr. Rucker's name. This species has five to seven fully developed keels over the lip, and no small prickly crests on the sides, such as are to be seen in quantities in *S. Cattleya*. The present plant comes from the revolutionised States of Columbia, and was collected by Mr. Bull, the collector of the living as Mr. Bull, the possessor of the stock, informs me. Now there is an opportunity of trying a species which, in its wild state, bears a profusion of large, nicely coloured, long-lasting flowers. Since its nearest ally has a powerful, agreeable smell of fallflowers, probably the present one will be inodorous.

Good drainage and no end of water during the season of full growth will prove essential conditions to success. H. G. Rehb. f.

THE NEW PLANTS OF 1876.

We resume from p. 43 our brief sketch of the more important of the New Plants which were introduced to the notice of the public during the past year.

ORCHIDS.

Orchids received some good accessions, irrespective of the many interesting forms of *Maxillaria* which have rewarded the search of the collectors, and of which one of the most remarkable is the long-tailed *M. macrantha* described and figured at p. 33, the tails of which are fully 6 inches in length. The species now, however, require to be separated into at least two categories—the ornamental and the curious, and a large proportion of those now known must be relegated to the latter. Amongst *Odontoglossum*, *O. cirrosum*, with its handsome white purple-spotted flowers; *O. Chestertonii*, with its cream-coloured flowers, marked on the sepals and lip with rich brown; and the beautiful yellow-lipped *O. Londeborghianum*, are all charming additions to this deservedly popular genus. *Bollea caesiata*, from tropical South America, with its blue, white-tipped,

* *Sorbalia (Brazilia) Cattleyana*, n. sp.—Pilis oblongo-ligulatis; acuminiatis; rhoribus paucisimis lateralibus; bracteis triangulis parvis; foribus coracatis; sepalis lanceolato-oblongis; petalis subobovatis; ovibus; labellio trilobis, lobis lateralibus oblongatis, medio supra columnam sub angulo erecto; lacinis dispositis, albis, multis subvergetibus; lacinis dispositis, albis, multis subvergetibus. Carinis per medium una supra teres obscuris, antice cristatis, cristulis parvis lateralibus minutis; papulis muricatis circumscriptis; columnis fasciatis; lobis; lobis.—Verae Giesman, H. G. Rehb. f.

yellow-lipped flowers, is said to be very distinct and of considerable beauty; while *Pescatorea Roezlii*, with its large white flowers tipped with blue, affords another distinct and charming type of a meritorious character. Some fine varieties of established species have been added to our lists, as the purple-tipped *Dendrobium Devonianum* var. *Elliottianum*; the thick-stemmed *D. Wardianum* var. *Louii*; a fine form of

having the fronds glaucous beneath; the latter a very distinct bipinnate thick-leaved Fern, with Blechnoid fructification. From New Caledonia M. Linden has introduced *Lomaria gigantea* and *L. neo-caledonica* (two large-growing arborescent forms of the *L. gibba* type), together with *Dicksonia Delplanchei*, *Cyathea nigra*, and *Marattia attenuata*. Mr. B. S. Williams has imported from New Guinea a distinct *Adiantum*

Williams, who both hold stocks of it. An Australasian plant, introduced under the name of *Davallia Youngii*, proves to be a larger growing variety of a well-known species, the *Dennstaedtia davallioides*, *alias* *Dicksonia davallioides*; it is a noble-looking plant for bold rock work in greenhouses, and extremely elegant, though of large growth. As a garden sport, we have had introduced a *Gymnogramma Allstoni*, one of



FIG. 10.—ACER VAN VOLXEMII. (SEE P. 72.)

D. diflorum which M. Linden calls *Gauberti*; and *Phalaenopsis intermedia Brymeriana*. Not the least interesting of these plants are the fine novelties in the shape of hybrids amongst the *Cypripediums* and *Cattleyas*, for which we are chiefly indebted to the Messrs. Veitch & Sons.

FERNS.

Amongst Ferns we have to add the Sandwich Island *Cibotium pruinatum* and *Sadleria cyatheoides*, the former a plant closely allied to *C. Menziesii*, but

of the ethiopicum type, which has been named *A. neoguineense* (see p. 12), and is remarkable for its broadly triangular outline and its roundly-lobed pinnales. The name of *Adiantum palmatum* has also been recently given to the Andean plant associated by some botanists with *A. speciosum*, but which proves to be quite distinct when the two are seen growing together, and also different entirely from the *A. digitatum* of Presl, under which name they had been thrown together. The *A. palmatum* is in the collections of Messrs. Veitch & Sons and Mr. B. S.

the golden-backed series, the peculiarity of which is that the tips of the pinnales are uniformly recurved, so that the gold colour shows on the upper surface. A still more curious sport is the *Pteris serrulata* Leyi, in which the ends of all the segments are converted into elongate leafless tails.

GREENHOUSE PLANTS.

Of greenhouse plants we have usually but a limited number to record, and though the term is expansive enough, our list of subjects still remains small. The

hard-wooded section yields us a beautiful highly-colored species in the Australian Boronia claret brought out by Messrs. Veitch, which has narrow pinnate leaves, and abundant blossoms of a deep purplish rose; it is doubtless a little inclined to grow tall, but our cultivators will know how to grapple with this peculiarity. Then *Grevillea Preissii*, shown by Messrs. Rollison & Sons, another Australian shrub, if not exactly showy, is exceedingly neat and pretty, being of dense bushy habit, with narrowly cut bipinnate leaves, and very abundant racemes of rosy-scarlet flowers. Mr. Bull's double-flowered *Epacris onoseoides* (fore-plant), with its little button-like white flowers growing up the elongated branches, will probably become one of the most useful amongst greenhouse decorative evergreen shrubs of slender habit. *Araucaria Goldiana*, introduced by Mr. B. S. Williams, is likely to prove a fine conservatory plant, and may be described as intermediate between *A. elegans* and *A. Kulei*, the branches being pendulous. *Bananea Canderi* (see p. 793, vol. v.), from Columbia, is a very handsome member of the tuberous-rooted section, from Mr. Bull's collection; its pendulous umbels of numerous bell-shaped rose-colored flowers are very beautiful. We gain a dwarf but exceedingly striking greenhouse perennial in the Peruvian *Begonia Davisii*, which has short-stalked radical leaves of the usual oblique type, and small cymes of brilliant crimson-scarlet flowers on slender scapes taller than the leaves; while in the hybrids of this tuberous-rooted race we have some of the most attractive of summer flowering plants for the greenhouse. Finally, we regain a greenhouse beauty of considerable beauty in the Brazilian *Crinum ornatum rubro-venatum*, the flowers of which are white with a crimson band across each of their six segments.

HARDY PERENNIALS.

Amongst hardy perennials, including with them the hardy bulbous plants, by far the finest object we have seen is the *Lilium auratum cruentum*, a splendid form of that most splendid of all Lilies, in which the golden band is obliterated by a band of crimson extending from the apex to the very base of each segment, and increasing in intensity from the point downwards, the base being a blackish blood-crimson, which suggested to us the name. *Lilium nellhergense* (see p. 332, vol. iv.) is another fine Lily of the longitundum type, and a decided acquisition, which blooms later than most other sorts. The Californian *Fritillaria recurva* is a beautiful dwarfish-growing hardy bulb, with sessile linear leaves, and bell-shaped scarlet flowers, having reflexed segments spotted inside with scarlet, "the red being as bright as that of a Lily." *Fritillaria aurea* from the Cilician Taurus, is another dwarf species, with yellow flowers minutely tessellated with black spots, and is very distinct from anything previously known in gardens. In *Mecopis Wallichii* we have a wonderfully handsome

Poppay, with pure sky-blue flowers—a plant known to botanists, but not previously generally accessible. Mr. Bull has now offered it, however, as *macrantha*, a herbaceous perennial of the labiate order, from California, introduced by Messrs. Veitch, is a charming acquisition, having low tufted stems, with small ovate leaves, and terminating in capitate heads of scarlet tubular flowers—a "very beautiful, and highly aromatic" plant, according to Dr. Hooker, who states that it flowers in October. Another "strikingly beautiful" Californian plant, introduced by Mr. W. Thompson, is the *Mirabilis multiflora*, which has large panicles of flowers, with broad, flat, bright rose-purple corollas, having a darker ring round the throat. The Hawaiian *Amancestrum armentosa* will be a welcome addition to hardy spring flowers, and forms a pretty object with its rosulate tufts of obovate-linear leaves, its red-stalked runners, by which it is freely propagated, and its heads of pale bright rose-colored flowers, which are decorated by a yellow throat surrounded by a deep rose ring. To these as a possibly hardy, possibly half-hardy plant, may be added the beautiful striped-leaved grass which has appeared at some of our shows under the name of *Eulalia japonica variegata*—a plant large enough to be effective, and yet without a touch of coarseness.

ANNALS.

At present there seems to be a dearth of newly-introduced annuals, and we have nothing of very special importance to enter to the credit of the past year. The Chinese *Moriandia sonchifolia*, from its

early flowering habit (March), and its large Stock-like single deep purple cruciferous flowers, something like those of a single Rocket, may be useful for spring gardening; it grows from 1 to 2 feet high, and flowers in racemes. *Helianthus cucumerifolius*, from Texas, is a novelty of some merit; it is of large growth, from 3 to 5 feet high, but freely branched, and altogether devoid of coarseness; the flower-heads are yellow, 3 to 4 inches in diameter, with a black disc. The new seminal form of *Godekia* named *Lily Albomaris* is so exceptionally fine, both in its magenta colour and its stocky floriferous habit, that we cannot refrain from mentioning it in this place; while *Zinnia Darwinii*, a hybrid between *elegans* and *Haageana*, is likely to be a useful decorative plant.

HARDY TREES.

One of the most striking of hardy trees which has lately been made known in Europe is the sapindaceous *Xanthoxerus sibirica*, a faithful representation of which will be found at p. 564 of our vol. v., new series. *Populus canadensis* var. *Van Geertii*, as a robust-growing deciduous tree, and *Weigela amabilis* Loomysianii, as a deciduous shrub, are both remarkable for the pure and bright golden hue of their summer foliage, and will consequently be effective objects in plantations and shrubberies. The *Hydrangea Hortensia* Thomas Hogg (alba), if accurately described, must be a fine hardy shrub, and at the same time invaluable for decorative purposes as a pot plant, since a white *Hydrangea* would afford a fine contrast with the more usual colours, pink and blue. But, far beyond all these points of merit, is Mr. Waterer's *Abies Menziesii* Parryana, mentioned at p. 45, and referred to under this name by Mr. André in the last part of *L'Illustration Horticole*, a Colorado Spruce Fir, of highly character, with the foliage as blue as a thick glaucous covering can make it—as blue as that of the glaucous *Echeveria*, and even of a brighter blue than *Picea magnifica*, and a habit as symmetrical as that of *Picea Pissapo*. T. Moore.

RECENT CONTRIBUTIONS TO THE FLORA OF ICELAND.

By W. LAUDER LINDSAY, M.D., F.R.S.E., F.L.S.

SINCE I visited Iceland (in 1860) and published a *Flora of Iceland** (in 1861), several small collections of flowering plants and Ferns—made mostly in the south-west of that island—have been sent to me from time to time. These collections came directly from Reykjavik, by my worthy friend and correspondent Jon Amason, inspector of the College there.† He called my kind interest to induce attention of the students of the said College to make, during their summer holidays, and in their own districts, botanical collections, in order to their transmission through him to me. The collections that reached me prior to 1870 were placed in the hands of Professor Charles C. Babington, of Cambridge. The names of the plants of which they were made up were no doubt included by him in his *Revision of the Flora of Iceland*‡ (published in 1871), but, other collections have been made and sent since 1870, have been deposited in the national Herbarium at Kew, and have recently been examined by Professor Oliver and J. Baker, F.L.S.

To these gentlemen I am indebted for a list of the aforesaid most recent plant collections made in Iceland by the Icelanders themselves. It appears to me desirable to publish the short list, in order to the encouragement of botanical students in Iceland itself. The fact that their gatherings are duly appreciated and utilised in this country will no doubt stimulate to further gatherings of a more valuable kind. For one of the purposes of this preface is to show (1) that certain Icelandic plants are common and others rare; (2) that certain districts have been sufficiently explored botanically, while others have not; (3) that certain classes of plants have hitherto received all the attention of botanical collectors and botanists, while

* In the *Edinburgh New Philosophical Journal* for July, 1861.

† This gentleman is one of the most distinguished living Icelandic literateurs—an indefatigable collector and transporter of the grand old seeds of his native land, but best known on the Continent of Europe and in England by his two large volumes of *Icelandic Plants*, published in 1859 and 1864. Selections from these tales or traditions were given in an English dress, in two volumes, in 1861 and 1866, under the title of *Icelandic Legends*, collected by Jon Amason, and translated by George E. J. Orwell and Ewiger Magnusson.

‡ In the *Journal of the Linnean Society* (Botany), vol. xi., 1871, pp. 312-316.

others have received little or none; and (4) that, in short, much remains to be done in the collection and study of certain classes of plants from all parts of Iceland, or from particular districts thereof, otherwise that there remains much to deserve and repay special collection and examination.

In the first place, then, the following catalogue may be held to represent simply the commoner flowering plants, Ferns and Horsetails, of the south-western districts of Iceland, within a radius of perhaps fifty miles of Reykjavik, the capital. The list contains no plant not mentioned by Professor Babington in his *Revision*, with three exceptions, that are not given by him as separate species, viz., *Potentilla aurea*, *Plantago maritima*, and *Equisetum pratense*. There are several instances, however, in which, though the plant would appear to be more or less common, Professor Babington has seen it from only one locality, or has found it recorded as having been by others only so found. Moreover, the list now given enumerates only 105 species, while my own *Flora* in 1861 gave 455 of Phænogams, Ferns, Lycopods, and Horsetails; and Professor Babington, in 1871, 467,* so that the present catalogue of recent collections does not represent one fourth of the higher flora of Iceland.

In the second place, while the south-western districts have been pretty well examined as to flowering plants, Ferns, Lycopods, and Horsetails, there are certain other parts of the island of whose flora, whether Phænogamic or Cryptogamic, we know comparatively little. These botanically unexplored districts include especially:—1, the little visited portions of the north-western, northern, eastern, and southern districts; 2, the volcanic deserts of the interior; 3, the southern regions as a whole, and particularly the yet almost unexplored great Jokul deserts.

At present the flora of Iceland may be said to be very much a flora of certain inhabited portions of the coast and its comparatively fertile plains and valleys; of the desert and alpine flora we have yet to learn a great deal.

In the third place, the attention of travellers or collectors, botanical or non-botanical, has been hitherto almost exclusively confined to Phænogams; to these and their allies Professor Babington's *Revision* confines itself; and though in my own *Flora* I have given a list of all the Cryptogams known to occur in Iceland up to 1860, there is avowedly much yet to be accomplished, especially as regards the more minute, mostly microscopic lichens and fungi, as well as algae, particularly freshwater ones, such as the Diatomaceae and Desmidiaceae. In my *Flora* the desmids are represented by a single species, the diatoms not at all, the fungi by thirteen—numbers that serve to show how absurdly meagre is, or at least was in 1860,† our knowledge of the microscopic flora of Iceland.

In the last place, the value of all such collections, made by persons not themselves practised botanists, is seriously detracted from by the failure of the collector to label each plant or group of plants with the name of the exact locality in which it or they were found. Thus, in the *Revision* of 1871, I am enabled to give of my Icelandic plant collection 173 names, because most of the plants were gathered in three localities very different in their character, viz.,—1, very high on Mount Esja; 2, at Thingvall; and 3, in the neighbourhood of Reykjavik. Unfortunately, however, we are left to guess which was found in each locality, and in the case of duplicates the same species may have occurred, so far as we know, in all three localities. In another letter, of date November, 1872, he referred to a collection made "in the small islands of the Breidifjord (broad fiord or bay) in the west." In March, 1871, he mentioned some plants "almost all gathered in the South of Iceland (the

* Dr. Trimen, of the British Museum, informs me (in *lett.*, October, 1876) that the latest best *Flora* of Iceland is Grönholm's, in the *Botanisk Tidsskrift*, of Copenhagen, for 1875, p. 220, 1875-5, noticed in the *Journal of Botany* for 1875, p. 220, 1875-5. He eliminates several of Babington's species, but adds about ten others to the Phænogamic flora as given by Babington; so that the total remains very much the same as given to me in 1861 and Babington in 1871, so far as concerns the mere number.

† I have not myself seen Grönholm's *Flora* of 1875, and am not sure whether it is or others subsequent to 1860 give lists of the lower Cryptogams.

‡ Subsequent to the date of my *Flora* I published certain papers,—"Contributions to the Arctic Flora of Northern Europe," including Iceland—*Journal of the Linnean Society*, vol. ix. (Botany), 1867; 2, "The Arctic Cladonia," including those of Iceland—*Journal of the Linnean Society*, vol. ix. (Botany), 1868; 3, "The Protogaea of Iceland," being remarks on the Icelandic Desmidiaceae, Desmidiaceae, and Algae—*Quarterly Journal of Microscopical Science* for 1867.

Kängvalldisjer), though a very few were from the east (Mílafjallisjer). I had asked the gatherers to take only the most rare plants, but I thought, when I saw them, that some of them were rather common." In August, 1871, he sent a few plants, "all of which were gathered in the district of Borgarfjord, north of Reykjavík; only one, a creeping Ranunculus, was from a hot spring here, not far from Reykjavík." In November of the same year he wrote:—"I fear it will be in vain to promise you some plants from the north, west, and east, and especially from the mountain districts, as few people go there who interest themselves in botany. . . . I think there are very few new plants in this collection, though I know there is one very rare in Iceland, which we call Eyjarós. I have been told that it is found only in two, or, at most, three places, in my country." In our college we have two residents who specially interest themselves in botany. . . . But both of them live here in the south of Iceland, and are not likely to go either to the west, north, or east of their country, and I do not expect them, therefore, to be able to go except those who drive a train of ponies loaded with dried fish, and who will not stop for the gathering of plants."

These explanations were offered in reply to certain suggestions of mine as to the localities most deserving of botanical exploration, and most likely to yield the greatest botanical novelties.

The apparent hopelessness of getting the Icelanders themselves to make a thorough botanical exploration of their own island, and the inaccessibility of its desert, snow, and alpine regions from the difficulties of overland travel, led me to repeat more emphatically a recommendation I made in 1856, that Iceland should be visited by a yacht party of British naturalists for exploratory purposes. The whole summer months might be spent in visiting at least the less known parts of the coasts or fjords that give readiest access to the deserts or alps of the interior. The yacht would always answer as a floating hotel, on the one hand, and as headquarters for natural history apparatus and collections on the other. It could be made to anchor for any length of time at a given spot, and it could be ordered to any point to wait the arrival of a party travelling overland.

KALOSANTHES.

THESE are showy, sweet-scented, succulent-leaved greenhouse plants, which bloom from June to August, just at a time when hard-wooded greenhouse plants, the majority of Pelargoniums, Azaleas, &c., are over—a time when a great and sudden drench of flowering plants for the conservatory is frequently, I had to say, always, felt; they help to fill a gap without their help and sometimes be a gap indeed. In the first place, the soil I have grown them best in has been loam, peat, and cowdung, rotted to mould in equal parts; any well rotted dung will do, but I prefer cowdung if it is to be had. The cuttings should be put singly into 60-pots, and either the few shoots which do not show flower in the spring may be used, or the stems which have flowered may be cut into lengths of about 4 inches, stripped of leaves half their length, and each inserted to the remaining leaves in the compost nard, with a little sharp sand added. They do perfectly well out-of-doors if the winter is not wet; as good a place as any, and in a frame where they may be kept a little for the first week after being put in and kept from heavy rains. The tops of the non-blooming shoots which are used for cuttings should be broken out, in order that the cuttings may break three or four shoots. If the soil is in a moderately moist state when the cuttings are put in they will not need water for a few days, but after they receive water they should be kept fairly moist. They will soon root and throw out three or four shoots each, and on the approach of winter should be put on a shelf where they will just escape frost and be in the light. As early in the spring as the points of the shoots can be fairly got up, so as to

leave the shoots themselves 3 inches long, pinch them out; and as soon as the plants can be trusted without danger in a cold pit shift them into 32-size pots: the soil for this shift will not need sand; they will then start away with from six to ten good shoots. When all danger of morning frosts is past, let them have all the sun and air out-of-doors. See that they stand on a good bottom impervious to worms, for if worms get possession of the pot, they will as usual to expect that it is not so easy to fill up the channels they leave; and it is sometimes troublesome to get a plant which requires keeping dry at any particular season, when worms have invaded the soil, wet again, without soaking the ball in a tub or trough. As the shoots elongate it will be advisable to put four sticks round the edge of the pot, and pass one or two strong strips of matting round to keep the wind from breaking them.

Should a few specimen plants be needed it will be a good plan to select some of the thinnest plants of the batch and cut them down in good time for them to break nicely before winter. The tops taking off them may be used as cuttings, and three or four of them can be put in a pot 6 inches, leaving the top of the shoot intact, and put in a group in the middle of a 48-size pot and looped up to a stick placed in the middle of the group, these will, if put in a semi-shady place, root and make useful stuff for vases and other uses where those in 32's would be too large. They may all be wintered in a similar situation to that recommended for the previous winter, giving them only sufficient water to keep them from shrivelling. As the spring advances nearly every shoot on the plants in the 32-sized pots will set for bloom, when more water and room will be necessary for them. Those which were cut down, should be potted on as soon as they have space can be found for them. If these are required to bloom the next season they must not be stopped after March. Having potted them and got them established, they must have all the sun and air an open situation will afford, and be carefully attended to in the matter of water; they must also be properly secured from breakage by the wind. If larger specimens are required they had better not be allowed to flower, but the tops of the shoots may be put in, in a group as before directed, or potted singly, if small plants with a single truss of flowers are likely to be useful. Those that have been cut down to grow larger will fill 16-inch pots in the spring, and will flower plants as they are manageable, particularly those of *K. coccinea*, which is a large grower. One thing I have tried to inculcate, but which for fear of misapprehension I will put into plain words, is, that to insure a good and regular head of bloom one clear season's growth without stopping is imperative.

There are several kinds of these plants. One small-growing recumbent species has white flowers—I regret I never have been able to get a plant of it when I have been growing them—it is named *K. albiflora*, I believe. The best kinds have grown here, *K. coccinea*, crimson scarlet, with white eye, the largest grower; Madame Celeste Winaas, rose-dink; Madame Traphemus, rosy scarlet; & Phoenix, deep scarlet.

The only insect which troubles the Kalosantes is the aphid or greenfly, which is easily removed by fumigation or syringing. They sometimes are affected with a kind of mildew which takes the form of black spots, generally in the points; it is caused by dampness with cold: a little sulphur dusted on it checks it, but a dryer and warmer atmosphere is the only cure, as far as I know. John Betler.

THE PHYLLOXERA AND INSECTICIDES.

SOME time ago we published in our columns a short account of the results of the investigations of various scientific men in France into the nature of the Phylloxera—a terrible scourge which is committing such wide-spread ravages among the French vineyards. Latterly we have received some reports communicated to the French Academy of Sciences dealing with the attempts which have been made during the last three or four years to arrest the mischief done by the insect, and ultimately to destroy it altogether, by means of some potent drug. It is obvious that the remedy to be employed must possess two qualities at starting, viz., it must destroy the insect, and it must not damage to any great extent the Vine. But, further, it is not sufficient that when put in close contact with the roots of a plant—as in a pot—it should

prove fatal to the insect, it is necessary, if the remedy is to be of real practical value, that it should reach and destroy the Phylloxera on all the parts attacked by it in Vines which are planted out in the open ground. This is a real difficulty to overcome, as the remedy, be it in the form of solution or of vapour, cannot easily permeate the soil, sometimes clayey, sometimes sandy, on which the Vine is growing, so as to reach and act upon the smaller roots and branches whose nutrition the Phylloxera draws into itself.

M. Moullefiere, a Professor at the School of Agriculture at Grignon, was the gentleman delegated by the Academy of Sciences to make the necessary experiments for the purpose of determining what agent was the most practically applicable to the destruction of the Phylloxera, and the account of the numerous substances employed by him with varying results fills no less than 200 pages of a memoir presented to the Academy of Sciences. It is not our intention here to do more than give a brief résumé of the results at which he arrived.

He divides the substances used by him into seven groups, the first of which was composed of manures of various kinds, such as guano, superphosphates, farm-muck, &c.; the second of neutral substances, as water, soot, and sand; the third of alkalis, as ammonia and soda; the fourth of saline products, amongst which were the sulphates of iron, copper, zinc, potassium, and ammonia, alum, and sea-salt; the fifth of vegetable essences and products, as decoctions of hellebore, datura, absinth, valerian, and tobacco; the sixth of empyreumatic products; and the seventh of sulphur compounds. It was only with some of the substances contained in this last group that really satisfactory results were obtained, and it is to M. Dumas, the permanent secretary of the French Academy of Sciences, that the credit is due for suggesting the employment of the alkaline sulpho-carbonates of potassium and sodium and those of barium and calcium. All the other classes of remedies mentioned above were either without effect on the Phylloxera, or, in destroying it, also destroyed or damaged the Vine.

The sulpho-carbonates, which were carefully used by the great Swedish chemist, Berzelius, and also obtained by combining the alkaline mono-sulphides with the bisulphide of carbon, are either liquid or solid, and emit a powerful odour of sulphuretted hydrogen and bisulphide of carbon.

The alkaline sulpho-carbonates in the solid state are of a beautiful reddish yellow colour and deliquescent, but are not easily obtainable in that condition; the sulpho-carbonate of barium can be easily procured, however, in a solid state, and presents the appearance of a yellow powder, but little soluble in water. The sulpho-carbonates decompose under the influence of carbonic acid, forming a carbonate, and evolving sulphuretted hydrogen and bisulphide of carbon. These two latter substances are gradually liberated, and, as they have a very powerful effect on the Phylloxera, one can understand that the sulpho-carbonate, placed in the ground, may prove, by its slow decomposition, a powerful insecticide. In the case of the sulpho-carbonate of potassium, over and above its toxic effect, it has a direct invigorating influence upon the Vine, as the carbonate of potassium is an excellent manure.

The employment of the sulpho-carbonates as a means for the destruction of the Phylloxera was suggested to M. Dumas by the clearly recognized fact that there was of some substance that would evaporate less quickly than the bisulphide of carbon; he saw that it was desirable to apply the insecticides in some combination which would fix them and only allow them to evaporate gradually, so that their action might continue long enough in any one place to infect with their vapours all the surrounding soil.

But the task of eradicating the Phylloxera has by no means been accomplished by the mere discovery of the value for the purpose of these substances; there is the further difficulty of applying them to the Vine in cultivation. One thing seems very certain, that in order to render the sulpho-carbonates practically efficacious in killing the insect, it is necessary to use water as the vehicle by which they may be brought to all the underground parts of the plant, and that the best time of year for their application is the winter or early spring, when the earth is still moist and the quantity of water necessary to be brought on to the ground by artificial means is consequently less. Mixed with lime in the proportion of 2 to 1, these sulpho-carbonates give a powder which can be spread over the ground before the heavy rains, that is, between October and

* I do not find any such name as "Eyjarós" among the native names of Icelandic plants given in my *Flora*. Nor does it appear in the list of plants by way of index to any of the specimens sent to me, so that I have no means of identifying the plant in question.
 † *Journal of a New Field for Tourists*, August, 1856; 2. "Contributions to the Natural History of Volcanic Phenomena, and Products in Iceland"—*Proceedings of the Royal Society of Edinburgh*, 1856.
 ‡ When I visited Iceland there was no such thing as a hotel in the island; but I was most fortunate in procuring quarters at the private residence of one of the leading merchants of Reykjavík.

March, and which will probably prove itself very efficacious.

The conclusion at which M. Mouillefert arrives at the end of his report is that the efficacy of the sulpho-carbonates is proved, and all that is necessary is to bring to perfection their employment in agriculture, which can only be accomplished by the intelligence and practical knowledge of the Vine grower, who is well able to discover the economic processes of culture which are conducive to their successful application.

He ends by saying that "Science has accomplished its mission, and it remains for Agriculture to fulfil it part" in the eradication of the *Phylloxera* from the vineyards of France. *Nature*.

BOTTOM-HEAT: ITS USE AND ABUSE.

I QUITE agree with most of what your correspondent, Mr. D. T. Fish, has so ably said, at p. 11, in favour of bottom-heat, and believe that, when applied at the right time and in moderation, it is one of the most powerful aids to successful cultivation a gardener can make use of. That it is highly injurious to Vines during the early stages of their growth I have long since found from experience, and for years have discontinued it altogether, substituting a thin coating of dry leaves or bracken, covered with shutters or old lights, just to keep out frost and wet from the border. The roots of Vines respond so readily to heat when applied to them that they pump up sap much faster than the slow swelling of the buds require, and the fluid, once started and finding no natural outlet, is forced into other channels, and effects its escape possibly by some of the very roots through which it was taken up, thus keeping up a continuous circulation in that manner till the Vines are exhausted.

Those who have attempted to stop a Vine from bleeding after it has once started to do so, will have some idea of the irrefragable force of sap after it is once fairly set in motion, and with what energy it pursues its course along the various channels allotted. Heat applied to the roots propels it at a quicker rate, and causes it to expand much in the same manner as does water; and I am strongly of opinion that the sap of Vines that set actively moving travels up the stem and returns again to the border, where it is discharged in the soil. If this is the case, as close observation has led me to believe, it is no wonder that Vines subjected to such treatment should start but feebly, and only make progress after they have got fairly into leaf, when any downward current that had previously been set going, would have ceased and taken its proper course. The fact of Vines starting stronger at the extreme end of the border, where they do not feel the influence of heat, shows clearly and unmistakably the evil of piling a mass of fermenting material on their roots, and if those who have been in the habit of so using it will only test the thing for themselves, by covering a portion of their early border, and simply protecting the remainder, I am convinced that they will soon abandon the practice.

It is not many years since that elaborate and costly works were undertaken in several gardens to heat Vine borders by means of hot water, but excepting the fine Muscat Grapes produced under the system by Mr. Drewett many years since, I have not seen anything to warrant the practice being adopted. As to pot Vines doing better with bottom-heat than without it, it should be borne in mind that it is generally applied to them when they are making their growth and have leaves, which is a very different matter to piling it on an outside border or planting the fruit in a mass of fermenting material to start them to do. That some do till this I am well aware, and they will continue to do so till they are convinced of their error; but if I remember rightly, one of our best gardeners (I think Mr. Gilbert, of Barchley) stated some year or two ago that he found they started much stronger and better without it. If pot Vines suffer less than those in a border, it is because the soil is very much drier, in which case the effect of heat would not tell so injuriously on them. I note that Mr. Wildsmith, in his paper relating to the subject of bottom-heat to Vines, says that he lays no claim to originality in discovering that they do not make fresh feeding roots till the buds are expanded. That they do and other deciduous plants do so, is a fact known to most people, or if it were not so what is the use of transplanting such things at the

time of year at which all operations of that kind take place? Vine borders are generally overhauled in the autumn, many of them not being interfered with till after the leaves have fallen; and does Mr. W. suppose that the old mutilated roots remain in that condition till the buds start again in the spring, before forming fresh fibres?

There are few gardeners who have not had something to do with renovating old Vine borders, and in doing so they must have observed numbers of rootlets to all appearance as active as at any time of the year. It is one of Nature's laws that roots are ever elongating and ever at work, although no doubt in a much less degree during the winter than at any other time; but that they are at work then is beyond all question, for if it were not so, how is it possible that any deciduous plants could exist? In the act of transplanting, or during any interference with a Vine border for the purpose of renewing the soil, most of the main roots are broken or damaged; this involves the loss of the principal feeders, but the plant immediately sets to work to repair the loss by forming others, without which it would live but a very short time. There are many who think that because the trees lose their leafless, they are entirely dead, and that there is no movement going on either above or below, but this is one of the most erroneous ideas ever entertained. If the roots were not at work, sending up sap to replace that carried off by drying winds, and to nourish the incipient buds during their slow process of swelling, trees would cease to exist. Nature is never at rest, but goes on unceasingly in all her various departments, and there can be no doubt that as regards root formation she is never at fault, but that the process is ever going on in a greater or less degree so long as there is life in the plant. With Vines I take it that it is not the formation of fresh feeders that does the mischief, as their increase would be highly beneficial, but that the sap is put in rapid circulation, and instead of finding its natural outlet it returns to the soil, thus keeping up simply a flow and return, to the great detriment of the swelling buds, as they would thus be in a measure starved.

With plants in leaf, or with such as have had their feeding-roots disturbed or injured, the effect of bottom-heat would be very different, as it would greatly aid the formation of fresh fibres to take the place of those destroyed, and thus enable them to get quicker to work to repair the injury; indeed, with many plants that have been shaken out and partly disrooted bottom-heat is absolutely necessary. There are many stove subjects that will do in from 10° to 20° less top-heat if they can have their roots in a hot-bed, and although they may not be so serviceable for the decoration of cool houses or exhibition purposes as when grown without it, most of them do best when they have it supplied. What, for instance, should we do without it in the case of Melons and Cucumbers? and do they not always succeed in a more satisfactory manner when the bottom-heat is greatly in excess of the top? And so with many other plants. Mr. Andrew Knight and others tried to do without it for Pine-apples, but the attempt was so much a failure that all who cultivate them now have returned to the old system.

As of all good things, it is an easy matter to have too much of bottom-heat, and to use it for a wrong purpose, as is the case when it is applied to the roots of leafless Vines, where the only effect it has is to cause them to pump themselves dry. *S.W.*

LOCKINGE, WANTAGE.

THIS extremely picturesque domain, the residence of Colonel Loyd-Lindsay, M.P., is situated about 2 miles eastward of Wantage, in the midst of a purely agricultural district. The roadway runs through a village of Lockinge, which is immediately contiguous to the park grounds, and Lockinge Church is almost close to the mansion, the main road being almost within a stone's-throw of it. It is one of those places in which the park grounds melt almost imperceptibly into the fields beyond them, and village and park alike have the appearance of being blended in one community bound together by a common bond of mutual interests. As the visitor drives up to the gardener's residence at the top of the hill, he has the park grounds on the left hand of the village, and on the right a line of semi-detached labourers' cottages, quite picturesque in appearance, in an elevated position, with charming flower-gardens in front and good

vegetable gardens behind; and their appearance testifies to the desire of Colonel Loyd-Lindsay that the abodes of his labourers should be examples of domestic convenience and sanitary arrangements. Prizes are annually offered for the best-kept flower and kitchen gardens, and some of the former, on a gentle slope towards the roadway, are excellent illustrations of taste and skill in the arrangement.

Lockinge is a place of great antiquity. The old Saxon name was "Licing," which, at the Norman Conquest was corrupted into "Lockings." In the ninth century Laking was granted, by charter of Queen Adelstine, to the Abbey of Abingdon, and for some centuries this estate continued vested in the abbey, until its dissolution in 1538, when it was placed at the disposal of the Crown. Clarke's *Parochial Topography of the Hundred of Lockinge* gives full details of the successive holdings of the property until it became the property of Mr. J. P. Bastard, M.P. for Devonshire, and was sold by his successor to its present respected owner.

The mansion occupies a low position, and the manor-house to which it was called was built about the Year 1500. It came into the possession of Colonel Loyd-Lindsay's forefathers, the grounds have been considered improved, and there are constantly being carried out under the superintendance of Mr. James Atkins, the able gardener at Lockinge.

The view of the mansion (fig. 12, p. 81) is taken from the rising ground near to the roadway, and it has been admirably executed by the artist. The church is situated on the right-hand of the mansion, but is hidden from view by the group of trees and shrubs in the foreground. There is a pleasant terrace flower garden along the front and at the sides of the mansion, the principal entrance and carriage drive being on that side of the residence farthest from view. The rising ground and slopes about the residence, and the stretch of park away beyond, are all modern, and there are to be found some splendid examples of Beech, Elm, Sycamore, Limes, &c., also of Yew, Box, Thuja, Wellingtonias, Picea, Finsapo, many kinds of Berberis, Laurustinus, Aucubas, &c. Many choice shrubs are not newly planted, but they are all doing well. Some of the Yews are of handsome pyramid shape, and 18 feet in height.

The grounds are remarkable for the air of repose about them; they seem to be so entirely removed from the busy haunts of man—forming a place in which to seek rest and quiet from the cares of business, the heat of party warfare, and the incessant requirements of modern social life to dwellers in the metropolis. There are extremely pleasant winding walks about the slopes, with here and there artfully constructed pieces of rock-work and waterfalls that look as if they had been fashioned by the hand of Nature; and at the lowest point a winding stream and rustic bridges, the banks clothed with Primroses and other flowers in spring, and in summer with Ferns, Periwinkle, &c. At almost every point some charming feature is introduced, appropriate groups of plants and shrubs, patches of bright flowers, &c. In one spot which the visitor comes upon suddenly—for it is artfully surrounded by a bed of shrubs and trees—there is a small circular flower garden, which at this time of the year is bedded with spring flowers of different kinds, such as Daisies, Arabis, Polyanthus, Aubrietia, Wallflowers, Fansies, Forget-me-nots, &c. In summer-time, the charming display is obtained here by means of ordinary flowering and foliaged plants, admirably arranged, and conspicuous among the subjects were some very charming beds of Lantanas, which were a most pleasing feature.

In addition to the terrace garden, in which the beds are similarly filled as above during spring and summer, there is also what is termed the saloon garden, which is situated in front of the smoking saloon leading to the large conservatory. Here small shrubs are intermingled with Hyacinths and Tulips at this season of the year, and the stone vases, filled with flowering plants in summer, have Yuccas, &c., as their occupants.

There are eight plant and forcing houses in addition to a spacious conservatory, all of which are filled with the usual occupants in excellent condition. Lockinge is not a plant-growing place, but there are many admirably grown specimens of great value for house decoration. A new road, 600 yards in length, leads from the mansion to the new walled-in kitchen garden, which occupies an open, elevated, and somewhat exposed spot. The new kitchen garden was

commenced by Mr. Burr, Mr. Atkins' predecessor in the management of the gardens, in 1871, and was completed under Mr. Atkins. It is about 6 acres in extent, with substantial walls and a range of vinerias and Peach-houses. The kitchen garden is in the chalk, and originally there was not more than 6 inches of natural soil resting on the chalk bed, but it has been made up to the depth of 30 inches by means of soil brought in from the great stretch of downs immediately contiguous, which was mingled with the natural soil. The wall trees are all in a concrete bottom, 5 feet in width. The Peaches that do best outside are Early Grosse Mignonne, Dr. Hogg, Téton de Venus, Early Silver, Noblesse, Royal George, and Princess of Wales. It may be remarked that all the trees are comparatively young and in process of being established, and during last summer bore good crops of fruit. To ensure a due supply, water is laid on to all parts of the kitchen garden by means of eighteen branch pipes from the waterworks on the estate.

The six vinerias are planted as follows—No. 1,

BOURNEMOUTH.

CLOSE to the beautiful estuary known as Poole Harbour, not far from Studland and Swanage, with their fine coast scenery and almost inexhaustible points of interest for the geologist and naturalist, lies the town of Bournemouth. Situated on a sandy coast, and well sheltered by hills thickly clothed with Finasters and other Conifers, this comparatively new town possesses almost unrivalled advantages as a health resort. To its other attractions has lately been added a winter garden and conservatory, a representation of which is given below (fig. 11), and which was opened on Tuesday last.

The winter garden is situated near the centre of Bournemouth, and within easy walking distance of the pier and the public pleasure grounds, and bids fair to become a fashionable and attractive lounge. A quantity of Palms and other ornamental plants has been placed within the wing of the building which has been specially erected for their reception, the corresponding wing being intended for a concert-room.

iron piping being covered with ornamental iron continuous grating. The ventilation is carried out on Taylor's system applied to a portion of the hot-water pipes, the fresh air being conducted by means of zinc piping and covers over the pipe troughs, and communicating with the outer air, thus giving a continuous supply of warmed and vapourised fresh air throughout the building. Additional summer ventilation is provided.

The quadrangle is lighted by a fringe of gas jets round the inner side of the gallery, and the wings, *i.e.*, the concert-room and the tropical department, are lighted by starlights. Water is laid on, and drainage, as well as protection from lightning, is also provided for. The height from the floor to the centre of the roof is about 70 feet, and there is a floor surface of 21,000 square feet. The extreme length of the building is 220 feet, and at its widest part it is 125 feet. The views obtained from the outer balcony, running round the upper structure, are very fine, embracing the Needles and great portions of the Isle of Wight, the Solent, the English Channel, &c.

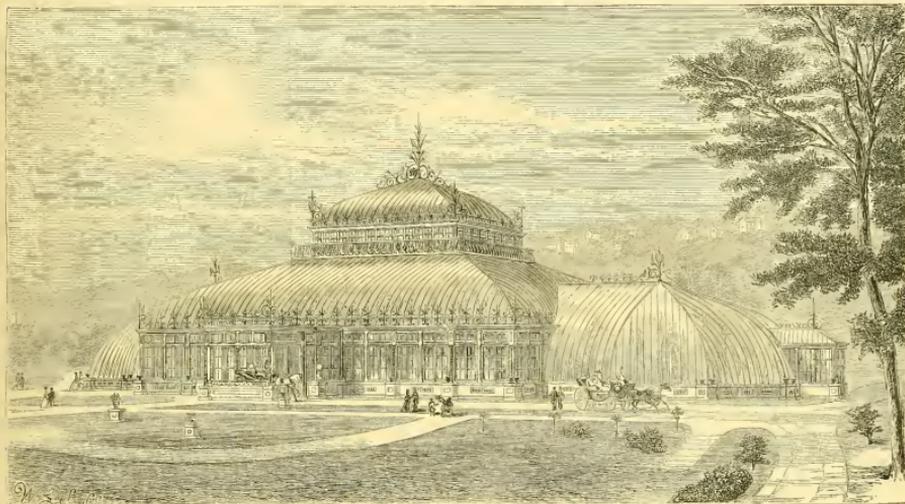


FIG. 11.—THE NEW WINTER GARDEN AT BOURNEMOUTH.

with Madresfield Court and Foster's Seedling; No. 2, with Muscat of Alexandria; No. 3 is a mixed house; No. 4, with Black Hamburg; No. 5, with Alicante and Lady Downe's; No. 6, with Hamburg and Foster's Seedling. Mr. Atkins has been very successful in showing that it is possible to have the Madresfield Court Grape fine in berry, in bunch, and without the trace of a crack, as shown at p. 367 of the last volume of the *Gardeners' Chronicle*. In the two Peach-houses are Noblesse, Royal George, Stirling Castle, Ward's Late, and Barrington; of Nectarines, Albert Victor, very fine, and Elruge; and there is a capital Fig-house also.

The kitchen garden paths are spacious, a central path being 14 feet in width, and all the other paths 10 feet in width, to admit of carts going round with manure, &c.; and on either side of the main path there is a mixed flower border, which admits of many flowers being grown that are invaluable for cut purposes.

Mr. Atkins is well known at various exhibitions as a successful cultivator and exhibitor of fruit and vegetables, and the improvements that are going on at Lockinge, serve to give him a wider scope for the display of his energy and practical skill, R. D.

The building has been designed by the contractors, Messrs. Fletcher, Lowndes & Co., of Great George Street, Westminster, and the erection has been superintended by Messrs. Tuck & Cumber, of Bournemouth. The building consists of the quadrangle, which is 100 feet square, with galleries approached by staircases, and running round three sides; an upper structure, or dome, 42 feet square, with external balcony; a vestibule, within the main entrance; and the two wings, each 50 feet long by 70 feet wide, and 27 feet high. The roofs are curvilinear, and are constructed on Messrs. Fletcher, Lowndes & Co.'s system, with their patent iron tubular ribs, and supported by cast iron columns.

The building is approached from the Exeter road by a carriage drive, and the principal entrance consists of a glazed roof, over the carriage-way, projecting from the vestibule. There are similar entrances at each end and at the back of the building, those at the wings consisting of vestibules projecting 10 feet, and being 10 feet in width. The principal entrances are paved with Carter & Co.'s tiles from the Poole Pottery. The heating apparatus is sufficient to raise the temperature as required from 32° to 65° Fahrenheit, throughout the building, a portion of the cast-

Florists' Flowers.

MESSRS. DOWNIE & LAIR'S NURSERY AT PINKHILL is situated about two miles west of "Auld Reekie," on the Glasgow Road. The Pinkhill Nursery is a branch of the West Coates establishment, where the firm a few years ago built a fine winter garden, now recognised as one of the sights of Edinburgh. Pinkhill has always played the part of a feeder to West Coates, and does so still, but to a greater extent, inasmuch that since Mr. John Downie, the senior partner, has taken up his residence there, Pinkhill has become emphatically the home of the various types of florists' flowers, in the culture of which for so many years the firm has achieved a well-merited success; and now that the crossing and propagation of the various flowers is carried on under the watchful eye of Mr. Downie, one of the keenest of florists and most genial of men, we may expect to see many more fine garden flowers added to the already long list sent out by the firm.

PENTSTEMONS.—At the time of our visit one of the grandest of sights in the floral world was to be seen in

two large beds of Pentstemon, the one composed entirely of named sorts, and the other of seedlings flowering for the first time. Which of the beds pleased us most we were at the time, and still are, unable to say, so abundant were the charms of each. The batch of named sorts included all the varieties catalogued by the firm, while the bed of seedlings contained a great number of their prototypes—in fact, as was remarked by a well-known nurseryman, if all the named Pentstemons were lost they could almost be replaced out of this bed of seedlings. In the improvement of the Pentstemon this firm has taken the lead. Indeed it is to Mr. Downie that the credit is mainly due of bringing the flower to its present high standard of excellence, and as he was kind enough to tell us how in a great measure this was brought about, it may as well be recorded. It seems that, some years ago, a variety named *perfoliatus* was introduced,—by whom we did not learn; but at all events it was a very fine introduction, and distinguished from the ordinary varieties in cultivation in those days by its lengthy spikes and thickly set whorls of short-leaved flowers. Well, this particular variety was planted amongst the other named sorts—and the bees, who are particularly partial to Pentstemons, carried the pollen of *perfoliatus* from flower to flower, and so started the improvement which has resulted in a complete change in the character of the plants, which are distinguished now from the old type of Pentstemon by their much more lengthy spikes and more thickly placed flowers. A batch of seedling Pentstemons has been raised annually at Pinkhills for some years past, and from these have generally been selected about a dozen of the very best to send out in variety. When we saw them last autumn some of the varieties about so selected, and these were named Countess of Tarbat, a very fine variety, with flowers of a deep shade of rose, the throat being white and pencilled with puce; Mrs. Kinghorn, a fine round flower of a rich dark rose, with a white throat, pencilled with rose; John M'Nab, which had a very fine spike of rosy scarlet flowers and a pure white throat; Dr. Masters, a very large flower, crimson scarlet, and pure white throat; Lady Houston Boswell, a large and well-formed flower, in colour a curious combination of white and rose; Octoroon, a dark rosy-crimson flower, with a fine bold throat; Mrs. A. F. Barron, a very early and very distinct flower, light rose, with violet; Lennie Barron, a shaded French-white and crimson pencilled throat; William Fowles, a white crimson shaded flower, of fine size; and Percy Wynne, dark crimson, and white throat veined with rose. Two of these, Mrs. A. F. Barron and Octoroon, were figured in the *Floral Magazine* for December last.

Turning now to the named sorts already distributed we noted as the best of the new varieties sent out last year Mrs. Sutherland Walker, bright scarlet, white throat; David P. Laird, crimson, with a white throat, pencilled with a deeper shade of crimson; Mrs. Wills, pale crimson, with a white throat; pyramidalis, crimson scarlet, with a deep crimson blotched white throat; Lady Dundas, white, shaded with purple; Captain Boyton, purple, crimson, with a white, crimson-striped throat; and Emma Marsh, dark rose, with fine white throat. The whole of these are distinguished for their fine lengthy spikes, and bold even flowers. Out of the dozen sent out in 1875 we noted eight varieties that proved to possess a high degree of merit, viz., Beauty, light purple, with white throat; Duke of Sutherland, bright scarlet, with white throat, very fine; James Watt, rosy crimson, throat blotched and striped with deep claret, the upper lobe white; Mrs. Macfie, purplish crimson, with a white throat; David Thomson, rosy crimson, throat white veined with crimson; Andrew Kemp, ruby-red, white throat heavily veined with crimson; and Dr. Gray, a bluish shade of purple, with a white throat, striped with claret.

The Pentstemon is one of the hardiest of florists' flowers, but in ordinary gardens it is better known as a very showy and useful border plant. Somewhat outside the pale of exhibition flowers in the South, though more favoured in the North, it yet has points of excellence that make it well worthy the attention of the florist, and the many fine named sorts now in cultivation attest that that attention has not been wanting, especially among the Northern growers. Paraking even more largely than the Wallflower or the Antirrhinum of a perennial habit, it is yet best treated as a biennial, or, at the most, as a triennial,

because it is apt to get ragged and shapeless after that period of growth has been passed. Still further, new plants are so easily raised from seed that it is but necessary to sow a pinch of seed each year, in order to secure a constant supply of robust young plants. It is also an excellent characteristic of the Pentstemon, as seen in the Pinkhills seedlings, that it very fairly reproduces by means of seed all the best features of the parent. The better the parents the better will be the stock of seedlings produced, and a selection from the best flowers is a matter of the greatest ease to any grower. Probably a knowledge of this fact accounts for the general non-appearance of named varieties in our gardens, although it by no means accounts for the too common absence of the Pentstemon from garden borders altogether. It may be that the fine qualities of the Pentstemon are not sufficiently understood in the South, and it is less doubtful that if understood they would ensure for the plant a much more general cultivation than it at present enjoys.

Why the Pentstemon should not receive as much encouragement amongst us for exhibition purposes as does the Stock or the Antirrhinum is one of those things that can only be explained by the compilers of floral schedules. Good spikes of flower are more showy than either of these are, quite as easily grown, and admit of the skill of the florist being more fully displayed in adjudging of their merits than do either of the flowers mentioned. Arrangement of flowers on the spike, size and shape of tube, colour, and markings, are alike favorable for accurate judgment, and therefore it is from no intrinsic defects in the Pentstemon that it is, so far, shut out of the pale of exhibition flowers.

An interesting fact in connection with the Pentstemon is the extraordinary fondness of the bees for the flowers. What there is about the flowers that the bees so much appreciate we are unable to say, but the fact remains, that while bees were generally very scarce everywhere last year, as pointed out recently by Mr. Darwin, they might have been counted by hundreds amongst the flowers of the Pentstemons at any time of the day when the weather was fine. We have no recollection of having seen any other plant so much resorted to be grown as a bed flower, but the bees are remarkably fond of the flower there can be doubt, and this furnishes another reason why this beautiful flower should come into greater favour.

ANTIRRHINUMS.—Another interesting feature in the Pinkhills nursery was a fine border of Antirrhinums in full bloom—a brilliant display of richly hued blossoms. A batch of seedling Antirrhinums is also raised here every year, but a greater number have to be grown to secure one good flower distinct enough to name. It is a singular characteristic of this plant that its continued cultivation develops so little improvement in the way of colour. The shape and size of the spikes and flowers have undergone immense improvement; but as regards new shades of colour, such as are so freely produced by the Pentstemon, the advancement of the Antirrhinum may be said to have stood still. There are three or four permanent colours, on which the variations or changes are rung, but from which the flower does not seem to be able to break away.

PHLOXES.—The raising of new varieties of Phloxes of the autumn-flowering section is also being vigorously carried on. The seeds will not ripen out-of-doors so far North, but when grown in pots and flowered under glass they ripen very well. There was a fine batch of seedlings just coming into flower at the time of our visit, and we have heard since that their flowering has given great satisfaction, and several fine varieties have been sent to bloom again this year.

PANSIES.—Next to the Pentstemons, the glories of Pinkhills lay in a large bed of Pansies and Violas planted on a gentle slope facing due south, and which was literally a sight to gladden the heart. The Violas were the Violas with us as were completely burned up, and it was indeed a treat to see such a display at the time. As a bedding plant the Viola stands pre-eminent in Scotland, where the less glaring sunshine and longer dewy nights suit it so much better than in hotter and drier summer weather in the South. Viola has been largely improved by the Northern growers, and so it has in the North, where our familiar names are seldom met with, the Scottish fanciers sticking more to their own productions. Amongst the fine varieties growing in front of Mr. Downie's residence, particularly admired, was the Viola Duchess of Sutherland, of a pale Cambridge-blue shade of colour, free-growing, and very floriferous, an improvement on Dean's Prince

Teck, from which it is a seedling; Mrs. Henry Pease, a pure white flower, dwarf and compact in habit, and very free-flowering; Max Kolb, a fine purple flower; Pinkhills Beauty, a fine shade of purple-pink colour with a dark centre, and fine in form; and King of Bedders, a variety sent out last year, and in the same way as the last-named.

—It will interest lovers of Pelargoniums to know that Dr. Denny's new varieties will be distributed this spring by Messrs Veitch.

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—The tying and staking of these plants should be pushed on with, so as to finish it as soon as it can conveniently be got through. The bloom-buds of many things will now begin to increase in size, and training is delayed too long when the plants are moved about, knocked off in the operation. Large plants that are only wanted for home decoration will not need as much tying as they would if intended for exhibiting as such. The material that shows the least is black cambric thread, indeed it has to be used so as to be seen; in its use it is necessary to be careful not to tie the shoots too tight, as it will not stretch. Always have new sticks, for even if those used last year seem sound they will before the season is over decay, and then, when the plants are moved about, they are in danger of the collar being injured. Soil of the various descriptions necessary—loam, peat, leaf-mould, and sand—should immediately be got under cover and spread out in open sheds to dry, so as to be in proper condition by the time of potting; and empty flower-pots should be well washed and crocks broken, so that all may be in readiness.

HEATHS.—With these also let the tying be completed as soon after this time as possible, by so doing the plants will when in bloom have a better appearance, as when tying is done a good while before the flowers open the points of the shoots and the leaves have time to assume their proper position. It is well now to make a calculation as to the time it is desirable to have the plants in bloom, and the time to be allowed for home decoration as well as to any that may be wanted for exhibition purposes. As soon as we get any sun they should be put in positions to keep back and push on their flowering according as may be necessary. Any of the plants that are not so retarding house must have a good situation where they will get plenty of light, for Heaths cannot bear being in badly ventilated or dark houses. Putting them at the coolest or warmest end of the house they are grown in will cause two or three weeks' difference in the time of their blooming. Early flowered plants of the *Hymalis* section that have been in conservatories or other places where a higher temperature is kept up, and where they may also not have had enough light and air, should as they go out of bloom be put where they will gradually receive treatment better suited to their wants. Do not let them be exposed to cold draughts of air, but give them abundance of light and the requisite ventilation, and encourage them to begin growing.

SOFT-WOODED GREENHOUSE PLANTS.—Lilies, if wintered under plant stages, or such-like places, must on no account be allowed to suffer for want of water. If from any cause they were not potted at the proper time last year, they should once be attended to, getting the soil in the pots above the bulbs carefully away without disturbing the roots, and replacing it with a good loam, to which has been added rotten dung, a little sand, and some leaf-mould, giving just enough of bloom to put them in a healthy state. Let Primulas have a position as near the glass as possible, and if in a night temperature of 45° they may have plenty of water to their roots, as the light and extra warmth will make them not liable to their greatest enemy, damp. Cuttings of show Pelargoniums struck in the autumn should, when they have filled their little pots with roots, be moved into larger; from a 4 to 6 inches, according to their size and the nature of the variety, will be big enough for them this first season. Give them good light, well enriched soil, and plenty of water, to which add a little sand. Those that have not been stopped should have their points pinched out to cause them to break. Cinerarias that were sown late and are in small pots, if they do not show signs of blooming, will be benefited by being moved into larger pots, and a little water added, and be of service when the earlier blooming plants are over. If they have commenced to push up their flower-stems do not report, as all that can then be done to help them is giving them liquid manure. To manage Primulas, give them a sitting in a hot water bath, treating well, not stinting it for pot-room, and giving it soil consisting of good loam with the addition of a fair sprinkling of sand and a fifth of leaf-mould and rotten

dung in equal proportions. Any plants that need it should now have a liberal shift; they will flower strong and late. Those that are intended to bloom early ought to be well fed with manure-water. Campana pyramidalis, both the white and blue varieties, are very useful decorative subjects, and deserving of being more generally grown than they are; if sown in good time in the spring and well done they make fine blooming plants in about sixteen months. Give plants either grown on from suckers or sown last spring a good position, and never let them get stunted through an insufficiency of pot-room. *T. Entica.*

ORCHIDS.—Advantage should now be taken, whilst there is a comparative slackness of work in the other departments, for cleansing and collecting mosses, and give every plant a thorough cleaning. This matter of sponging will be necessary during almost the whole of the season more or less, for dust will be sure to follow the leaves, and insects to get upon them also; and the more diligent the collector, the more the course be adopted, and the plants carefully gone over. The different forms of scale that attack these plants, whether the soft woolly one that is found chiefly on Cattleyas and *Aerolis*, or those that affect more particularly the *Orchis*, *Vanda*, and *Saccolabium*, or again that small hard one that we meet with chiefly on *Colognea cristata*, are all imported with the plants, and as soon as we have the plants under cultivation the insects appear to thrive and increase immensely. Get a small brush or a pointed stick for the removal of these. In the case of a rise of sponge carefully go over the leaves and bulbs, and thus give a fresh and glossy appearance to the whole. In sponging it is always better to use a little soft soap in the water, and if few drops of turpentine are added to help to kill the smaller scale, whilst it is quite safe and will not hurt the tenderest leaves. Only those should be treated to perform this duty who have previously had experience in the cleaning of plants that are less costly, else if one who is new to the work attempts to kill the smaller scale, he gets the number of cracked and split leaves and scratched bulbs will soon show signs of inexperience and want of care, and in a few hours the results of years of care and toil may be completely spoilt, and thus should give pleasure and satisfaction will then only bring disgust and disappointment. Let a sufficient quantity of sphagnum moss and calcareous peat be got under cover, and on wet days, or when time can be spared, give the moss a good picking over, and take out all green weeds that will be sure to be amongst it, so that when required for potting it will be ready and fit for use. Pots and crocks should also be washed, and placed under cover, and some charcoal obtained, so as to be at hand when needed. The Odontoglossum-house is now being put up to the clerestory aspect, and from the first the flowers of *Alexandria* expand we may look forward to a continuance of bloom. One of the pleasures in connection with this class of plants, more especially those that are purchased as soon as imported, is the fact that it has often happened that when numbers have been obtained for *Alexandria*, and grown on for a year or two under that impression, when the flowers have opened they have proved to be triumphans, and in some cases the even more rare and choice *Andersonianum*; where such is the case a single plant will be worth much more than is often given for the lot. It may be said, however, that sometimes the results are the other way, and that a worse thing turns out amongst what were expected to be all very fine things. It is true, in measure, but the chances now-a-days are much more in favour of the buyer than when this class of plants was first introduced. Again the different, and at the same time, beautiful varieties of *Alexandria* and *Pezomachus* are such, that where convenience can be given them they should be grown by species, and of the hundred, and when established and in flower there are very few signs that can be compared to a stage in the Odontoglossum-house with the spikes of these spreading and drooping over dark green healthy foliage; and when the flowers of *Alexandria* have been seen some twelve years ago, it was directly looked upon as one of the most desirable and useful that had ever been sent over, and each year, though it has been imported by thousands, and gladdened the heart and eye of numbers of eyes, it is now sought for as eagerly as at first, and is in higher estimation than ever. *W. Swan, Wallingford.*

FRUIT HOUSES.

PEACHES AND NECTARINES.—When the time of flowering of these subjects takes place under the variable external aspects which usually prevail during the present month, it may reasonably be considered a somewhat peculiar process, and one that is not the most suitable artificial means should therefore be adopted to effect the object perfectly. At times, however, when this peculiar function fails, the cause is too readily ascribed to it alone, without duly considering the influence of the season, and the inseparably connected therewith; for, for example, as in

would naturally arise from an unmaturred state of the wood by reason of over-exuberant growth being allowed to go unrestricted, or by suffering the borders about the roots to become exceedingly dry before the buds are perfectly developed. To these may be added other matters of detail in management, to which failure in this particular way may therefore with justice be associated and not solely limited to the conditions which are existent in the house at the period in question, for cases occur where excessive frosts are secured, even on the very ordinary circumstances. We invariably pursue a definite course of keeping up a moderate equilibrium of from 50° to 55° at night and from 55° to 60° in the day-time by fire-heat if it be necessary; and under other matters of detail in management, at this time admitting a free course of air through the house; on other occasions ventilating and closing the house at from 57° to 60°; and at times when severe pressure exists externally we are content with 5° less and at times in the day, as on the 10th, we expand, and when the pollen is dry, brush these over with a camel's-hair pencil, or a jar of the trellis by the hand is not amiss; the customary course of sprinkling is likewise adhered to throughout the whole period, and the trees are watered and given evening and early in the afternoon every day, providing the moisture from the former syringing has dispersed. The temperature and treatment in the successional-house, with an increased amount of light, be kept identical with that of the first house, but the same should be lost in completing what-ever remains to be done in this department in the way of pruning, clearing, and training, as the flower-buds are already considerably advanced, and will speedily, with sunshine and favourable conditions, expand, and the operations injurious. *Geo. Thos. Miller, Wycombe Abbey.*

CUCUMBERS.—A very important item in the management of winter Cucumbers is cleanliness. Syringing the plants should be kept sweet and free from decaying matter; free ingress of light should be provided for by frequently washing the glass. If green or black fly put in an appearance dress with Pooley's Black Fly Powder. Destroy red-spider by the removal of old leaves, a few at a time, and careful pruning of the remainder with tepid soapy water—a tedious process many will say, but if taken in time a house of plants may soon be gone over. Smoking at this season, particularly after so much dull weather, is dangerous, the young foliage being so tender and tender. The steaming of pipes or other heated surfaces should also be avoided for the present, as plenty of moisture may be obtained by damping the plants and walls. If severe weather sets in, blinds, mats, or other non-heating material should be used for covering with at night. Maintain a night temperature of 68° to 70°, with a rise of 10° to 15° by day. Pay constant attention to the preparation of materials for frame Cucumbers by frequent turnings and protection from heavy rain. Make further sowings of the most approved kinds for succession, placing single seeds in small pots. Shift on young plants as they require more pot-room, and keep them near the glass.

ORCHARD-HOUSE.—In large places, where an early forcing orchard-house has been provided to save the hard forcing of old-established trees, a selection of the best early kinds should be used for this purpose. One of the very best is Hales' Early, a fine, large, richly-flavoured Peach; Early York, Early Grosse Mignonne, and Abe, equally large and good, although a little later than Beatrice and Louise, are really presentable when well-grown in pots; indeed, these four kinds form the cream of the early forcing peach, and if properly treated these trees should now be going out of bloom, and treated liberally. The fruits will swell rapidly under frequent syringings with tepid water, and a temperature of 50° to 55° at night, with a rise of 10° by day.

In the orchard-house proper—*i.e.*, the cool house—the mild weather is bringing the buds very forward. When fire can be applied in severe or wet weather this is of little consequence, but where the house is unheated every door and window should be thrown open, and the trees kept vegetation in check. All pruning, dressing, and cleaning should be finished, the trees gradually watered, until every particle of soil is brought into a growing state, when the final top-dressing may be applied. Trees established in houses like a hard house to grow in a good turfy loam should be kept light, with a fair sprinkling of old lime rubble, suits them well. The drainage, too, must be good, as size of fruit depends so much upon feeding and the amount of healthy foliage the trees are allowed to carry. Trees intended to be put in late may be prepared for the winter by cutting out a north or west wall until the blossoms begin to show colour, when they must be taken under glass. If well managed through the past summer, but little cutting will be required at this season; but when it is necessary to cut a trunk, explain that the cut is made in front of a triple bud. *W. Coleman, Easton Castle.*

KITCHEN GARDEN.

With the advance of the season rendered vigilance must be exercised in order to keep pace with the different requirements of the day, and in view of the principal of which is to see that a constant succession of *Seakale* is regularly put to work at such intervals as the supply required renders necessary. The ordinary method of covering with pots and fermenting materials is not to be resorted to in any way, but cannot always be thoroughly depended upon for supply; it may with very great advantage be supplemented by taking advantage of the splendid roots for forcing which have been so largely cultivated of late years, and that are so abundant in the country. One or two from seven to nine large roots in 10-inch pots, water them thoroughly, and invert a pot of the same size over them, and place them on the top of the brick-work over a large boiler which heats several houses, covering them with a good thickness of old mats to exclude light. The soil must not be allowed to get dry, and about fourteen days is the average time required to have it ready for table; if pushed faster it comes weak. Another batch of *Asparagus* crowns should be put to work, care being taken to avoid overwatering, of which it is very impatient. A few roots of early sorts of *Khebarb* may have cement barrels, with the heads knocked out, placed over them, and these well covered with stable litter which has not become too much fermented. As a second crop is present when *Asparagus* so scarce, will forced early *Khebarb* cannot fail to be appreciated. Another batch of French Beans should be put to work for succession; where conveniences serve it is better to get in smaller batches at shorter intervals than a great number at all once, and the soil should be kept moist in the way of succession by sowing half the batch of a later sort. Some time in the last week in the month a good bed of prepared fermenting materials should be ready for the sowing of early Carrots the first week in February. This is often done in movable frames with very good success, but it does not economise material. For some years we have devoted a small brick pit a little over 4 feet deep and half sunk in the ground to this especial purpose, and have never failed of a satisfactory result; we usually sow two things, Early French Forcing and the other Early Horn, thus securing a succession to bring in the same two sorts in the open quarter. We take advantage of the heat for a sprinkling of Wood's Early Frame Radish, which is away before it can harm the Carrots. Early Carrots intended for planting in frames next month should be at once laid out on the floor of any erection where there is a constant heat; the advantage to be derived from this practice, both for framework and early planting in the open, is very great, because the plants will set and sprout at all in so late that they would be useless in frames, where every plant is expected to tell; and for the open border it is always a great advantage to be able to select such seeds as will ensure a crop that are ready for planting. If the weather is open at the end of the month, and the ground in such a state that trenching may be carried on, all vacant plots should be attended to at once, and where new plantations of Horse Radish are required now is the best time to plant, or as early after this as the weather will permit; this crop requires deep trenching and plenty of manure.

Now is a good time to decide upon the various plots to be occupied by the forthcoming crops, and proceed with the work of preparation in the order required. One of the first as a general crop will that of Parsnips, which should be sown in the north, the *Hollo*, Crowned and Student are two good sorts; they take to have new seed, as seed even two years old is very uncertain. Look well to the sowing of small salad in heat, and see that Chicory and Witloof are put in heat to be ready for use. The winter stock of the supply of Endive from the winter stores. *John Cox, Redleaf.*

—The Rev. F. Simcox Lea, writing from Worcester to the *Times*, remarks that "Mr. Darwin's statement (quoted in the *Times* of the 11th inst. from our columns) that the Holly is a diocious plant explains a difficulty which the older writers on botany do not solve. Neither Withering nor Sowerby (original editions) gives the Holly as diocious, which in common experience the trees which are fall of flower in the spring, and which never bear berries are familiar. A peculiarity noticed during 1876 in this district was that the abundant berries of the Holly of 1875 remained on the trees all the year, and in my own garden I had the berry of 1875 at the Christmas of 1876. The berry of 1876 was very rare, but the year was remarkable here for a generally deficient fruit crop, the stone fruit and Apples having alike failed. The Portugal Laurel, however, ripened its berries in unusual plenty. This, I believe, is a monocious plant, but the Yew, which is diocious, had also an abundant yield of berry."

THE
Gardeners' Chronicle.

SATURDAY, JANUARY 20, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, Jan. 18. Sale of Fruit Trees, Roses, Shrubs, &c., at Stevens' Rooms.
THURSDAY, Jan. 19. Sale of Lilies, at Stevens' Rooms.
FRIDAY, Jan. 20. Sale of Hardy Plants and Bulbs, at Stevens' Rooms.

SOMEWHAT to the astonishment we suspect of those who thought they had really seen the last of the ROYAL HORTICULTURAL SOCIETY, a large and interesting display of miscellaneous plants was collected in the Council-room on Wednesday last, thanks to the exertions and good feeling of such exhibitors as Messrs. VEITCH, WILLIAMS, LEE, Sir HENRY PECK, and others. We must refer to another column for the details of what was really a large and interesting meeting, though but thinly attended by the general public.

It was gratifying also to hear a long list of new Fellows proposed. All these signs should encourage the Council. It scarcely admits of doubt that a large accession of new Fellows would accrue if the Society could only get clear of its entanglements to the debenture-holders and the Commissioners. To be saddled with the gardens one day longer than is absolutely necessary will, be believe, be fatal to the rejuvenation of the Society. All that is wanted is an official meeting place for the committees, with space enough for shows, if desired. Any attempt to conciliate the fashion of the town by bands, and such non-horticultural things, will simply be to pursue the same fatal policy which has so well nigh wrecked the Society. Let the Society stick to its own work, and that only. If any considerable section of the Society want bands and promenade-gardens let them pay for them themselves, but let not a penny of money that ought to be spent upon horticultural objects be again frittered away upon unproductive matters of this kind. Every effort should also be made to conciliate and bring in the country Fellows and the real horticulturists of the country. The butterflies will come if the flowers are provided.

AN answer which was given in our columns a week or two ago relating to the COURSE OF THE SAP has elicited a paper from Mr. ANDREW MURRAY, which was read before the Scientific Committee on Wednesday last, and which, at his desire, we reproduce. In our reply, to which Mr. MURRAY takes exception, we gave what we believe to be a substantially correct answer according to the present state of science, but one which it was necessary to compress into as few words as possible. There are three principal theories, which, disregarding modifications, may be thus briefly summarised:—1. The old theory of a regular continuous ascent in the season, and an equally regular descent later on. This seems to be the view of a correspondent at p. 76 of our present issue, but it is one to which we cannot assent. 2. The more modern theory, according to which the descent is not absolutely denied, but whereby it is supposed to be limited by the requirements of the plant at the time; and, lastly, there is the theory broached by Mr. MURRAY himself. There are numerous modifications of these several notions, but it is not our intention to speak of them now. Any text-book may be consulted with reference to them, and hence we prefer to let Mr. MURRAY speak for himself, and to solicit the attention of our readers to the subject, that they may favour us with their views. Only, as the subject is essentially a practical one, we trust they will not rely on their

imagination, but base their statements upon trustworthy facts.

"A great revolution has of late years taken place in the ideas of respectable physiologists regarding the course of the sap; and, what is very unusual, it has taken place silently, and with scarcely any discussion. One regrettable consequence of this has been that those who are out of the current of scientific unwritten opinion remain in ignorance of the change that has been coming over men's minds; and even those who are in the midst of it are at a loss to find what the real verdict of the scientific world is. That this is so will be admitted by those who attended the Botanical Congress at Brussels in May last, where this question formed one of the subjects selected for discussion, and elicited much diversity of opinion; and that a like uncertainty still prevails here may be seen from a reply to a correspondent in the *Gardener's Chronicle*, January 6, 1877—

"It is not affirmed by any one that we know of that the elaborated sap does not descend; the modern notion is simply that it may and does ascend, go horizontally, or in any other direction, as well as descend, according to time, circumstances, and the need of the plant. Suppose, for instance, starch is to be stored in a Potato tuber, or wood to be formed in the root, the matter out of which that starch that wood is formed must in a great measure pass through the leaves, and therefore it must descend to reach its destination. But starch is likewise stored up in the grain of Wheat; in this case, then, it is obvious that the nutrient and store-containing, or storing-up sap, must ascend from the leaves, and the seeds, &c., true of fruits and stones (seeds) placed above the leaves.

"This is not at all what I understand to be the modern view of the subject; neither is it the view which was come to by the Congress at Brussels. It is neither more nor less than the old theory, with scarcely any qualification. That theory was that the sap described two courses, viz., an ascending and a descending course; the ascending course to the leaves, where it was submitted to certain influences which fit it for the nutrition of the plant; the descending one from the leaves, in a condition fitted for that purpose. The modern view, as I understand it, is that the sap describes only one course, viz., that from the root to the leaves, being drawn up by the power of the sun and other concurrent influences. In its course it is like a great river, which steadily flowing to the sea, turns to the right or left, as obstacles present themselves, and opportunities occur, but the delta near the termination of its course, which may be compared to the arrival of the sap at the leaves, it flows in any direction, now dividing to the right and to the left, and again even regurgitating and flowing in a backward direction, but all these anastomoses together, and by simply emptying into the ocean, we may compare is the atmosphere, into which its watery portion is drawn by evaporation from the surface of the leaves.

"It is ten years since Mr. HERBERT SPENCE's paper on circulation and formation of wood in plants (*Linnean Society's Transactions*, vol. xxv.) proved to demonstration that the sap ascended in the branches, and that while of course he could not prove a negative he at least showed that in some of his experiments could he get the sap to descend; he moreover gave a simple explanation of the deposit of wood by the sap oozing through the vessels on its way up and, depositing woody fibre around them. A few years later Professor W. R. M'NAB repeated and extended Mr. HERBERT SPENCE's experiments, with the same results, and, if my memory serves me right (for I have not the paper) showed also that the sap ascended both by the vessels supposed to be appropriated to its ascent and by those appropriated to its descent. I have been under the impression that these experiments, coupled with other facts well known (such as that the bark and wood on the under side of a cut on a tree swells, while that on the upper side does not), had convinced the scientific world that the notion of the descent of the sap was an error. It has never had a particle of proof offered in its support. The only thing I can recollect that I ever heard advanced as such was the experiment of tying a ligature round a branch, when the branch swells above it instead of below it. It is only by a misapprehension of the experiment that this can be likened to a dam keeping back a descending stream. It is the case of a stream expanding itself when it finds space after its passage through a narrow channel. Any stream, after being released from a narrow gully, behaves in this way.

"Seeing, then, that on this important physiological question doubt still exists, I have thought it might be well to give the expression of my opinion to the committee on the subject. I know how difficult it is to submit old opinions, what an exertion of magnanimity is required to acknowledge that we have been in the wrong. I remember, with sympathetic distress, the almost piteous remembrance of a learned Professor at the Congress at Brussels, who, when interrupted in his

argument about the descent of the sap by cries of '*Un'ya pas de vive descendante!*' exclaimed, 'There must be a descent of the sap. I have been teaching it for thirty years. What am I now to say to my students if there is no descent of the sap?' But the greater the difficulty, the more the necessity for consulting such feelings, and putting the question on its right basis.

"I am not at all blind to the consequences of adopting the view that I take. I know that if descent of the sap goes, the elaboration of the sap by the leaves must follow. If it is not to descend of what use to elaborate it in them, and why elaborate it by the leaves rather than by the roots or any other part? The storing-up of liberates will also have to go, both of which are gratuitous assumptions without a particle of proof. The attraction of carnivorous plants will become still more difficult to comprehend, and other more remote corrections or received ideas dependent on them must follow. I do not now concern myself with these; my present subject is the descent of the sap, and it is respectfully suggested to the committee that they could not be more usefully or appropriately employed than in giving an authoritative expression of their opinion upon it. I do not ask, and indeed I would rather deprecate a hasty, offhand judgment on the spur of the moment, which in any view could only be regarded as the expression of individual opinion. What I would like to see published, well considered opinion after mutual consultation by the most eminent physiologists of our body."

— The following is a list of the persons recommended by the Council of the ROYAL HORTICULTURAL SOCIETY to be appointed to the offices of the President, Treasurer, Secretary, committee-men of the Expenses Committee, and Auditors of the Society, at the annual meeting on February 13, 1877:—President, R. HON. LORD ABERDEEN; Treasurer, HENRY WEBB; Secretary, ROBERT HOGG; Expenses Committee-men, F. CAMPION, HENRY WEBB, WILLIAM HAUGHTON; Auditors, JOHN LEE, CHARLES EDMONDS, JAMES F. WEST.

— We have received from a correspondent a piece of the stem of a TOMATO PLANT, which measures 4 inches in circumference. The plant is stated to have produced heavy crops of fruit for over two years, and would have lasted another year, notwithstanding that the stems are beginning to decay in the centre. The plant was raised from a cutting, and planted two years last September in a Pine bed, in the old tan and leaves used for forcing.

— We find that the association of OMPHALODES and DOUTRE WERTZ PEAROSSES, alluded to at p. 59 as a happy but accidental hit in plant grouping, occurred at the Knop Hill Nursery, and not, as there stated, in America.

— According to the *Journal de la Société Royale Agricole de l'est de la Belgique* the loss in the Potato crop from disease has been very heavy in many parts of Belgium. When the crop was dug the tubers were healthy, but during the succeeding fortnight it is estimated that from a quarter to a third became rotten.

— Dr. WITTMACK, of Berlin, has been conducting some comparative experiments to ascertain the DEVELOPMENT OF CEREALS and other plants from NORTHERN SEEDS, by the sowing of home-saved seed in the South. The general result was, notwithstanding some exceptions, that seeds of cereals and other plants from the North develop at first more slowly in Central Europe, but in the end overtake and pass the indigenous seeds.

— Some idea of the extent to which PLANT CULTURE in POTS is carried on in this country may be gleaned from the fact that in one potterry alone—that of Mr. JOHN MATTHEWS, of Weston-super-Mare—1,280,000 pots, varying in size from 1½ to 30 inches in diameter, were manufactured last year.

— The CHAIR OF BOTANY AT ABERDEEN is likely to be vacant shortly. Among the candidates are mentioned the names of Dr. J. E. BALFOUR, Rev. Dr. BROWN, Dr. W. R. M'NAB, and Dr. TRAILL.]

— According to the *Illustration Horticole* an AGRICULTURAL INSTITUTE has been established in PARIS, with M. BOUSSINGAUD as Director, M. FRINGSHEIM as Botanical Professor, and M. DU BRUILL as

Professor of Horticulture, &c. It would have been scarcely possible to select three more appropriate persons.

— In an account of a HAILSTORM AT EMU CREEK, QUEENSLAND, on October 23 and 24 last, given in the *Sydney Morning Herald* just to hand, it is stated that many of the hailstones were as much as 6 inches in circumference, and some that were weighed were over 1 lb. in weight. Holes were knocked through the roofs of houses and barns, and

ANDRÉ'S researches in Columbia. We shall hereafter allude in the ordinary course to M. ANDRÉ'S plants, which, like those of Messrs. WALLIS, CARDEE, SHUTTLEWORTH, BRUCHMÜLLER, and other collectors, will have special interest from the fact that the country is now desolated by civil war, which may prevent further explorations for some time to come. The country is described as so rich in plants that, large as is the number of fine things already received, there are many more yet to be introduced. Considering the melancholy fate of thousands of Orchids

BATA in the same house will shortly be covered with wreaths of golden bloom, forming with the silvery Fern-like foliage a beautiful association. The magnificence of this species is shown only by large specimens of free growth, and this example is one worth inspection.

— Mr. DICK, gardener to Sir IVOR B. GUEST, Bart., Canford Manor, Dorset has been appointed bailiff or manager of Phoenix Park, Dublin, in the place of Mr. C. McDONALD, who retires. This is



FIG. 12.—LOCKINGE, THE RESIDENCE OF COLONEL LOYD LINDSAY, M.P. (SEE P. 76.)

the standing corn was in many places struck down and destroyed.

— Mr. WILLIAM THOMSON, for many years connected with the seed establishment of Messrs. PETER LAWSON & SON, and lately a partner in the firm of PETER ROBERTSON & CO., has commenced business under the style and title of WILLIAM THOMSON & CO., as a seed merchant and nurseryman on his own account, at 16, St. Giles' Street, Edinburgh.

— The current number of the *Illustration Horticole*, which has just reached us, has a special interest from containing the first instalment of M.

torn from the trees to die on the journey to this country, we can but feel that the civil war will have some compensations in affording a fallow time to the Orchids, which otherwise would run a fair chance of extirpation, if there be not some of them extirpated already.

— SERICOGRAPHIS GHIESBREGHTII, an old plant not often seen, is one of the most valuable of the cultivated Acanthaceae. Its scarlet tubular flowers are extremely showy at this season, and occurring in graceful sprays are useful for cut purposes. It is now very ornamental in the temperate-house at Kew. A large specimen of ACACIA DEAL-

one of the best public appointments open to the profession.

— Mr. RUST, of Eridge Castle Gardens, writing in the *Florist and Pomologist* of the NEGRO LARGO FIG, remarks that "Of all the Figs which grow in the garden, this is, to my mind, the most desirable, being fruitful to a degree, and the flavour being the finest I ever tasted. My experience of its good qualities is as grown under glass, and I do verily believe it will yield fruit continuously for eight months out of the twelve. In the early part of December the flavour was as good as it was in June. No fruit trees are more improved by root-pruning than the Fig; they

are thus kept within bounds, and made to produce fruit at an earlier period, while those on the open wall should have a double net over them during April and May, to guard them from the frost."

— Twenty or thirty species of FLOWERING PLANTS were found by the members of the late ARCTIC EXPEDITION between 82° and 85° N., including, says Dr. HOOKER, the beautiful *Hesperis Palasii*, *Saxifraga flagellaris*, and *Vesicaria arctica*.

— At the annual meeting of guarantors and life members of the YORKSHIRE GALA, held recently, Mr. Alderman TERRY presiding, the Lord Mayor (Mr. Alderman MELROSE) was appointed President for the ensuing year, and Mr. Alderman TERRY, who was vice-chairman last year, was elected Chairman in the place of the late Mr. Alderman STEWARD. Mr. Alderman ROOKE was appointed vice-chairman, and the Town Clerk and Mr. J. WILSON were respectively reappointed treasurer and secretary. The following vote of condolence and sympathy with MISS STEWARD and family was unanimously adopted:—

"That this meeting desires to record the great loss the Society has sustained in the death of its deplored Chairman, Mr. Alderman STEWARD, who was connected with it almost from its formation, and whose extensive knowledge of floriculture, and his assiduous attention to the numerous and arduous duties attached to the office, enabled him to render the Yorkshire Gala Society, whilst his genial disposition and adaptability caused its various meetings to be of a most pleasurable character. This meeting also offers its sincere sympathy with MISS STEWARD and the other members of the family in their great and sorrowful bereavement."

Mr. WILSON, the secretary, announced that he had received, in answer to various applications he had made to nurserymen to give special prizes for amateurs and gentlemen's gardeners, which would tend to improve floriculture, benefit the nurserymen indirectly, and also improve the show, promises of donations from the Chairman of £5; Messrs. BACKHOUSE & SON, York, five guineas, for a collection of fruit, to be offered to growers in the six northern counties to be held in 1877; Mr. MAY, of Bedale, £6, for Roses in pots; Messrs. PAUL & SONS, the Old Nurseries, Chesham, £5, for cut Roses; Messrs. CRANSTON & MAYOS, of Hereford, two guineas, for Tea-anted Roses; Messrs. LAZENBY & SONS, York, two guineas; Mr. WILLIAMS, London, one guinea; and Mr. DOUGLAS, York, one guinea.

— The Southampton papers report that the recent high tides have been peculiarly destructive in their effects on the stock in Mr. W. KINGSBURY'S small nursery at Bevois Valley. The nursery is the same as that originated some years since by the elder Mr. WINDERBANK, Mr. KINGSBURY'S former partner, and is so well known in the locality that its desolation, in spite of the occasional danger of inundation, was always regarded as objectionable. It abuts on to the banks of the Itchen River on the one side, and on the other is subject to receive the overflow of storm water from the Bevois Hill when an unusual storm takes place. Some years since, for its last-named cause, the place was flooded and much damage done. On the recent occasion the flood of sea-water broke in and literally flooded all the houses, destroying thousands of seedling plants, and doing mischief to the estimated extent of about £600.

— A very charming effect in spring bedding may be obtained by interspersing strong clumps of the beautiful vermilion-scarlet ANEMONE FULGENS with the charming pale blue MYOSOTIS DESISSERTIOLA. If planted in a sheltered spot this lovely Anemone will flower as early as February, but in the open flower-beds it would produce its blooms at about the same time as does the Myosotis. The latter might be planted up closely to form a carpet, and the Anemone in clumps as pot plants. This Anemone will transplant easily in the autumn, when the clumps should be carefully divided but not be reduced too much. It would be undesirable to divide it in the spring when transplanted back to their summer quarters, as the less disturbed at the growing period the better.

— A correspondent sent us a few weeks ago a double flowered of LAPAGERIA ROSEA, so remarkable in its double condition as to demand notice. Several times it has fallen to our lot to see more or less

double flowers of this beautiful and useful trailing plant, but the one to which we now allude exceeded them all in beauty and the extent of its doubleness, if we may be pardoned the use of such a word. The colour of the outer, or, as we may term them, the guard-petals was rich, and within them was a dense mass of narrow petals as regularly disposed as in the best of the double Paeonies. Our correspondent, who gave no other name than that of a "Constant Reader," informed us that the flower in question was produced as a sport from the ordinary form, and inquired of us as to whether it was likely to be perpetuated. Analogy would lead us to expect that if the sporting branch were propagated by layering or otherwise, that the peculiarity in question would be perpetuated: and for the sake of those to whom double flowers are an attraction it is very desirable that the experiment should be tried, for assuredly this variety is one of the most desirable we have seen. On examining the flower more minutely, we found a calyx of three pieces of the usual form, but rather greener and more leaf-like than usual; within these were three rose-colored petals of the usual form, colour, and size. Within the petals was a row of stamens combined, with a cup below and above bearing imperfect and more or less petal-like anthers. These, which would be a defect from a florist's point of view, were completely concealed by the petals until the flower was pulled to pieces. Within these imperfect stamens came four or five tiers or whorls of petals, one above another, each tier or whorl consisting of brightly coloured petals of the same form and colour, and nearly of the same size as the normal petals. The extreme centre of the flower was occupied by a tuft of small irregularly shaped segments, exhibiting various transitions from the shape of the petals to that of the pistils, many of them showing imperfect ovals on their edges.

— One of the most exquisite plants for wreaths or for adorning dresses is undoubtedly CLEMATIS CALYCINA. Its tufts of bronzy, deeply divided leaves, from the centre of which hang the whitish bell-like flowers, render it one of the most elegant plants we know of. It is not often that we see it "in full bloom," and this winter with us it has been exceptionally full of bloom. Talking of wreaths reminds us of the grotesque abominations which one sees now and then on the heads of ladies or in the show-windows of fashionable milliners and artificial flower-makers. In a window of one of the most celebrated of these establishments at the West-end we lately saw wreaths of Daffodils and of Polyanthus Narcissus, not mixed in with but bearing pinnate leaves like those of Mahonia. After this we were not surprised to see large yellow Calceolarias treated as climbing plants; while Hops of bright gamboge and of clear magenta excited no particular astonishment. In these days, when knowledge and taste are supposed to be so much more widely diffused than heretofore, it seems a pity that artificial florists either do not copy Nature more accurately, or, ceasing to copy servilely, profit by her teachings, and adapt in a suitable and becoming manner the means to the end required. Pure conventionalism is far better than hideous or grotesque caricatures.

— HABROTHAMNUS ELEGANS under certain circumstances is not only valuable for its flowers, but also for the berries, which for a length of time have been very attractive in the temperate-house at Kew. They are purplish-crimson in colour, and some of the clusters may well be compared to bunches of small Grapes. As usually grown this plant does not produce fruit in any quantity, the only requirement, however, seems to be a freedom of growth, such as easily obtained by planting out.

— We learn that Mr. J. F. JOHNSON has resigned the CURATORSHIP OF THE ROYAL BOTANIC GARDEN, BELFAST, with the intention of devoting the whole of his time and energies to the more congenial occupation of a landscape gardener, in which profession he has already a fair share of practice in Ireland, and in other parts of the United Kingdom.

— THE ANNUAL DINNER of the *employés* of MESSRS. DANIELS, nurserymen, of Norwich, took place on the 9th inst., when the community of interest between master and man was pleasantly illustrated.

Home Correspondence.

Dracena indivisa.—Looking over the *Gardener's Chronicle* for Dec. 16, 1876, p. 785, I see what I think an erroneous statement respecting the *D. indivisa*. I have been acquainted with it some ten years. I first saw it at the Abbey Gardens, Trescoe, Isles of Scilly, where I was much struck with it, several being in flower. The gardener gave me some seed, and I was successful in raising several distinct plants. At the Vineage, in Galway, Penzance, there is a splendid plant, about 12 feet high, that has seeded, and plants raised from the same. Large plants flower and seed freely. There is a possibility for small plants to be taken for *D. australis*. I planted some two years since, in a very exposed situation, where they have no protection, and are only about 2 feet high. Your correspondent says that he dug one up after being planted two years, and found that it had multiplied sixfold, forming six handsome pot plants 30 inches high; and again, he says some planted out on the shrubs have reached 6 feet high in the same time. He really must be talking about something else, for with us it does not increase in this way, neither does it grow so fast. *J. G. M., Penzance*.

Lily of the Valley.—Mr. THOMSON, in addressing you on this subject, draws a comparison between *Lily of the Valley* and *Crucifera*, and the *Lily of the Valley* of Belgian origin. Now the two great sources from which our supplies are drawn is Holland and Germany; from the former they are imported in clumps full of flowering crowns, from the latter in single flowering crowns. I wish a number of which go to make up a potful, and it is these which are grown so much for Covent Garden. I have noticed the difference between the two, and an quite sure they are distinct varieties, the German being much superior. Now, without troubling you with my idea of the points of difference, I would say that flowers of each be sent to the *Gardener's Chronicle* office, and, if proved to be distinct, that Mr. W. G. Smith should favour us with an engraving. *F. H.* [Illustrations of the German and Dutch *Lilies of the Valley* will be given in the next issue of the *Chronicle*, and two plants are quite distinct enough for garden purposes. EDS.]

The Supply of a Family.—What extent of kitchen-garden ground and glass would be required to provide a regular supply of forced and choice vegetables, fruits, table plants, and cut flowers the whole of the year for a family of five persons, with two or three attendants and a constant influx of visitors? *B. C., North Durham*. [Your question is a somewhat difficult one to answer, as so much depends upon the special requirements of the family, and various other circumstances, such as situation, climate, soil, &c. However, assuming that "B. C." resides in the country, the extent of ground under cultivation for the supply of such a family should not be less than 4 acres, two of which should be inclosed with walls; the other 2 acres should surround the walls in the form of slips, bounded by an evergreen protecting fence. This quantity of ground, with a judicious system of simultaneous cropping, should produce a large and sufficient supply of hardy fruits and vegetables to meet any reasonable demand. The area and number of the forcing-houses must to a great extent be determined by the actual requirements. The vinery should not be less than three in number, and may average from 40 to 50 feet in length for the production of early, mid-season, and late Grapes. There should also be two Peach-houses of a proportionate size, and Melon, Cucumber, and Mashroom houses respectively. There should also be a house set apart for the forcing of the various products. These houses, with the usual appendage of frames, if judiciously managed, should produce a good supply. In making this calculation an unnecessary house I have omitted such as Pine-houses, Fig and orchard-houses, &c., which may be added at will. With regard to plant-houses for the production of plants for table and cut flowers, &c., it is very desirable to have two or three distinct stores, and to have a great difference in the general treatment necessary for stove plants. A large proportion of the thin, tender foliaged varieties require shade to insure perfect development, while on the other hand there are many flowering and fruiting plants, such as *Campanula*, *Coleus*, &c., which require full exposure to light to ensure anything like real perfection of character; therefore we shall say two stoves, two greenhouses, and two span-roofed pits with a passage down the centre for the production of the bedding-out plants, and also to come in handy for the culturing of soft-wooded plants for table, such as *Carnations*, *Mignonette*, &c. The 20,000 bedding plants required for planting out

will necessarily occupy considerable space, but as I should calculate that at least one-half of this number can be supplied in the shape of hardy plants which will prove far more satisfactory than such a host of gaudily coloured tender things, then the accommodation above indicated will be sufficient in the way of plants. To make anything like a trustworthy calculation of the actual labour required for the working of such a place, it would be necessary to know the nature and extent of the grounds and flower garden, as without this any calculation must be only approximate. Therefore I should say that eight to ten men, including the head gardener, would be ample to keep the whole in perfect order; but much, however, depends upon what the actual labour in the management is constituted. More than one-half of the plants in England are unseasoned, and are consequently badly managed. Large places and inadequate assistance is the order of the day, but such conditions give no real pleasure, profit, or satisfaction to any one. G. W.]

A Quick Method of Forcing Asparagus.—By the same post I have sent you a sample of Asparagus, and as my method of forcing may be different from any other, I beg to send you the details. I have forced two beds this season with great success. My first was taken from the ground on November 14, and from those crowns I cut on November 17, and continued so doing, with a daily yield of 50 bunches. My second bed was also begun taking up my second bed on December 1, and began cutting in six days after planting. At the time of writing I can cut about 150 beautiful heads daily. The plan I adopt is to place the roots in a bed in a tub-like casing of bricks, and to put a piece of glass to plant them on a thin layer of manure and soil, and after placing the roots thickly together I cover all over with a shallow dressing of soil, and then one thing only remains to be done to ensure success, and that is to give plenty of water, either in the form of liquid-manure. This mode of forcing has great advantages, inasmuch that it effects both a saving of time and also of material, and many who have hot-houses but who have not manure for forcing purposes can adopt it. One trial will, I am certain, prove satisfactory. *Clark, The Gardens, Milton Costable, East Dereham, Norfolk.* [We received a very good sample, and are much obliged to our correspondent for the hint. Eds.]

Eucharis amazonica in the Garston Vineyard.—Amongst the many objects of interest to be seen at this famous vineyard in this dull season is a gorgeous display of this beautiful Lily, the culture of which has been ably treated on by several correspondents lately in the pages of the *Gardener's Chronicle*. All or very nearly all agree that to do it well it is necessary, after the winter season's growth, to give it a period of rest, and then plunge in a brisk bottom-heat, when every plant will throw up flower-spikes in accordance with the strength of the bulbs. What prompts me to write of the stock at Garston is not the individual plants, but the manner in which the grower, as our readers must imagine one of those large span-roofed houses, the centre bed of which is filled from end to end with plants in robust health, all about in the same stage of growth, and yielding hundreds upon hundreds of flowers, with far marking purposes must be a very profitable investment. When we bear in mind how simple it is to grow and flower these plants, is it not surprising why any one possessing a hot-house or two should be without them? Taken as a whole, I must confess to never having seen anything to equal this display for uniformity of merit, and upon asking Mr. Cowan how such a result was brought about I was informed that nothing novel in the shape of treatment was tried. The plants had a good season of rest in a cooler temperature than is generally given to them, and that "well-watered" Vine, and that it can be grown to perfection under such circumstances there can be no doubt. The Vine is just breaking, and promises well, and I should say that a visit to the Garston Vineyard next July or August ought to satisfy those who complain of the want of this Vine. It is whether it is worth house-room or not. W. Hinds.

Superheating Vine Borders.—Would it not greatly facilitate the arrival at a correct estimate of the value of superheating Vine borders if it were possible to obtain an exact comparison of the relative temperatures of soil and atmosphere in which trees in a state of Nature first start into growth in the spring? Such an experiment should not be difficult of execution, as a thermometer might be fixed in the head of the tree, and another placed in a hole in the ground at a distance of 8 to 10 feet from the trunk, and the depth at which the roots are found. In this way a fair guide

might be found as to the relative differences of temperature for roots and branches essential for successful Vine culture. It is assumed that with Vine roots inside the temperature of the border there is equal to that of the house, but the probability is that it is considerably lower. This will no doubt be the case with trees growing in the open air. In the case of Vines with the roots outside of the house there can be little doubt that without artificial heat the difference at starting time would be considerable, and that with the application of artificial heat the difference would be extremely unanalogous. The obvious course in such a case would be to bring the temperature of the border somewhat nearer to that of the house by means of leaves, manure, or other heating material, but the danger in this case lies, not so much in exciting the border roots to action as in the soil, which is unduly apportioned, the greatest heat being applied to the surface-roots, whilst those several inches in depth scarcely feel the stimulus. Probably the most natural temperature for outside Vine borders would be found by covering the border during the spring with a temporary glass protection, and this course would doubtless be found safer and more satisfactory in the long run than in applying fermenting material, as the mere exciting unduly of surface-roots is not the best idea of the Vine culture. D.

Veitch's Self-Protecting Broccoli.—In your review of the "Fruits and Vegetables of 1876" I observe you do not notice the above Broccoli. Although situated as this place is, high up among the hills of the North of Wales, I have corresponded with Mr. Johnston, have indeed found it to be the gem of the first water, and I think the following particulars respecting this excellent vegetable cannot fail to be interesting to many of your readers. In June last we planted out which began to be ready for cutting about the middle of November, and from that time up to the present (Jan. 6) we have been cutting from six to ten fine heads almost daily, and when cooked their delicate flavour and tenderness leave nothing to be desired. Where vegetables are wanted in quantity during the winter months every gardener should have a good stock of this choice Broccoli. It only requires to be known to become a garden necessity. *J. Melville, Hutton Hall, Guisborough, Yorkshire.*

The Scarcity of Holly Berries and Bees.—Few but a philosopher like Mr. Darwin would have thought of linking these two facts together as cause and effect. It may, however, be so. Wasps, too, of course, may be held to be bees in this manner, and the scarcity of them may start the spring of the present year was notorious. I have noticed that wasps frequent the Holly a good deal in the spring. Of course, too, the movements of bees and of wind is more important to such plants as the Holly than to most other plants, and the male of the former is not only on the same plant but in the same flower. Neither does the scarcity of bees theory cover such exceptional facts as the one I recorded—one tree among thousands being literally coralled o'er with berries, and the male of the female of the same tree that matter, neither does the severity of the weather nor of drought explain such exceptions; still I am inclined to think the severe cold when the Hollies were in flower had much to do with the destruction of the crop, just as it destroyed Apples, Pears, Plums, Gooseberries, acorns, Beech-mast, and other fruit-bearing flowers by wholesale. No doubt the Holly is a hardy plant—very hardy, in fact; so is the Oak; but, nevertheless, I have seen Oaks killed dead by May frosts; and hence it is reasonable to suppose that Holly may be frost-killed by the same means. The power of bearing berries by frosts biting them hard when in full bloom. No one knows better than Mr. Darwin that the ability of plants to resist cold is a matter of condition rather than of constitution. A plant may pass through zero unscathed when at rest, while all its embryo fruit may be cut off, and even its life be destroyed, by from 10° to 15° of frost out of season. Thus it comes to pass that the cold a plant may safely endure in its own climate is no safe criterion of what it may withstand in another country, inasmuch as in the latter the cold may come upon it in a different stage. Alike in regard to maturity or state of growth, spring frosts, for instance, are not destructive in the ratio of their severity, but rather in the degree of their seasonableness. The plants are allured to abnormal tenderness through far promises of fine weather that are not fulfilled, or unwise cultural devices, and the plants thus taken unawares, and in a tender condition, succumb to the cold. It would, however, be interesting to know the accuracy of bees or wasps was co-extensive with the scarcity of Holly berries, and whether that scarcity was at all affected by the proximity, or otherwise, of hives of honey-bees, which were active last spring in some localities. In regard to this place, for I have not seen a fly or a single berry within more than 500 yards of

them; while the solitary example of a bush laden with berries was nearly double that distance from any honey-bees. Also how far the scarcity of bees would be likely to account for the scarcity of spaw, acorns and Beech-mast, which are almost as rare as Holly-berries in some localities this season. Much Clover seed was also grown in this and other parts of the kingdom; perhaps some of the old agricultural readers of the *Gardener's Chronicle* will say whether the scarcity of Clover seed last year was general. It was a good crop in some localities this season. I have no remark of course, being confined to the honey-bee and its produce, and having no reference to the wild bee or wasp. The latter were very scarce throughout the earlier parts of the season, though they put in a pretty strong appearance here for their share of mallow fruit in the latter part of the season.

— I beg a little space in your journal to confess my error with respect to the cause of the scarcity of Holly berries. I have been convinced of this by the two communications in your last number, by the statement to the *Gardener* by Mr. Fish, and by some private letters which I have received. It appears that several causes in combination have led to this scarcity; but I still think that the rarity of bees of all kinds in this neighbourhood during the spring, of which fact I feel assured, must have played a part, though a quite subordinate one. *Charles Darwin, Down, Beckenham, Jan. 17.*

— There is little doubt that several causes may have made the scarcity of Holly berries last year appear so very general. I have been struck by this. Darwin's hypothesis of bees not fertilising the blossoms is not one of the causes, for bees last year were very plentiful, and the hives stronger than usual. I never before knew such crops of the white Clover as were seen this season. The hives were in the open air, pasture-field and roadside being covered with plants in flower. The bees, therefore, had plenty of food, and an excellent honey harvest was the result. There are immense quantities of Hollies in the hedges and plantations in this district, and in the spring, and the fallures in their berry-bearing are all alike. On the outskirts of Sherwood Forest there are some very long hedges of tall Hollies, and it is only where the bushes have been sheltered with trees that any berries are to be seen on them. The Holly likewise grows and prospers on some magnesian limestone crags near this, where the soil on the surface is very thin, but no berries were produced on the bushes last year, although they usually show more berries than the bushes grown on rich soils. *William Tillyer.*

— I have been struck by a confirmation of Mr. Darwin's theory of insect fertilisation as occurred locally here this year, where our Holly trees are a "glorious sight," as Evelyn well describes them when covered with their coral berries. We have generally myriads of insects in the spring and summer, and also several strong hives of honey-bees quite close to the Hollies. One old bush never fails in any season to have a fine crop of berries ever since it was nearly ringed or barked round by rabbits some severe winter several years ago. *T. R. B.*

The Blackthorn in Bloom on January 9.—It is not nearly three months in advance of its usual period of flowering? I have not been able to go and see the hedge, but I am assured that there are several sprays of white blossom out in full beauty on some Blackthorn near here; so "spring is bidden" as Mr. Howitt termed this flower, has been fulfilled this year. Primroses have been in blossom in the garden for some weeks. *Helen E. Wotney, Linn, Hants.*

Luminous Mycelium.—In the *Gardener's Chronicle* for December 4, 1875, p. 719, will be found an illustration and description of a remarkable case of phosphorescent fungus-spawn found permeating the wood of a rotten stump in the garden of Captain King of Chidbury, Peterfield, who kindly forwarded the original materials to us, has kept the spawn-infested stump in view, and the mycelium has now produced a dense crop of Agaricus fascicularis. Captain King has obligingly sent me another portion of the insect sent by Mr. Mitchell, and he suggests, very apparently spring from the same dense white spawn which was luminous a year ago, but it is not luminous now. *W. G. S.*

The "New Danger for Orchid Growers."—I am obliged to Mr. McLachlan for recalling my attention to the notice of the Embic contained in my friend Lucas' work on the *Insects of Algeria*, in which it is distinctly stated that the young Embic inhabit little silken tunnels, as was also stated to be the case with the insect sent by Mr. Mitchell, and he suggests, in the *Gardener's Chronicle* that the web was probably spun by a species of spider common in Orchid-houses is not supported, although not actually disproved. I have since, however, received a further communication from Mr. Mitchell, and he has forwarded roots and webs, with the statement that he had "seen the insect make its web, apparently for

porposes of concealment, with some organs situate in or near the head; also you will observe the *debris*, i.e., the scales extruded, which resemble wax, and certainly resemble that of some *Vinea larva*, and is certainly not that of a spider. *L. O. Watwood.*

Inside v. Outside Vine Borders.—When such men as Mr. Henderson, who, I believe, has taken more first prizes for Grapes than any other grower, and Mr. Wildsmith, who bids fairly to do as much in the future as Mr. Henderson in this respect, would exclaim, "I may well exclaim, "When doctors differ, who shall decide?" My own experience in Vine culture, as compared with these gardeners, is indeed small; but, nevertheless, I find that white Grapes keep far better and ripen better when planted in inside borders, than the latter give certainly there is trouble in watering. In the case of early Vines, I have always seen inside borders preferable. I am sorry to differ with such champions, but experience alone tells me to plant in inside borders. *R. Gilbert.*

Notes on Grapes.—Observing several inquiries concerning Mrs. Pine's Black Muscat Grape, I am inclined to give you some remarks, and also of my experience with it. I have it worked on Lady Downe's, both sorts bearing; the bunches are very large, with fine berries, but lacking colour, and the bunches partake somewhat of the parent shape, viz., large shoulders and conical bunch, but not so particularly one-shouldered as Lady Downe's. Another, inched on Black Prince, does very well, colouring almost to perfection, with pyramid (inverted) shaped bunches; both these are growing in a late-forced vinery. A third, grafted on Black Hamburgh, both bearing, colours equal to the parent, quite black; this is in a mid-season vinery. I am convinced that Mrs. Pine's requires a longer season, with less fire-heat. Black Alicante does equally well on Lady Downe's and its own roots with me. Even Black Alicante does well on Black Hamburgh, and throws very long bunches, with rounder berries than upon its own roots; upon Black Hamburgh it does well, and the bunches in shape partake of the character of the Black Hamburgh or parent. I don't know better stocks than Foster's Seedling and Black Hamburgh; the former is a remarkably free grower, requires more restraining or pinching than any other I know of. I find stocks influence the style and character of the bunch more than most writers venture to observe or state, and I have tried a good many one time another. With regard to the best place for Black Alicante first, Lady Downe's second, Mrs. Pine's third, West's Saint Peter's fourth, Gros Guillaume fifth, Gros Colman sixth; (the latter requires a long season to grow it to perfection, with plenty of heat, and is the noblest looking Grape grown.) Of white Grapes Muscat of Alexandria and Bowood are best flavoured, but Syrian and Trebbiano for late keeping, also White Lady Downe's. Perhaps I may give you some further remarks about early Grapes on another occasion [viz., do]. For information of other gardeners, and the chief question is, "How do his Grapes look?" and I am sure Dr. Lindley was't far from what he said, "A good supply of Grapes covered a multitude of sins." *A. S. Kemp, Haxton Garden, St. Paul.*

A Holly Tree Fruiting Twice the Same Year.—As there has been a good deal of correspondence lately about Holly berries, I send you the following, *quantum valet*. Some few years ago I had a shooting place in Argylshire, and on one part of the ground was a very fine Holly tree, which had one summer a splendid crop of berries. As the summer passed the berries disappeared, even, I conclude, by birds, or blown down. To my astonishment, a second crop appeared, equally fine, the same winter. The tree was covered from top to bottom both in summer and winter. It strikes me that this is rather a singular circumstance, and I do not think I have had anything to do with the fructification of the berries, as I doubt if there were any near, as it is in a wild part of the county. The tree was on a hillside, facing I should say, about E.S.E., sheltered, and near a salt water spring, and was surrounded by a hedge. It is now still is, a very fine tree. That winter was an exceptionally cold one—snow and frost for three or four weeks continuously, and woodcocks most abundant. *Russell Todd, Jan. 13.*

The Clive House Seedling Grape.—This Grape, for which the Fruit Committee of the Royal Horticultural Society, at their meeting on December 6, 1876, awarded Mr. D. P. Bell, Clive House, Alnwick, a First-class Certificate, was raised twenty years ago in the garden of His Grace the Duke of Northumberland, Alnwick Castle, by William Casley, who was, as most of us are employed in the forcings there. The female parent was Black Morocco, impregnated with the pollen of

White Syrian, for the purpose of causing the former to set its fruit better than it had been in the habit of doing. After being fairly tested, all but the very ripe of the berries were noticed as being of unusual size. From these Mr. Casley saved seeds, which were sown by him, and which produced several plants, the fruit of some being black, and that of others white. After being fairly tested, all but the very ripe were nearly worthless. These two are still in cultivation in the houses there, that for which the certificate was awarded being one of the two. My only motive for interfering in this matter is that honour may be given to whom it is justly due, and that this excellent Grape may be sent out under a false name. I may also state that Mr. D. P. Bell has only had it in his possession for the last few years. *Robert Ewolt, The Gardens, Chillingham Castle.*

Notes on Vine Culture.—I have more than once been struck with the apparent difference in the product of Hamburghs and Muscats upon the same soil. Indeed it may be a question for physiologists to solve whether or not these two kinds of Vines may be termed distinct species. Though I have seen cases where Hamburghs are more at home and succeed better than Muscats, and vice versa, I am inclined to think that the difference in the results of Muscat culture on different soils is even greater than the difference in the Hamburghs, and perhaps more especially in their keeping qualities. To illustrate this point I would refer to the successful case which I think that Mr. Denham, the Duke of Roxburgh's gardener at Broxmouth, used to show at Edinburgh over a dozen years ago. They were large in bunch and berry, and better in that respect than those grown at Floors, but for keeping qualities I am not in a position to judge, they could not be compared. The same thing also, I might say, is the case here after with my experience of Muscat culture at Elvaston. All things being equal, I think finer looking Muscats could be grown at Elvaston than could be grown here, but after being ripe they would not keep nearly so long as at that rate. I should have no difficulty in keeping good Muscats here well into March, whereas at Elvaston they were finished, and I might say in good time to make the most of them by about the new year. A soil that produces good bunches of Muscats is bound to be equally good to be able to sustain their keeping qualities. However, I am inclined to think that inside and outside roots also exert a great influence on the keeping in proper condition of late Grapes. If the roots are wholly inside, and the soil is of a porous nature, they will be inclined to lose the pecuniary life of late Grapes without shrivelling to keep the border without water, which is to be avoided, for the proper atmospheric condition. Outside borders for late Grapes, protected with litter, and a proper atmosphere in the house, would be the best mode of culture in any locality. The Vine is such an accommodating plant that it might be said that only with very early Grapes is so much care required, and these as far as possible, for various reasons, should be substituted with late Grapes or with those of the previous seasons on the early kept, and in the time of ripening. Vines on when the atmospheric conditions tend to give the cultivator more tendrils than bunches, by watering with water of too high a temperature, and when the Vines are in an early stage, causing the shoots to make way without the proper vigour that the cultivator would desire. Circumstances do a great deal in Vine growing. Last autumn in looking at the early Vine border here, which is inside as well as out, I observed that where the front sashes were up (the house being a lean-to), with the sashes being open to the south-west, early bunches were to be found in this very damp part when I could find none elsewhere, the Vines being in a state of rest. Too much moisture in this part caused an untimely root-action. What the general deduction from observations in Vine culture is every cultivator who has followed a reply to me will be the same time from his friends so as to make his practice safe. *R. Mackellar, Ayr, Auld Hall.*

Saponaria acyminodes.—In a recent number of the *Gardener's Chronicle* a correspondent inquires if seed of this plant preserves its vitality for any length of time, or whether it should be sown as soon as gathered. As I have not the value of a reply, I will answer from the result of my experience, and it is to the following effect:—That well-ripened seed of this plant will, in a temperature of 55° to 65°, vegetate freely at any period within a year of its maturity, and in a moderate percentage give an interval of four or five months so that the correspondent has a fair right to conclude that the seed supplied him, and which failed to germinate, was old or defective in quality. *East Anglian.*

Fermenting Materials on Vines.—Borders.—Mr. Hino's theory and my practice differ very much with respect to the value of fermenting materials for horticultural purposes, and I fear his remarks are calculated to mislead, I fail to see how he could

produce ripe Grapes in May, where all the roots are outside, without the aid of the old-fashioned dung-bed. If we start two vineries at the same time and under the same conditions in November and December, using manure on one and not on the other, the benefit arising from the hot dung will soon be very evident, teaching us not to despise the old plans. Whatever differences of opinion may exist with regard to the practice of starting early pot-Vines in bottom-heat, the results are more favourable with it than they are without it; an abundance of roots in a healthy condition is the most essential element in the successful culture of the Vine. It is hardly possible, and quite unnecessary, to start the roots in advance of the top, as they rarely start naturally before the fruit is thinned or sometimes stoned, as may be seen by growing a plant in a glass pot, which is dependent on here a slight time-lapse which is worthy of notice. After planting a Waltham Cross Vine, I noticed a lump of transparent gum exuding from the cut on the main rod; this in a few days became quite hard, and would not dissolve in cold water, but I found it would readily dissolve in warm water. I think this proves beyond a doubt that the hard condensed sap in well ripened Vines requires a moist warmth to set the sap in motion and push the Vines into growth. If we cut a pot Vine off level with the soil, and plunge it in a warm manure-heap outside, where the top remains cold, we find it soon commences to bleed, or as some would say to set the pump going; and it will be found that the roots will not move before the Vine has started at the top again, whereas had it been put on the same temperature in the same nature it might not have moved at all. I once made a plug of Muscat wood to stop a hole in the pipes; this started into growth, and showed a fine bunch of Grapes, whereas had I put it into a hole in the dry hot flue of the same temperature, the pipe would have perished and lost its vitality. It is not an unrefreshing occurrence for Vine eyes when put in to push into growth five or six leaves, and show a bunch of Grapes before making any roots whatever. *J. J. Goodacre, Elvaston.*

Forestry.

As most of the moorland devoted to planting is too wet for the purpose without drainage, underground drains are the best of all other systems designed to be the best for thoroughly drying the ground, but is less adapted for arboricultural purposes than those of agriculture; not that forest trees are less appreciative of well-drained ground than corn or Turnips are, but the comparatively large expense entailed in doing the work being about three times greater, acre for acre, than for open surface drains, and the insurmountable difficulty of preventing the tree roots from penetrating the soil till they reach the tiles and choke them. The soil being rendered loose and open in this way, the drainage drain, becomes on the whole still more attractive to the roots of the trees than the surrounding unbroken ground, hence they soon fill the drains.

Many plans have been proposed for remedying this evil, but none have hitherto proved available or successful. The depth of drain, description of soil, size of tile, &c., severally aid in determining the length of time the drain will act without being choked by the tree roots, but under the most favourable circumstances they will reach them, and render them useless. A modification of the underground tile drain has also been tried, and not without success.

It is constructed in the following manner:—The drain is first cut to the usual depth, 33 to 40 inches, and filled with tiles proportionate to the quantity of water it is to contain, and filled in to about half its depth. It is sloped on the sides, and made in all other respects the same as an ordinary open surface drain. The advantages of this over that of the common tile drain is that the roots are longer in reaching the tile, on account of the sloping exposed surface they must traverse before reaching the loose soil in the bottom of the drain; and often they do reach the tile, and ultimately choke it, so as to force the water to the surface. It then acts as a common surface drain, and in that capacity does its work without entailing any additional expense either by deepening or enlarging the drain in any way.

No part of the surface of a plantation is so completely interwoven with the roots of trees as the margins and bottoms of drains, footpaths, and places rendered bare, whether of herbage or soil; and such being the case it is both expensive and hazardous to deepen existing drains, for the obvious reason that in doing so roots are necessarily cut to such a degree as to cause many trees to be blown down by the first severe gale that occurs.

the island, and with its silvery bark, scanty, light-coloured foliage and dwarfish aspect lends quite a peculiar character to the general herbage of the country. A dwarf Casuarina, generally from 3 to 9 feet in height, and commonly called a Swamp Oak by the Australians resident in the island, occupies irregular patches on the hill-sides near the coast. The wood is tough and the form of the shrub elegant, but in masses the effect is sombre and unpleasing.

In Nouméa itself the usual tropical ornamental shrubs are to be seen, such as Flamboyant (*Poinciana regia*), Oleander, Bougainvilleas, *Bignonia venusta*, Aloes, with young specimens of *Coccoloba* and *Date Palms*. In the neighbouring jungles numbers of *Freyinetia* and *Cordylines*, with a few Ferns, *Blechnums*, *Lygodiums*, *Davallias*, a *Gleichenia*, a *Pteris*, and large masses of *Asplenium Nidus* may be found. Further inland—but it is never possible to get far from the sea, the island being about 230 miles long, and only 40 in width at the broadest part—very irregular and isolated patches of jungle are to be met with, generally, but not always following the course of a stream. Their appearance is very striking. The upper foliage is extremely dense and massive—frequently almost as dark in tint as Ivy, and matted together with heavy-follied creepers. In the midst of this, and in striking contrast with it, may be seen the snow-white foliage of the *Kekane*, or *Candle-nut tree* (*Aleurites triloba*). As a rule, there is very little undergrowth, such as Ferns, mosses, Orchids, &c., in the jungles of the southern part of the island of which we have been speaking. *Cordylines* are quite a feature in these forests, as is in the damper places a certain species of *Araliaceæ* closely resembling *Theophrasta*, and I have come upon splendid white *Lilies* at the edges of the forest at considerable elevations. Sometimes the ground is perfectly bare, scarcely a moss being seen even on the trunks of the trees, and it is possible to move about with the greatest ease and security, except in the neighbourhood of the *Supplejack*. At other times the jungle is a mass of creepers, through which it is extremely difficult to penetrate, but the contrast is always most marked between these and the jungles of South India, Ceylon, or Java.

In all the forests of New Caledonia that I have been in, the shade afforded is most complete, and this may possibly have something to do with the absence of ground vegetation, but I am inclined to think that it is the porous character of the subsoil and the consequent rapid draining away of the moisture that renders the surface so unsuitable for the growth of Ferns and mosses. In the North, where the rainfall is heavier and the geological formation different, consisting chiefly of schists and slates, the forests are both more extensive and really very rich in the undergrowth spoken of—as may be seen by the fact that they contain something like 200 species of Ferns and over 120 mosses. Some of the valleys south of Balade on the north-east coast where Captain Cook first landed, are very steep and densely clothed with forests, suggesting splendid opportunities for the cultivation of Coffee after the Ceylon system; but I was told that the force of the wind is so great during the cyclones which visit the island in the early part of the year that Coffee trees would be torn bodily from the ground and their cultivation under such climatic conditions is, of course, hopeless. At Kanala, about 100 miles to the south-east of this part of the coast, I visited the largest Coffee plantation in the island. This is one of the few spots where any alluvial soil is to be found, and the proprietor of half of it (100 acres) has about fifty planted with Coffee, the rest being under Rice, Maize, Sugar, or Manihot cultivation. Even under such favourable conditions of soil as this, it is found necessary to manure the Coffee trees in order to obtain a satisfactory crop. Several varieties of

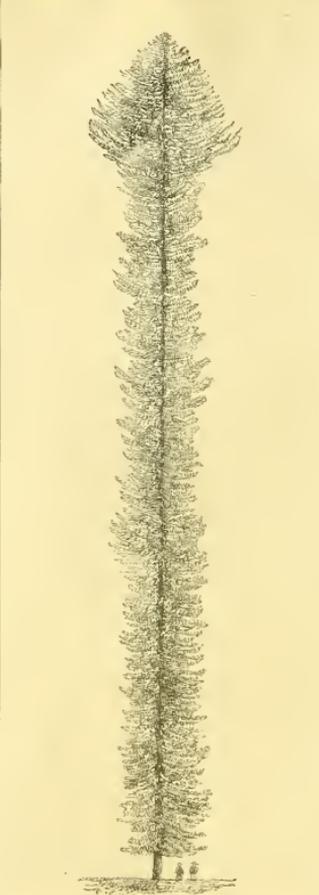


FIG. 13.—ISLET OFF NEW CALEDONIA, WITH *ARAUCARIA COOKII*.

Coffee have been employed, and the trees are planted 8 feet apart and in rows 8 feet wide, so that it is possible to plough up the weeds between them. The plants are topped at 5 or 6 feet and

the primary branches allowed to grow unpruned in any number from the stem, so that the tree presents an extremely bushy appearance totally different from that of the best crop-bearing trees of Ceylon. Even under these conditions individual trees will bear 2 lb. or more of Coffee (prepared), and 7 or 8 cwt. per acre in a favourable year may sometimes be gathered. The injurious prevalence of the black-bug (*Capnodium*) fungus proves that the climate is somewhat too damp and perhaps too cold for the perfect growth of the plant. A white ooccus, too, does a certain amount of injury, but the "leaf disease" of Ceylon, and South India (*Hemicelia vastatrix*) is here, as in Java, totally unknown. The crop-time generally extends over the five months of wet season and considerable difficulty is experienced in drying the parchment coffee for market. At present there are in all about 150 acres of Coffee in the island, planted almost entirely on small alluvial flats, and the annual production, except in a good year, is barely sufficient to supply the wants of the colony; and unless some of the sheltered valleys in the north can be planted up—which as yet has not even been thought of—it seems probable that the importation of this commodity will continue. The only article of consumption that is not imported is sugar. Special efforts have been made and special privileges granted by the Government, in the shape of cheap convict labour and suitable lands in order to make this enterprise successful. The cultivation is chiefly carried on on the west coast from Nouméa northwards, where alluvial flats are more extensive than elsewhere; but these have long ago been all taken up, and the production of sugar has as yet but rarely allowed of much more than a nominal exportation. The fact is that, what with the difficulty of obtaining labour and the natural poverty of the soil, there is little hope that the island will ever yield much more than an ample supply for its own population of 12,000 or 15,000 whites (convicts, Communists, soldiers and settlers), together with its 20,000 or 30,000 Kanaks, in any one of its articles of consumption, unless it be sugar, and even this I think is very doubtful. Several old Bourbon sugar-planters are settled in the colony; one of them, M. de Greslan of Dombes, near Nouméa, kindly showed me all the objects of interest on his estate, which consists partly of alluvial lands suitable for Sugar, Maize, &c., and partly of mountain jungle and grass. From ten to twenty varieties of cane I was informed are cultivated on this estate, the work being chiefly performed by Tamil coolies, formerly imported into Bourbon and exported thence into New Caledonia. Maize, though planted year by year, is frequently a complete failure, on account of the ravages of a brownish-coloured ladybird when the plants are young.

Under the shade of the forest M. De Greslan was planting Coffee trees, those which had been previously planted in the open not having proved a success. He informed me that there were no less than 112 varieties of fruit trees on his estate—Mangoes, Oranges, Rambutans (*Nephelium lappaceum*), Loquats or Japanese Medlar, *Coeur de Boeuf* (*Anona reticulata*), *Soursop* (*Anona muricata*), Pine-apples, Strawberries, *Cerises de Brazil*, *Moreton Bay Chestnut*, *Sapodilla plum*, &c., and that he had been at considerable expense in trying to introduce foreign fruits into the island. He has had to contend with an ineradicable weed called Tea-shrub, which is very disheartening. In the neighbourhood of Nouméa, Potatoes, Cabbages, French Beans, and other European vegetables are cultivated, chiefly by *libérés*, or ticket-of-leave men, in the same gardens with the *Papaya* (*Carica Papaya*) and the *Banana*; but the want of water

for irrigation, as well as for other purposes, is very severely felt, and the vegetables and fruit for the supply of the town are chiefly brought from a distance. The natural grasses of the country are

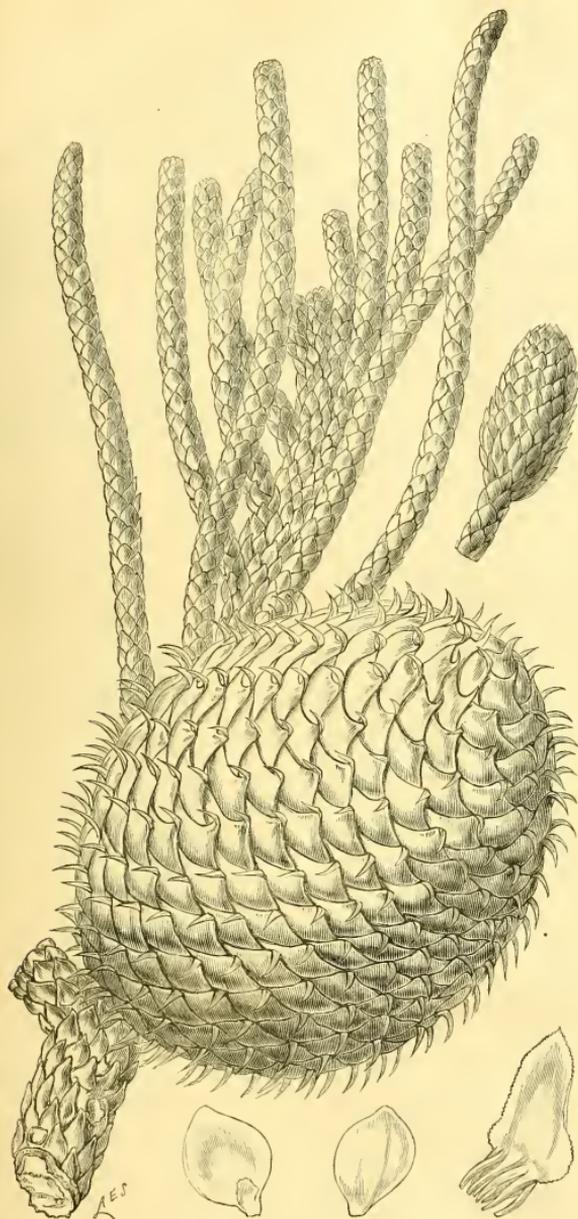


FIG. 14.—ARAUCARIA COOKII. (FROM *Bot. Mag.*)

considered by Australian stockmen to be very poor for the purposes of pasturage, and one of them (*Andropogon austro-caledonicum*, I believe) possesses a spiky seed-case which is said to penetrate

when swallowed by sheep into every part of the body. The land consequently must be eaten bare by cattle before smaller stock are turned on it. Another pest, which threatened at one time to be very injurious, was

Asclepias curassavica, said to have been introduced in soldiers' mattresses from Bourbon or Tahiti. This plant was rapidly overgrowing many of the pastures when a fritillary butterfly appeared in enormous quantities, both in the larva and imago form, and ate it down to the ground. It is perhaps worth suggesting here that this plant may possibly prove of great service to the island, as the *Lantana* promises to be to Ceylon and Southern India, through the renovation of poor or exhausted soils by the deposition of humus.

There are either four or five different species of New Caledonian Pine found in the island, the principal of which is *Araucaria Cookii* or *columnaris*—the one discovered by Captain Cook in the southern parts of the island and on the adjoining Isle of Pines. Some of these trees attain a height of 200 feet, and they appear to thrive best on little rocky islands a few acres in extent or close to the sea. They have a somewhat curious habit, even when growing alone, of shedding their branches for five-sixths or more of their height, and then replacing them by a smaller and more bushy growth, so that the tree at a distance presents a very columnar appearance, the resemblance being increased by the summit being crowned with a mass of foliage somewhat like a capital (fig. 13). The natives do not unfrequently plant these trees in their burial grounds, or rather in the hills of bush where they expose their dead to the birds and the hermit-crabs.

As to the natives themselves, there is very little chance of making them generally useful in the cultivation of the land. Although very muscular they are extremely lazy and independent, and will not submit readily to the necessary discipline of plantation life. Indeed, one can scarcely expect men—many of whom at an earlier period in their lives have been cannibals, and who have indulged themselves with the mad excitement of native warfare—to settle down readily to the humdrum employment of hoeing corn. Other tillers of the soil have consequently to be obtained, by means of labour vessels, from the neighbouring islands, or else by the importation of Tamil coolies from Bourbon. This latter is by far the most successful plan as yet adopted, but it has only been carried out to a very limited extent. The Tamil is exceedingly docile, and though not very muscular, it is surprising how much work he will get through if properly managed. The Kanak, on the other hand, is very difficult to deal with, and the manner in which he has been obtained is not likely to render him cheerfully amenable to the requirements of the planter.

The food which the natives used before the arrival of Europeans was almost exclusively the Taro, I believe of two kinds (*Colocasia esculenta* and *macrorhiza*), which were cultivated in terraces on the hillsides where water was available for the purposes of irrigation. The root of the Fern (*Pteris esculenta*), so universally eaten by the Maories of New Zealand, was scarcely ever used by the Kanaks of New Caledonia. The pith of *Cycas circinalis*, which is common, is often made into a kind of sago and eaten. A few fruits, but none of much importance, are eaten; nor have the natives much animal food except the flesh of pigs that have run wild since their introduction by Europeans. There are no wild animals indigenous to the island—the only ground game ever hunted by the natives being the *Kagou* (*Rhinoceros jubatus*), a member of the same family living in the woods, that has enjoyed security from four-footed enemies so long that it has lost the use of its wings, and can be easily captured by dogs. Young birds, the size of thrushes, I have seen native women transfixing with pieces of stick and roasting alive before the fire. When the locusts make their appearance, as they sometimes do, in enormous swarms, the natives readily procure a meal by setting fire to the grass on a hill-side, and picking up their food ready roasted after the flames have passed.

At the present time it is perhaps somewhat early to form a decided opinion as to the ultimate capabilities of the island when plants from all parts of the tropical and subtropical world shall have been introduced for the purposes of acclimatisation. It is possible that some may be found to overspread the waste places of the island and to impart a fertility to the soil which it does not at present possess, but it may be assumed that as some of the hardiest specimens of tropical vegetation, *etc.*, *Lantana*, *Ageratum*, *Couch-grass*, have failed to make any progress except in very isolated spots, the prospects are not very promising.

It may be mentioned that owing to the absence of

jungle vegetation and lowlands, as well as on account of the narrowness of the island, the climate is extremely healthy, no case of epidemic sickness (unless recently imported) having ever been known in the island, although the fitness of the low-lying parts of Nouméa, owing to the utter absence of any sewage system, is such that it seems little less than a miracle that the town has escaped so long. *R. Abbay.*

Obituary.

It is with the greatest regret that we announce the death, on the 11th inst., of ALFRED SMEE, Esq. An enthusiast in whatever he undertook, he threw himself as warmly into the pursuit of gardening as into the chemical, electrical, surgical, and other subjects in which he attained fame. His garden at Wallington was a perfect epitome of all departments of gardening, useful and ornamental; a keen lover of Nature, he had gathered together a vast variety of interesting plants. Nothing came amiss to his wide sympathies in this way, and if bedding plants were nearly excluded from his garden it was because he liked them less than other plants. His collection of hardy fruit trees was one of the largest of any private collector in this country. The outcome of his garden experience was manifested in his richly illustrated work, *My Garden*—a treasure-house of information for amateur gardeners. Mr. Smee was for some time chairman of the Fruit Committee of the Royal Horticultural Society, and served on its Council. Few men had clearer and juster notions of the duties and objects of the Society, or was more emphatic in giving them utterance. His feelings were always those of a staunch horticulturist, firmly impressed with the conviction that the Royal Horticultural Society, if it were to take its proper position as the national representative and exponent of gardening, should devote all its energies to scientific and practical horticulture. In private life Mr. Smee was beloved for his unvarying kindness and liberality of spirit. As we hope in a short time to publish a portrait of the late Mr. Smee, we defer for the present any further notice of his career.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, JAN. 17, 1877.

MORNING AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.				HYGROMETRIC DEPARTURES FROM GLADSTONE'S TABLE 5th Edition.		WIND.	RAINFALL.
	Mean Reading.	Lowest.	Highest.	Range.	Mean for Month.	Excess or Deficiency of Mean for Month.	Dew Point.	Difference of Humidity.		
Jan. 11	29.72	-0.20	41.6	36.4	47.8	+2.7	38.7	+2.1	N. E.	0.00
12	29.71	-0.00	35.5	39.9	42.3	-0.8	37.8	+2.5	N. E.	0.00
13	29.73	+0.15	37.1	41.2	36.6	-0.2	34.2	+2.4	W. S. W.	0.00
14	29.53	-0.10	39.1	31.1	41.9	+1.7	34.8	+2.1	W. S. W.	0.28
15	29.48	+0.15	45.1	33.8	42.0	+0.8	33.8	+2.3	W. S. W.	0.15
16	29.88	+0.15	37.1	38.1	44.4	+6.2	35.8	+1.9	S. S. W.	0.00
17	29.66	-0.07	51.4	41.0	46.8	+2.1	35.5	+1.5	S. W.	0.09
Mean	29.72	0.00	41.6	35.0	42.0	+0.4	37.1	+0.9	variable	0.00

- Jan. 11.—Overcast, dull, and cold. Strong wind. Occasional rain.
- 12.—A very dull, cold, foggy day. Hoar-frost on ground all day.
- 13.—A fine bright cold day. Fog in morning. A little thin rain about 7 P.M.
- 14.—A dull miserable wet day. Cold and damp.
- 15.—A fine pleasant day. Mild and bright. Shower of rain in early morning.
- 16.—Very fine and bright till 3 P.M.; dull and overcast after. Thin mistral rain in A.M. and P.M.
- 17.—A dull cloudy day. Frequent thin rain. Very mild. Cloudless at night.

LONDON: *Barometer*.—During the week ending Saturday, January 13, in the vicinity of London the reading of the barometer at the level of the sea increased from 29.08 inches at the beginning of the week to 29.55 inches by the morning of the 8th, decreased to 29.48 inches by the afternoon of the same day, increased to 30.05 inches by the morning

of the 10th, decreased to 29.66 inches by the morning of the 11th, increased to 30.07 inches by the morning of the 13th, and was 30.07 inches at the end of the week.

The mean reading for the week at sea level was 29.75 inches, being 0.46 inch above that of the preceding week, and 0.17 inch below the average.

Temperature.—The highest temperatures of the air varied from 55° on the 9th to 35½° on the 12th; the mean value for the week was 46½°. The lowest temperatures of the air ranged from 29½° on the 12th to 44½° on the 8th; the mean for the week was 37½°. The mean daily range of temperature for the week was 9½°; the least range in the day being 5½° on the 11th, and the greatest 13½° both on the 9th and 10th. The mean daily temperatures of the air and the departures from their respective averages are as follows:—7th, 45°, 3, +12°; 8th, 45°, +11°; 9th, 48°, +11°; 10th, 41°, 8, +5°; 11th, 38°, 4, +2°; 12th, 32°, -4°; 13th, 36°, 6, +0°. The mean temperature of the air for the week was 41° 9', being 5° 6' above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 80½° on the 7th, 73½° on the 9th, and 70½° on the 12th; the lowest 28° on the 12th; the highest recorded by this instrument. The lowest readings of a thermometer on grass with its bulb exposed to the sky were 24½° on the 12th, 30½° on the 13th, and 33½° on the 10th; the mean value for the week was 34°.

Wind.—The direction of the wind was S. W. and N. E.; and its strength brisk at times. The latter during the first five days of the week was dull, wet, and very mild; on Friday and Saturday the weather was somewhat finer, cold, but foggy.

Rain fell on five days during the week, the amount collected was 1.88 inch.

ENGLAND: *Temperature*.—The highest temperatures of the air observed by day were 55° at Blackheath and 54° at Truro; at Hull 48° was the highest temperature; the mean value from all stations was 51°. The lowest temperature of the air was 27½° at Nottingham; at Portsmouth and Norwich 32° was the lowest temperature. The mean value from all stations was 39°. The range of temperature in the week was the greatest at Blackheath, 25½°, and the least at Bradford, 18½°. The mean range from all stations was 21½°.

The mean of the seven high day temperatures was the highest at Truro, 50½°, and the lowest at Hull and Sunderland, both 43½°; the general mean from all stations was 46°. The mean of the seven low night temperatures was the lowest at Sunderland, 35½°, and the highest at Plymouth, 41°; the mean from all stations was 38°. The mean daily range of temperature in the week was the least at Norwich and Leicester, 5½°, and the greatest at Truro and Manchester, both 11½°; the mean daily range of temperature from all stations was 8°.

The mean temperature of the air for the week from all stations was 41½°, being 10½° higher than that for the corresponding week in 1876; the highest was 45½°, at Plymouth, and the lowest 39½°, at Sunderland.

Rain.—The amounts of rain measured at the several stations were comparatively small as compared with previous weeks. The heaviest fall, however, was 2½ inches at Brighton, and the least fall was two-tenths of an inch nearly at Leicester, Sheffield, and Liverpool. The average fall over the country was seven-tenths of an inch nearly.

The weather during the week was dull, wet, and very mild till the 11th, and on the 12th and 13th the sky was cloudy, and the weather was frosty and cold, with fog.

SCOTLAND: *Temperature*.—In Scotland the highest temperatures of the air varied from 49½° at Leith to about 45° at Dundee, Aberdeen, Greenock, and Paisley; the mean value from all stations was 48½°. The lowest temperatures of the air ranged from 24° at Paisley to 31° at Edinburgh; the mean from all stations was 27½°. The mean range of temperature from all stations was 21°.

The mean temperature of the air for the week from all stations was 38°, being 5½° higher than the value for the corresponding week in 1876. The highest occurred at Edinburgh, 39½°, and the lowest at Dundee and Perth, both 37½°.

Rain.—The falls of rain varied from 2 inches at Greenock, to half an inch at Dundee and Aberdeen; the average fall over the country was 1 inch.

DUBLIN.—The highest temperature of the air was 56½°, the lowest was 24½°, the range was 31½°, the mean was 41½°, and the fall of rain was 0.17 inch.

JAMES GLAISHER.

Esquiquiers.

He that questeth much shall learn much.—BACON.

158. MAIDENHAIR (BRAZILIAN).—Will you kindly tell me how the fronds are grown or prepared for market so that they may preserve their freshness for so long a time as they are taken to do in Covent Garden. In whatever stage I cut them, whether old, young, or medium, they wither or dry up in a very few hours—before they are in a bouquet an hour they are withered. C. Z. [We believe that only the most dry and best matured fronds are cut and sent by the growers to Covent Garden, and these will only keep fresh for about twenty-four hours. In the florist's shops the fronds are kept in a dark moist place, and when sent any distance are packed in air-tight boxes. They should not be grown too hot or too moist. Eds.]

159. WHITE VARIETIES.—Will any floriculturists kindly inform me if they have noticed whether white or pale varieties of garden plants are relatively more self-fertile than the coloured? Mr. Darwin's white *Mimulus*, pale *Pelargonium*, according to Dr. Denny, and a white *Antirrhinum*, show this peculiarity; but I should be glad to hear of other instances. *George Hamilton, 7, Beestock Terrace, Regent's Park, N. W.*

160. DAMAGE FROM FALLING TREES.—Can you say whether, if a large tree be blown down on a neighbouring land, and fall upon another's, doing great damage, the injured party can claim damages? J. S. [This is a legal question which some of our readers may be able to answer from their own experience. Eds.]

161. ASPHALTE WALKS.—May I inquire of some of your correspondents the best means known of laying down asphaltic walks in gardens; the composition of the materials in parts; whether it should be mixed with hot or cold tar; what thickness is best to withstand the washings of heavy rain; and, if laid now, would frost affect it? To give it a bright glistening surface, would Derbyshire spar, or the chippings of tuffa rock, be most durable and effective? *Cephus*.

Answers to Correspondents.

BOOKS: *Reader*. Yes; at 177, Fleet Street, or through your agent, *Piccadilly*.
GALLS ON VINES: I enclose what seems to be an unusual tufted growth of *Vitis* leaves, in case it may be of any interest to you from a teratological point of view. F. C. [The tufted growth, as shown in the



FIG. 15.—GALL ON VINE.

accompanying illustration (fig. 15), reproduced from our volume for 1873, p. 110, is the work of the gall midge of the *Vitis*, *Cecidomyia* (a.).

DISEASED LEAVES: *Antaeus*. The so-called diseased leaves of *Statice* and others look as if suffering from attack of red-spider. The *Cheriaras* can only be suffering from too much damp either at the root or top, and perhaps also from want of a sufficient circulation of air.

DOUBLE PRIMULA: *E. Hillier*. The flowers are very pleasing—a delicate blush, very full, and nicely fringed. Double varieties are, however, now so plentiful that it needs to be seen growing beside the others to judge if it is superior.

GRASS TREES: *J. Fryer*. We do not understand your question. Do you refer to the Vine pest, *Phylloxera*, to the Vine midew, or what? If you mean the medicinal uses of *Grapes*, apply to Messrs. Churchill, New Bunhill Row.

MISTLETO: *E. F.* The Mistleto will grow on the Thorn, and also on the Apple, Lime, and various other trees. The best plan is to fix the berries on the bark in a sheltered part, and protect them from birds; they will adhere by their own viscosity if crushed on the surface of the bark. The underside of a branch is generally preferred. It may be done now.

Garden Wall Wiring.



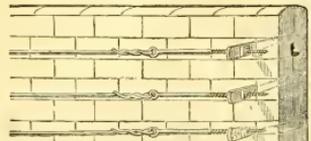
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FOR DURABILITY—Because, being able to use the strong Wire, it is not so liable to be eaten through with the galvanism as the thin Wire, as used in the French system.

The above engraving is an example of our system of Wiring Garden Walls. We have recently completed the Wiring of the New Garden Walls for the Marquis of Salisbury, Hatfield House. The Walls are 22 feet high and 75 yards long, wired on both sides; making a total length of 1500 yards—our system being chosen in preference to any other.
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The following prices give the total cost of each line of wire, including holdfast, straining bolt, intermediate guiding eyes, 20 feet apart, and best quality galvanised wire.
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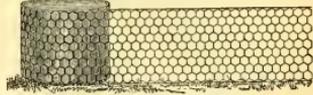
No. 14 Gauge Wire 1 1 8 2 2 2 2 8 3 2
 No. 13 " " " 1 4 1 1 2 6 3 1 3 3
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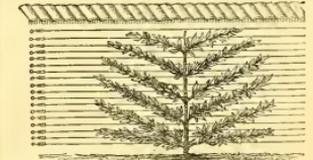
Prices per Lineal Yard, 2 1/2 inches high:—

Size of Mesh.	Mostly used for	Light.	Galv.	Medium.	Strong.
2 in.	Dogs or Poultry.	19 3/4	18 1/4	17 5/8	17 1/2
1 1/2 in.	Small Rabbits, &c.	19 1/4	18 1/8	17 5/16	17 1/8
1 1/4 in.	Smallest Rabbits.	19 1/8	18 1/16	17 1/16	17 1/16

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GALVANIZED IRON RADDISSEURS, for Tightening Wires, one to the centre of each wire, 2s. 6d. per dozen. KEY, for Winding, 4s. each.

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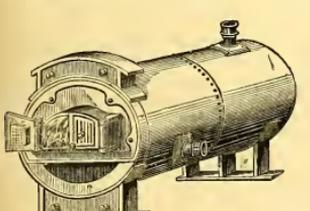


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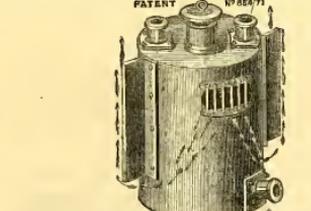
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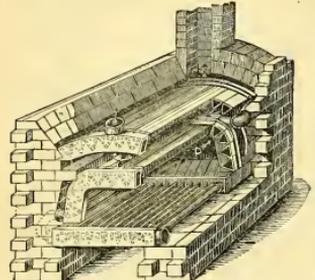
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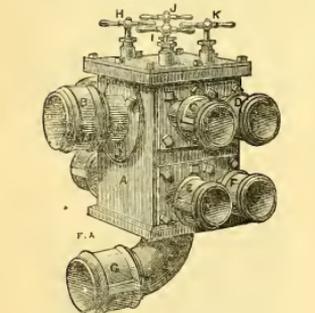
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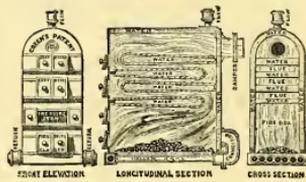
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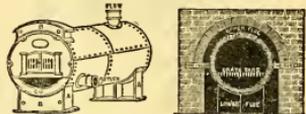
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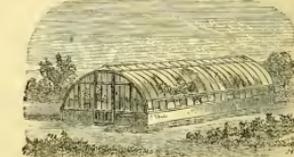
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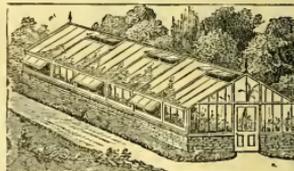
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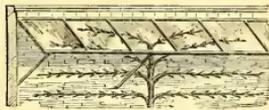


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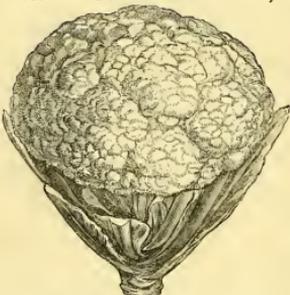


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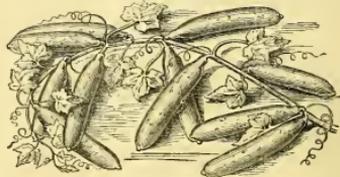
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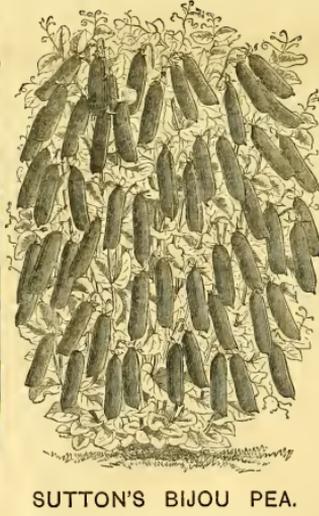
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Established 1841.

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No. 161.—Vol. VII. { NEW SERIES }

SATURDAY, JANUARY 27, 1877.

{ Registered at the General Post Office as a Newspaper. } Price 6d. { POST FREE, &c. }

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Vines, Vines, Vines.

B. S. WILLIAMS begs to announce that his **GRAPE VINES** this year are unusually fine, and are as new ready for distribution. For Detailed List, see Bull Catalogue: Victoria and Paradise Nurseries, Upper Holloway, London, N.

POT VINES.—3000 Pot Vines, of all the best varieties, on Sale at the Garston Vineyard, 6 miles from Liverpool. Price LISTS post-free. COWAN PATENTS COMPANY, Garston, near Liverpool.

VINES.—Splendid Planting Canes of leading varieties, recently ripened without bottom-heat. Extra strong for immediate fruiting. JAMES DICKSON AND SONS, Newton Nurseries, Chester.

Grape Vines.
FRANCIS R. KINGHORN has still to offer strong planting and fruiting Canes of most of the leading sorts. Particulars on application. Sheen Nursery, Richmond, Surrey.

Araucaria excelsa.
WANTED, One or Two well-furished large Plants. Any one having such or other grow to take for the houses can have them EXCHANGED for New and Rare Plants, Orchids, Ornaments-foliated, or other plants, on application at Mr. WILLIAM BULL'S Establishment, King's Road, Chelsea, London, S.W.

WANTED, LILY OF THE VALLEY, chumps, English-bred, Address, stating price and quantity to C. W. Crediton, Reading, R.

WANTED, MANETTI STOCKS, strong Apply to J. C. WHEELER and SON, Kingsholm Nursery, Gloucester.

WANTED, strong Maiden APPLES, CHERRIES, and PEARS, from Griffs. Sorts and lowest price to W. TRIGG, Hook Hill, Woking Station.

WANTED, LARCH FIR POLES, 16 to 18 feet long. State size, and price delivered at a Railway Station. CHARLES LEE and SON, Royal Vineyard Nursery, Hammersmith, S.W.

WANTED, BAMBOO CANES, of sizes imported, fit for Staking Plants. State price, size, and lengths, to CHARLES LEE and SON, Royal Vineyard Nursery Hammersmith, S.W.

New Broccoli.
HARRISON'S DWARF LATE.—This splendid kind is fully described on page 122 of this paper, with testimonials of the value. Price 1s. 6d. per packet. HARRISON AND SONS, Seed Growers, Leicester.

SYMPHYTUM ASPERIMUM (Prickly Comfrey).—Whole Roots Purchased at per cwt, after examination. State price delivered at Railway Station. F. CHRISTY AND SONS, Finchchurch Street, E.C.

W. THOMPSON, SEEDSMAN, Tavern Street, Ipswich, begs to announce to Amateurs that his **FLOWER SEED CATALOGUE** for the present season is now ready, and may be had gratis on post-office application.

LARCH, SPRUCE, and SCOTCH FIR, 2 to 3 feet; also a great variety of excellent strong TREES and SHRUBS suitable for New Parks. W. JARVIS and CO., Nurseries, Bedale.

LARCH, 2 to 3, and 3 to 4 feet, extra fine; English OAK, strong, 2½ to 4½ feet; SYCAMORE, 2½ to 3½ feet; Silver FIR, 1½ foot. Price on application. W. HALSTEAD, The Nurseries, Lancaster.

Special Catalogue of Fruit Trees and Roses.
THE DESCRIPTIVE and ILLUSTRATED CATALOGUE OF FRUITS (by Thomas Rivers) is now ready, also CATALOGUE of Select Roses. Post-free on application. THOMAS RIVERS and SON, Sawbridgeworth, Herts.

Roses, Fruit Trees, Evergreens, &c.
WILLIAM FLETCHER'S CATALOGUE is now ready, and may be had post-free on application. The Nursery Stock generally is very fine, healthy, and well-rooted. See Wardens' Catalogue, Barbican, E.C. Otterburn Nurseries, Chertsey, Surrey.

ROSES, Standard, fine plants, 65s. per 100; 4 to 5 QUICK, strong, 22s. 6d. per 1000; OAK, 4 to 5; 2½, 1/2 D. 1/2 feet, 1/2 per 1000. J. JACKSON, Nursery, Kidderminster.

To the Trade.
STANDARD and DWARF ROSES of the leading sorts—splendid FLORA, so better in the Trade, well-tipped, and also—about 2000 DWARF, guaranteed true to name. For lowest prices apply to GRANT AND CO., Park Nursery, Portadown, Ireland.

NUTTING and SONS' WHOLESALE GARDEN and FLOWER SEED CATALOGUE is now published. A copy has been sent to their Friends; any one not having received it, an application another shall be sent. See Wardens' Catalogue, Barbican, E.C.

Winter-flowering Orchids.
CALANTHE VESTITA RUBRA OCULATA. For price per dozen or 100 apply to S. WOOLLEY, Nurseryman, Chesham, Herts.

Special Offer.—Garibaldi Strawberry, true COLE begs to offer Sir Plants of the above splendid forcing variety, at 1s. 6d. per dozen, or 7s. 6d. per 100. The Trade supplied. Promenade Gardens, Safford Coldfield, near Birmingham.

SNOWFLAKE POTATOS.—Warranted true and free from disease, in cwt. bags, 4s. 6d. bag free, and carriage paid to any Railway Station in England or receipt of Post-office order for cash. See WARDEN'S CATALOGUE, Barbican, E.C. DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

DICK RADCLIFFE and CO'S WHOLESALE CATALOGUE OF SEEDS and SUNDRIES has been posted to all countries. Kindly write if not received. Everything in the Trade supplied. 120 and 129, High Street, London, W.C.

Now Ready.
CHARLES TURNER'S Descriptive CATALOGUE OF SEEDS. Post-free on application.

The Finest Dwarf Marrow Pea is TURNER'S D.R. MACLEAN See CATALOGUE, now ready.

New Early Prolific Pea.
ALLA CROMPION Full description in CATALOGUE, now ready.

Schoolmaster.
FINEST ROSTER POTATO. Description, with testimonials, in CATALOGUE, now ready. CHARLES TURNER, The Royal Nurseries, Slough.

Gentlemen's gardeners, Amateurs, and Others
GARDEN POTS of best quality, are requested to send their orders to J. MATTHEWS, Royal Pottery, Weston-super-Mare.

Notice of Removal.
HEREMAN and MORTON, HOTHOUSE BUILDERS and HOT-WATER ENGINEERS, from 14, Titchborne Street, 9, 2, Grosvenor Street, Regent's Park, London, N.W. Estimates and Price Lists on application.

The "Gardeners' Chronicle" in America.
THE ANNUAL SUBSCRIPTION TO THE GARDENERS' CHRONICLE, including postage to the United States, is £2 10s 0d gold, to which add premium on gold for U.S. currency at the time, and 25 cents exchange—PAYABLE IN ADVANCE.

Agents:—Messrs. B. K. BLISS and SONS, Seed Merchants, 34, Barclay Street, New York; Messrs. M. COLE and J. DRAWER No. 1, Broadway, New York; Messrs. J. ALLEN, Columbia, Georgia; and Mr. C. H. MAROT, 814, Chestnut Street, Philadelphia; through whom Subscriptions may be sent.

Now Ready, in cloth, 16s. 6d., THE GARDENERS' CHRONICLE VOLUME FOR JULY to DECEMBER, 1876.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

CRYSTAL PALACE ARTIFICIAL FLOWER and FRUIT SHOW, March 3 to 27, 1877. Intending Exhibitors may obtain Schedules on application to the GENERAL MANAGER, Crystal Palace.

SPREADING HORTICULTURAL SHOW will be held on June 27 and 28. GEORGE KINGSTON, Secretary.

RICHMOND HORTICULTURAL SOCIETY.
President—H. S. H. THE DUKE OF TECK, G.C.B.
Under the Royal and Dispersed Patronage of—H. R. H. the Duchess of Cambridge; H. R. H. the Princess Mary of Cambridge; Duchesse of Teck; H. R. H. the Duc D'Annam, &c. THE THIRD EXHIBITION OF FRUIT, FLOWERS, FRUIT, VEGETABLES, DINNER TABLE DECORATIONS, and COTTAGERS' PRODUCTIONS, will be held at the Jubilee Beer Hall, Richmond Green, on FRIDAY, June 23. Schedules may be obtained of ALBERT CHANCELLOR, Hon. Sec. 7, King Street, Richmond, S.W.

WEST OF ENGLAND ROSE SHOW, Hereford.
THIS ANNUAL EXHIBITION OF ROSES is fixed to take place on **FRIDAY, July 6**, by order of the Committee. January 22, 1877.

INTERNATIONAL HORTICULTURAL EXHIBITION, 1877.
A GREAT INTERNATIONAL HORTICULTURAL EXHIBITION will be held at OLYMPIA on **THURSDAY, FRIDAY, and SATURDAY, September 6, 7, and 8,** when early 2,000 will be REFERRED FOR THE BEST FRUIT, FLOWERS, EXOTIC and NATIVE PLANTS, &c. SPECIAL PRIZES have also been promised; and as the SCHEDULE PRIZES will be issued in a few weeks, it is hoped that Gentlemen interested in the Advancement of Horticulture, and inclined to give SPECIAL PRIZES, will communicate with the Acting Secretary, in time to secure their appearance in the Schedule. A select number of Advertisements will also be inserted at 2s. 2s. per Page, 2s. 1s. per Half-page. Copies of Advertisements must be sent not later than February 10, to

Mr. JOHN MOUNSEY, Acting Secretary, Victoria Buildings, Lower Street, Carlisle.—Jan. 25.

ZUR BEACHTUNG.—Hiermit erlauben wir uns ergeucht anzuzeigen, dass der **VEREIN DEUTSCHER GARTNER IN LONDON**, mit Aufang dieses Monats die Vertheilung beginnt mit dem Heft "City Arns," Bridge Road, Hammersmith, am Fusse der H. Brücke, unweit der English Station, London, W. Die Copien der Anzeigen müssen bis zum **27. JANUAR, Abends 8½ Uhr**, wozu freudigst sinnliche deutsche Geortner, zur Zeit in London, eingeladen werden.—J. V.

SALES BY AUCTION.

Hayfield Nursery, London Road, St. Alban's, Herts. MESSRS. PROTHEROE AND MORRIS will sell by AUCTION... Mr. J. C. STEVENS will sell by AUCTION...

Knoeknott, near Sevenoaks, Kent. (About 2 miles from Halstead Station on the South-Eastern Railway.) MR. HODSOLL will sell by AUCTION...

Johnstone's St. Martin's Rhubarb. EARLEST and BEST in CULTIVATION For the Open Ground, has a splendid color and excellent for forcing... W.M. CUTBUSH and SON have for many years held one of the finest Stocks of SEEDS in the Trade...

Edgware, N.W. IMPORTANT CLEARANCE SALE OF VALUABLE NURSERY STOCK, comprising a great variety of Lawn Trees, including some splendid specimens of Picea Nordmanniana, Loxa, Grandiflora, &c.

To BE SOLD, TWO capital VINERIES, containing between 2,000 and 3,000 feet of Glass; good Dwellings-house.

DAISIES and strong healthy WALL-FLOWERS, &c., for sale on the 20th inst. Terms Cash, or would EXCHANGE for Value in Primulas, Cinerarias, Sparaxes, Cyclamens, Dandelions, Early Rose, or any other Early Flowering Plant.

MESSRS. PROTHEROE AND MORRIS will sell the above by AUCTION, on the Premises, the Whitechurch Rectory, Edgware, N.W., on SATURDAY, February 24, at 10 o'clock precisely.

To Nurserymen, Florists, &c. TO BE SOLD, TWO capital VINERIES, each 20 feet long, with Forcing and Boiler Houses, erected about nine years since by Messrs. Weeks & Co., of Chelsea.

W. FIELD, Tarvin Road Nursery, Chester, has for sale the following: TREE BOX, 3 feet 6 inches, 60s. per doz. ACUCUA JAPONICA, 1 to 1 1/2 foot, 25s. per doz.

MESSRS. PROTHEROE AND MORRIS are instructed to sell by AUCTION, on the Premises, the Exotic Nursery, Tooting, S.W., on THURSDAY, February 22, at 10 o'clock precisely.

To Nurserymen and Others. TO BE LET, the GOOD-WILL and Old-established BUSINESS of the late Mr. John Thomas, Nurseryman, Brecon, Apply to Mr. T. E. TREW, Ship Street, Brecon.

W. FIELD, Tarvin Road Nursery, Chester, has for sale the following: TREE BOX, 3 feet 6 inches, 60s. per doz. ACUCUA JAPONICA, 1 to 1 1/2 foot, 25s. per doz.

MR. J. C. STEVENS will sell by AUCTION, on the Premises and at 10 o'clock precisely.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION. - At a General Meeting of the Members of this Institution, held on January 18, for the purpose of ELECTING THREE PENSIIONERS on the Funds, the following was the result of the Ballot -

W. FIELD, Tarvin Road Nursery, Chester, has for sale the following: TREE BOX, 3 feet 6 inches, 60s. per doz. ACUCUA JAPONICA, 1 to 1 1/2 foot, 25s. per doz.

MR. J. C. STEVENS will sell by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'clock precisely.

CANDIDATES.

MONROE DUKE OF EDINBURGH COUNCIL. J. MONROE begs to inform the Trade, &c., that he has SOLD the ENTIRE STOCK of Seed of the above-named number 12.

MR. J. C. STEVENS will sell by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'clock precisely.

Table with 3 columns: Name, Age, Votes. Lists candidates for the Gardeners' Royal Benevolent Institution.

G. GARIBALDI STRAWBERRY. - This variety is the best of the kind. It is sent by the Fruit Committee of the Royal Horticultural Society on December 6. The Raiser can supply for cash strong plants at 5s. per dozen, or 10s. per dozen, for the Gardeners' Chronicle for Jan. 6, page 24.

MR. J. C. STEVENS will sell by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'clock precisely.

THE MEETING then declared JAMES GOSTLING, ELIZABETH AYRES, and EDWARD CUTLER, the greatest number of votes, duly ELECTED PENSIONERS of this Society. EDWARD CUTLER, Secretary, 1 Tavistock Row, W.C. - January 27, 1877.

SILVER FIR. - Fine clean growth and clean leaflets. Transplanted Silver Fir, 9 to 12 inches, stock per 1000; 13 to 18 inches, stock per 1000; 19 to 24 inches, stock per 1000. W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

MR. J. C. STEVENS will sell by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'clock precisely.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION. I WILL take this opportunity of thanking all who have given their names in favour of the AYRES, which has secured her Election. Number of Votes, 854. Royal Exotic Nursery, South Kensington, S.W.

MANETTI STOCKS, extra clean stout, fit for work this season, 30s. per 1000, 42s. 6d. per 1000. Dwarf Roses on Manetti, extra fine plants and first-class sorts, my selection, 30s. per 1000, 42s. 6d. per 1000. SEAKALE, strong, 60s. per 1000; if forced, 80s. per 1000. Fine Cash only with others - RICHARD LOCKE, Alexandria Nurseries and seed, Richmond, Hill, Surrey.

MR. J. C. STEVENS will sell by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'clock precisely.

PROTHEROE AND MORRIS, HORTICULTURAL MARKET GARDEN and ESTATE AGENT, 15, Abchurch Lane, E.C. 4, Gracechurch Street, City, E. and at Leytonstone, E. Monthly Horticultural Register had an Application.

JAMES HOLDER and ANTHONY MORRISON have a fine healthy Stock of the above to offer, at the following low prices: Cash, 1/2, 3/4, 5/8, per 1000 distinct sorts, hamper and packed, 60s. per 1000; if forced, 80s. per 1000. 12 dozen, in 48-pots, 1/2 per dozen, 60s. per 1000, basket and packing extra. Crown Nursery, Reading.

MR. J. C. STEVENS will sell by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'clock precisely.

SPANISH CHESTNUT, ASH, LARCH, and ALDER, stout, well-rooted, transplanted. - A large quantity to be sold at low prices. G. CHORLEY, Midhurst.

R. AND A. MORRISON LARCH, transplanted, 6 to 8 feet, at 25s. per 1000; 12 to 18 inches, 17s. 6d. per 1000. 19 to 24 inches, 22s. per 1000. F.R. SCOTCH, 9 to 18 inches, at 17s. 6d. per 1000. The Native SCOTCH FIR SEED, price per lb. or cwt. on application. Finefield Nurseries, Elgin.

MR. J. C. STEVENS will sell by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'clock precisely.

JAMES BIRD, NURSERYMAN, Downham, has to offer extra fine Standard MAYDUKE CHERRIES. Grape Vines. - Strong Fruiting and Planting Caneas. W.M. CUTBUSH and SON have a large Stock of the leading sorts, price on application. Highgate Nurseries, London, N., and Ennet, Herts.

VERBENAS, VERBENAS, VERBENAS. WILLIAM BADMAN offers Purple King, King, in single pots, 14s. per 100; or if turned out of pots, 10s. per 100. Good rooted Cuttings, 6s. per 100, 30s. per 1000, package included. Cemetery Nursery, Gravesend, S.E.

MR. J. C. STEVENS will sell by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'clock precisely.

LARGE EVERGREEN TREE FOR SCREENS. WILLIAM MAULE and SONS offers, for Norway SPRUCE and CEDRUS DEODARA, 20 to 25 feet high, well rooted, 10s. each, the latter 12s. 6d. The Nurseries, Bristol.

GREEN IVIES of Sorts in Six Kinds. ROBERT PARKER, having a Surplus Stock of fine Plants in pots of the above-named, will be pleased to dispose of them in quantities, in single lots, Names, sizes, and prices per dozen, 100, or 1000, will be given on application. Exotic Nursery, Tooting, Surrey, S.W.

MR. J. C. STEVENS will sell by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'clock precisely.

EDMUND PHILIP DIXON'S CATALOGUE OF NEW and CHOICE SEEDS is now ready for issue. It will be forwarded gratis and post-free on application. EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

ARECA BAUERI (Scarfathia robusta). - Of this rare species, one of the finest of Greenhouse Palms, a fine stock of young plants, in the hand, and offered at unprecedentedly low prices. - Nice young Plants, in single pots, 3s. per dozen. - 1000 seedlings, in store pots, 26s. per 1000. EARLY ORANGE, 10s. per 1000. JEAN NUYTENS VERSCHAFFELT, Leeleberg, Ghent, Belgium.

MR. J. C. STEVENS will sell by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'clock precisely.

TO THE TRADE and Others. PATERNOSERS VICTORIA POTATOS seed size, grown on the best Lincolnshire soil, in large or small quantities. Prices on application. CHESTER QUINCY, Potato Grower and Merchant, Peterborough.

SEED POTATOS to the Trade. H. AND F. SHARPE'S Special Priced List of HOME-GROWN GARDEN and AGRICULTURAL SEEDS of 2876 growth, is now ready, and may be had on application. Seed Growing Establishment, Wisbech.

MR. J. C. STEVENS will sell by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'clock precisely.

SPECIMEN PLANTS for Sale, consisting of FERNS, ALLAMANDAS, MARANTAS, &c. For full particulars apply, to WILLIAM PAYNE, Nurseryman, Covent Garden House, Taverton.

SEED POTATOS in several excellent Garden varieties, grown specially for Seed. List, with prices, on application, on application. A change of Seed always advantageous. W. P. LAIRD AND SINCLAIR, Seed Merchants, Dundee, N.B.

MR. J. C. STEVENS will sell by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'clock precisely.

THE BEST CUCUMBER IN CULTIVATION. SUTTON'S DUKE OF CONNAUGHT. From Mr. ROBERT DRAKER, Gt. to the Right Hon. Earl Vane, "Your seed, sown on the 21st of October, Duke of Connaught, is the best kind I ever saw; suitable for exhibition." Price, 3s. 6d. per packet. SUTTON AND SONS, The Queen's Seedmen, Reading.

TO FRUIT and Fish Salesmen, &c. GREEN PARSLEY. - Five Tons to be offered. Parties wishing to purchase the same, to be delivered in London, to apply to JOHN SALSBUURY, Market Gardener, King's Newton near Derby.

ENGLISH FURZE, 1-yr. old, fine, 5s.; 2-yr. extra fine, 6s.; 3-yr. extra fine, 7s. 6d. per 1000. MAHONIA AQUIFOLIA, extra handsomely grown, 10s. per 1000. WILLIAM MAULE AND SONS, The Nurseries, Bristol.

DICK RADCLYFFE & CO.,
SEED MERCHANTS,
GARDEN FURNISHERS
And Horticultural Decorators.



Complete Collections of Vegetable Seeds.
No. 1.—Suitable for a very Large Garden £3 3 0
No. 2.—Suitable for a Large Garden 2 2 0
No. 3.—Suitable for a Medium-sized Garden 1 1 0
No. 4.—Suitable for a Small Garden 0 10 6
Carriage free as per terms of Catalogue.

Choice Collections of Flower Seeds.
Containing only popular kinds of easy growth, which will make a pretty and effective show during the summer months.
5s. 12s. 6d., 21s., 31s. 6d. and 42s. each.
All Flower Seeds sent post-free.

For full Detailed List of Collections, see D. R. & Co.'s Illustrated Flower, Vegetable, Agricultural and Garden Requisite CATALOGUE, sent gratis and post free on application to

DICK RADCLYFFE & CO.,
128 and 129, HIGH HOLBORN, LONDON.



RICHARD SMITH'S LIST
of Evergreen and Deciduous Shrubs, Rhododendrons, Standard Ornamental Trees, Climbing and Twining Plants, with their Generic, Specific, and English Names, Native Country, Height, Time of Flowering, Colour, &c., and General Remarks.

RICHARD SMITH'S LIST
of Roses, containing all the best of the new and old varieties, arranged in their several sections, and fully described as to their Shapes, Colours, and Adaptations; with ample instructions as to their Treatment and Prizes.

RICHARD SMITH'S LIST
of Herbaceous and Alpine Plants, with their Scientific and English Names, Height, Colour, Time of Flowering, Price, &c.

RICHARD SMITH'S LIST
of all the Evergreen Fir Tribe suitable for Britain, giving Size, Price, Popular and Botanical Names, Derivations, Description, Form, Colour, Foliage, Growth, Timber, Use in Arts, Native Country, and Size, here, Situation, Soil and other information, with Copious Index of their Synonyms. Free by post for six stamps.



CRANSTON'S NURSERIES,
KING'S ACRE, near HERFORD.

ESTABLISHED 1785.
SPECIALITIES.
ROSES, FRUIT TREES,
CONIFERS.

Descriptive Priced Lists on application.

Vegetable & Flower Seeds
Seed-Potatoes, Tools &c
Best quality. Carriage free
Priced Catalogue post free
James Dickson & Sons
Seed Growers &c
108 Eastgate St. Chester.

NEW SOBRALIA AND IMPORTED CŒLOGYNES.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 1, at half-past 12 o'clock precisely, some fine Plants of the NEW SOBRALIA CATTLEYA, which was fully described by Prof. Reichenbach in the *Gardener's Chronicle* of Jan. 20, 1877, p. 72. Unlike most of the ordinary Sobralias, this species has large thick flowers of a firm fleshy texture, the sepals are purplish brown, with rich rosy-purple lip; instead of the flowers being borne singly, they are produced on stout spikes, each with six or seven flowers, two or three on each spike being expanded at the same time; from which it will be seen what a remarkable Sobralia this is. The plants are good, and just showing strong breaks. Also an importation of the rare CŒLOGYNE GLANDULOSA, C. CORRUGATA, C. ODORATISSIMA, and an unnamed Cœlogyne, probably new; also an importation of the rare DENDROBIUM ALBUM, which Wight, in his *Icones Plantarum Indiæ Orientalis*, describes thus:—"This is one of the handsomest of the genus I have yet met with; large pure white flowers." Also some imported plants of the rare ACANTHOPHIPIUM BICOLOR; this Orchid gives flowers of large size, bright yellow and scarlet. Also some good plants of the exceedingly chaste and beautiful NEW SOBRALIA VIRGINALIS; this has large pure white flowers, with rich golden throat; the plants are showing strong breaks. At the same time will be sold several plants of ODONTOGLOSSUM CRISPIUM (Alexandre), O. VEXILLARIUM, and various other Orchids.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

VALUABLE LILIES.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 8, at half-past 12 o'clock precisely, an Importation of good Bulbs of the beautiful LILIUM NEILGHERRENSE. The white flowers of this magnificent Lily are deliciously fragrant, and of great substance; it bears several flowers on a stem, each flower nearly a foot long. Also some excellent Bulbs of the following new varieties of Liliium neilgherrense, viz.:-

- LILIUM NEILGHERRENSE ROSEUM—the exterior of the flower tubes of this variety is pink, the interior white.
- LILIUM NEILGHERRENSE FLAVUM—a handsome light yellow-coloured form of this charming Lily.
- LILIUM NEILGHERRENSE TUBIFLORUM—a magnificent pure white Lily, with very long flowers; figured in Wight's *Icones Plantarum Indiæ Orientalis*.
- LILIUM NEILGHERRENSE TUBIFLORUM LUTEUM—a very handsome yellow-flowered variety of tubiflorum. And some

Splendid flowering Bulbs of other choice LILIES, including BLOOMERIANUM OCELLATUM, PURPUREUM, HUMBOLDTII, GIGANTEUM, PARDALINUM, PARVUM, CALIFORNICUM, and WALLICHIANUM; also a quantity of choice Bulbs and Tubers from California, including CALOCHORTUS, CYCLOBOTHRAS, BRODIEÆ, TRITELIAS, CALLIPHORAS, ERYTHRONIUM, BLOOMERIAS, &c.; and some fine blooming Bulbs of the handsome CRINUM BRACHYNEMA, C. AUSTRALE, C. PRATENSE CANALICULATUM, tuberous-rooted BEGONIAS, PANCRATIUM, AMARYLLIS, North American CYPRIPEDIUMS, with a variety of other Bulbs and Tubers.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

GROS GUILLAUME GRAPE

(Roberts' Variety),
THE LARGEST BLACK GRAPE IN CULTIVATION.

W. TAIT & Co.,

SEED MERCHANTS AND NURSERYMEN,
45, CAPEL STREET, DUBLIN.

The entire Stock of this extraordinary Grape has been placed in our hands for distribution. It is a strong growing Vine, good constitution, free from shanking, will keep till spring, and under ordinary management will produce splendidly formed bunches, and well coloured, up to 25 lb. At the winter show of the Royal Horticultural Society of Ireland on November 11, 1875, three bunches of this Grape were exhibited by the introducer, Mr. Roberts, the well-known Grape-grower, of Charleville Forest, Tullamore, which obtained the First Prize, and were awarded the Society's Medal for special and meritorious productions, and it is scarcely necessary to say more than that these bunches, which weighed collectively over 45 lb., were the admiration of everybody who saw them at the Show, and they were seen and admired by many others who saw them growing on the Vine.

This is quite a sensational Vine, distinct from the ordinary kinds of Gros Guillaume and of Barbarossa (with which it is said the latter is identical), inasmuch as it will produce bunches double the weight of those varieties; it is a good bearer, requires no coaxing or high manuring. The Vine which produced those extraordinary and marvellously well finished bunches is growing in nothing but pure loam.

Eyes, or Scions, from fine wood, well ripened, extra size 10s. 6d. each.
Second size do. 7s. 6d. each.

Orders will be executed in strict rotation. To secure strongest Eyes or Scions, early application is necessary.

W. TAIT & CO.,
SEED AND NURSERY ESTABLISHMENT,
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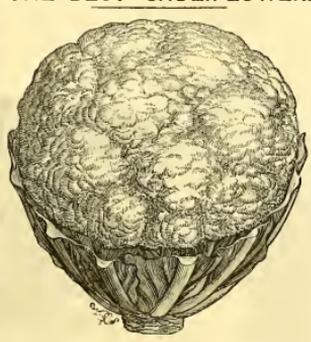


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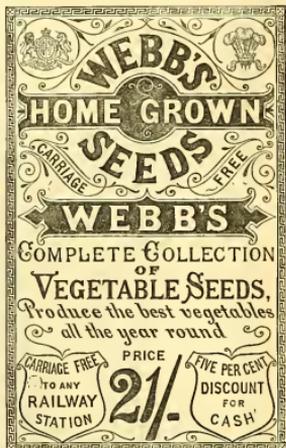
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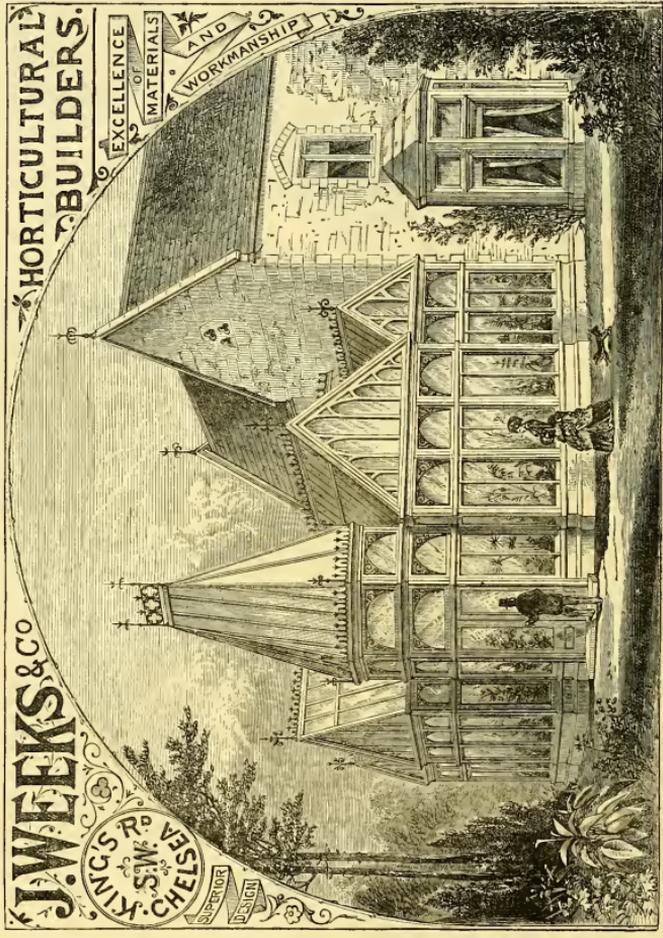
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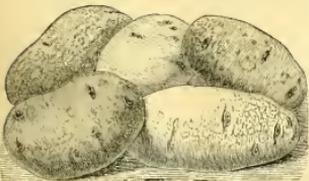
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SATURDAY, JANUARY 27, 1877.

WALKING-STICKS.

IF we were to pick out hap-hazard any one commodity and trace its history from the earliest stage to the condition in which we find it, we should no doubt find that history one of great interest and instruction, for it is a fact that most of us know but little of the manufacture of our principal articles of trade, notwithstanding that many of them are directly derived from sources with which we are specially interested, namely, the vegetable kingdom. This is particularly the case with a dealer in walking-sticks. These articles, with umbrellas, now form a distinct trade, and the wares, as exhibited by the retail dealers, are often most attractive, not only on account of the variety of the sticks themselves, but also on account of their elaborate manipulation, artistic and inartistic. "The Natural History of a Walking-Stick" would form a subject upon which even a book might be written, for we might trace the origin and use of the walking-stick from the very earliest period—how that it was originally a staff, and was used even by the mediæval pilgrims as now by Swiss tourists; how the upper part was often hollow, forming a receptacle for religious relics and snuff or perfume; how the first head of Saffron is said to have been secretly brought from Greece in the hollow head of a pilgrim's staff, and afterwards largely cultivated at Saffron Walden, which place derived its name from the above fact; and further, how that the silkworm was introduced to Europe in a similar manner.

Though the walking-stick of the present day can trace its ancestry to the staff, the bulk of the modern sticks are in no way comparable to their ancestors, inasmuch as in former times they were really of use to relieve the limbs to some extent of the weight of the body, and so were of a tolerable thickness, rigidity, and strength; at the present time they are chiefly carried for ornament, or on account of a prevailing fashion, though indeed the fashion of carrying a stick, whether for use or ornament, has descended through ages, with more or less change. Many old gentlemen still call their walking-stick a staff, and are as particular about its style and mounting as they are about their dress.

Notwithstanding all this a walking-stick, unlike an umbrella, would seem to be an article that would never wear out, and given the chance of accidents by loss or breakage would apparently last a lifetime, or even be passed from one generation to another, which in reality is not an uncommon occurrence. Hence, then, does it come that the manufacture of walking-sticks and umbrella-sticks is one of the great trades of London? Thousands upon thousands and tons upon tons of sticks are cut not only in this country but imported from all parts of the world, simply and solely for use as walking-sticks. From the East and West Indies, China, Java, and Singapore, immense quantities are constantly being brought. From the latter countries come all the varieties of Bamboo known in trade by distinct names, such as the "dog-head" cane, from the fact that a portion of the rhizome is left attached to each stick, which, having two protuberances like ears, gives it a resemblance to a dog's head. These trade names, though ordinarily those under which they are imported, are very often quite unknown to botanists, the names being

evidently more adapted to convey to the popular mind the appearance of the sticks than as indicating their proper scientific classification. Though so many varieties of Bamboo are constantly imported (mostly from China) and very largely used, little or nothing is known as to the species producing them. A few years since a very beautiful stick was introduced from Borneo under the name of Rajah cane; the hardness of this stick, together with its beautiful markings of dark lines, caused it to at once become popular. The name "Rajah" is said to be derived from the fact of the duties paid for its export being claimed by the Rajah of Borneo. Though enormous quantities of this stick were, and, indeed, are still, being imported, nothing is known as to its botanical origin further than that it is the stem of a Palm.

Another favourite stick is that of the Pimento, or Allspice (*Pimenta vulgaris*). This is more particularly adapted for umbrella-sticks, owing to its extreme rigidity and strength and its non-liability to warp. These sticks are imported from the West Indies, often in tolerably thick billets, and with a crook or bend, from which a knob or hook may be formed. From the West Indies also come many of the Orange and Lemon sticks, perhaps the most highly prized of all natural sticks, that is, of sticks with the bark on. These are valued on account of the fine white lines abundantly seen on the bark, especially after being polished; they are, moreover, suitable both for walking-sticks and umbrellas, the bark being removed and the stick smoothed for the latter purpose. Though there is something in common between the Orange and Lemon sticks, the first may easily be known by its beautiful green bark, with fine white longitudinal markings, while the Lemon can be detected by its symmetrical proportions and the regularity and prominence of its knots. In these, as in all other sticks, the quality varies very considerably; though they can be procured at almost any stick-dealer's, choice specimens are rare, and realise large prices.

The well-known Malacca cane is also a very choice stick; it is the produce of *Calamus scipionum*, and does not come from Malacca, but is imported from Siak, on the opposite coast of Sumatra. These canes are valued according to the length of their internodes; a perfect stick of the required length taken from between the nodes fetching a very high price, sometimes, indeed, as much as ten guineas, but this, of course, depends a great deal on the style of mounting. A genuine or perfect Malacca cane should be the natural stick, properly tapering, and simply cleaned and polished; quantities of those, however, seen in the shops have had their nodes rubbed down to make them appear continuous, after which they are stained or painted, and finally polished, and when so finished they are extremely difficult, except to a practised eye, to detect from a natural Malacca cane.

Of late years an immense number and variety of sticks have been imported into this country from Algeria, where many kinds are systematically cultivated for commercial purposes. From this country are chiefly imported the sticks of the Pomegranate (*Punica granatum*), Olive (*Olea europæa*) Myrtle (*Myrtus communis*); the petioles of the Date Palm (*Phoenix dactylifera*), and latterly the small branches of a species of Eucalyptus, probably *E. globulus*. All these, more especially the Olive and the Myrtle, have been and are still in great request.

Such, then, are some of the sticks of foreign produce which constantly and in large numbers find their way into the English market. Besides these we have many kinds of British-grown sticks, the principal of which are Ash, Oak, Holly, Blackthorn, Cherry, Maple, Hazel, Crab, and, last but not least, the Box and common Furze, added to which the Channel Islands supply us with the well-known Cabbage-stalks. *J. R. Jackson, Kew.*

(To be continued.)

WINTER DECORATIVE PLANTS.

In addition to the many flowering plants grown for decorative purposes at mid-winter, Ferns play an important part, and especially the Maidenhair Fern, *A. cuneatum*, and the elegant *A. gracillimum*. At the Royal Nursery, Ascot, Messrs. Standish & Co. grow these two in immense quantities, and at Christmas there could be seen two long span-roofed houses quite filled with some thousand plants of *A. cuneatum*, the great majority in 32-pots, with larger examples in pots an increased size. Every plant was a perfect specimen in itself, so admirably was it grown. The ferns are not marketed, but simply grown for the florists, and they are constantly being sent to London. The ripened developed fronds are those gathered, as they stand much better and last longer than the young ones. They are gathered and carefully laid in baskets, and reach their destination without taking harm. *A. gracillimum* is wonderfully well grown at Ascot. There are those who term it a "miffy grower," and say they cannot do anything with it, but at Ascot it is the very perfection of vigour, and if anything more robust than *A. cuneatum*. It is a very fast grower.

A large number of plants had been raised from seed, and it is curious to note that a few of the very young stage the pinnae were as large as those of *A. cuneatum*; but when it gets into size, the young fronds take on that small elegant form peculiar to it. So rapidly do the plants come on from seedlings, that there were admirable specimens in 48 pots that were in the seed-pans a year ago. Some extra large specimens showed off the character of the species to the very best advantage. It may be that failures with this charming Fern arise from the use of too much peat in the soil: at Ascot no peat whatever is used. The soil is a sandy, turfy loam, and a little horse-manure, and strong plants have a little weak manure-water once a week, and rather more in summer-time. The experience gained at Ascot teaches that *A. gracillimum* will not grow in peat. The cuneatum is increased by dividing the plants when they break into growth after being cut over for the London season. The plants, as soon as they begin to be active, are cut to pieces, and potted in 32-pots.

Asparagus decumbens is much grown for table decoration at Ascot; its long handsome shoots are very acceptable for clothing the stems of tall eperges. This species was growing in 48-pots, and a line of plants along the front of a stage of Camellias, &c., hung down like a fringe. The plant puts forth pseudobulbs like an Orchid, and is nearly deciduous in summer, but most ornamental in winter.

GREENHOUSE PLANTS.

THEIR CULTURE AND MANAGEMENT.

BIGNONIAS.—The different species here treated of are climbing or twining plants, and are suitable for greenhouse or conservatory decoration as roof climbers, covering back walls, or growing round pillars. So managed their natural habit is seen to advantage, as a portion of their shoots can be allowed to hang in graceful festoons, and even when not in flower, grow in this way they are very effective. They can be so arranged as to drape the wood or ironwork of the building in a manner to take off the objectionable straight lines without shutting out too much light from the general occupants of the house. This is a matter that cannot be too forcibly impressed upon those who have the charge of plant structures of this description—that where roof-climbers are allowed to form a complete thicket up to the glass, as a consequence they exclude the light from the plants that occupy the lower stages in a way that precludes the possibility of the latter doing more than drag out a miserable existence.

Roof-climbers have an elegance that cannot be imparted to ordinary trained pot specimens; but to allow the comparatively few plants that can be accommodated on a roof to monopolise the whole house, so as to render the cultivation of everything else attempted to be grown an impossibility is as great a mistake as can well be committed. In this as in most other things a medium course is the best; the roof of a conservatory can be sufficiently draped with climbers as to answer the purposes required, without making the body of the house a mere living sepulchre for the unfortunate plants placed therein. Subjects for furnishing the roof in this way can either have their roots kept confined in

pots proportionately large to the size of the plant, or, as is more usual, be planted out; the latter system has many advantages, not the least of which is that the plants will last much longer so treated, but the space thus apportioned to the roots should always be sufficiently confined to prevent the plants getting too rampant. Neither should plants intended for growing in this way ever be turned out in these prepared beds whilst they are very small, or in many cases unless naturally strong growers they do not do well, for the reason previously explained in connection with the management of conservatory cypresses, that the roots will not firmly take they cannot lay hold of the soil before it gets sour, in which case they rarely afterwards do satisfactorily; therefore if the plants are small it is generally better to grow them on in pots for a year, and afterwards to put them out.

Climbers are often grown for sale and kept with their roots confined in small pots until they get so stunted as to prevent their growing freely, consequently it is much the best to select such as are young and free in growth in preference to those that may be larger yet not in as good a condition. If of the usual size, in 6-inch pots, they should be repotted in April, giving them a 3-inch shift. All the kinds here treated of will succeed in a mixture of turfy loam, and fibrous peat in equal proportions, to which should be added enough sand to keep the whole porous; do not make the soil too fine, and pot moderately firm. In most cases it will be better to confine these Bignonias to a single stem until they have attained a considerable height, consequently they will not require the leading shoot stopping, but should be encouraged to extend in length, and for this purpose three or four long sticks should be inserted in each pot, round which the plants ought to be kept regularly trained, not allowing the shoots to twine about them in a way that they will be difficult to undo. Through the spring and summer encourage growth by syringing overhead, and every afternoon, and keeping the atmosphere moistened in very bright weather, during which a thin shade will assist them. When the roots get well hold of the soil give them plenty of water, and admit air freely, to keep the growth strong; towards the close of summer disperse with shade and the use of the syringe, so as to harden them up. Keep during the autumn and winter in an ordinary greenhouse temperature, with just enough water at the roots to maintain the soil in a medium state of moisture.

Before growth commences in the spring they should be turned out into the border wherein they are to be grown; this ought to be well drained with 5 or 6 inches of broken crocks or porous bricks, over which some fibrous material from the soil should be placed, so as to keep the latter from being washed down into the drainage; in this put 10 or 12 inches of good soil, consisting of a mixture of peat, loam, and sand similar to that already advised in planting a portion of the roots. Such as are at the outside of the ball should be loosened and spread out in the border; in this way they will soon begin to grow and occupy it. Syringe them regularly overhead every day all through the growing season; on a free use of the syringe in this way a good deal of success depends, as by so doing insects are kept down. All the after-treatment required to be kept the shoots trained to the wires that are to support them, and the space between them intended to fill is covered, regularly use the knife, so as to keep them in due bounds. In time the soil becomes exhausted; to remedy this, a couple of inches should be taken off the surface each spring without injuring the roots, and its place supplied by new soil, to farther assist which, liberal applications of manure-water may be given them during the growing season.

The following varieties are deserving of cultivation:—

B. capensis (*syn.* with *Tecoma capensis*) has orange-coloured flowers, produced in summer. It is a native of the Cape of Good Hope.

B. capreolata: flowers scarlet, blooms in June and following months. It comes from North America.

B. grandiflora: flowers from July to September. This fine variety comes from Caracas.

B. speciosa: a pink-flowered plant from Uruguay, blooms in the spring.

B. Tweediana: a yellow-bloomed kind, that flowers in the summer. It is from Buenos Ayres.

B. venusta: a once-colored variety, blooms in the autumn. A native of South America.

B. (Tecoma) jasminoides: a handsome pink-flowered species, from Moreton Bay.

Insects.—Red-spider will live upon them, but must be kept under by a free use of the syringe. Should be kept under by a free use of the syringe. Should be kept under by a free use of sponge and brush. *T. Barnes.*

GARRYA ELLIPTICA.

AMONG HARDY ornamental shrubs few surpass the *Garrya elliptica*, which is just now clothed with its long pendulous racemes of flowers, that hang from the tips of the branches in the greatest profusion. In form and appearance these greatly resemble the catkins of the Hazel or Filbert, but they are considerably larger and much heavier, and being looked up as they are by such dark rich foliage, and flowering at this season, when all else is bare and desolate, they produce a striking effect, and command admiration. In habit and growth the plant is much like the evergreen Oak, except that it is more free and open, and has leaves considerably larger and more elliptic in shape. Considering its great beauty and the length of time it has been introduced, it is very remarkable that it appears so little known, for it is a plant one seldom meets with except in very extensive collections. This is much to be regretted, as it is well adapted for any of the many uses to which shrubs are generally put. It, however, sheds off to the greatest advantage when trained up tiers or buttresses to walls, or when planted at equal distances on the latter to form panels to be filled in with other plants of distinct character. In positions of this kind they are singularly attractive, as the whole of their flowers are thrown out clear of the foliage, where they are moved by every passing breeze, and exhibit themselves in the most graceful manner possible.

It is a shrub that will bear the knife well, and may be pruned hard in every season, but this should be done directly the bloom fades, or the plant will not have time to break again and ripen the young growth, without which it would not flower again the following winter. Those we have are spurred close back any time in April, so as to confine them to their present size, and when so treated they never fail to produce an abundance of bloom from the top to the bottom, in which condition it is impossible to imagine anything more ornamental in the plant way at this season of the year. The female variety appears to be even more scarce than the male, as I note in a recent issue of the *Gardener's Chronicle* an inquiry from a correspondent as to whether it is likely the plant can be obtained, and as it is said to fruit freely, it would form a most suitable companion to the other, and be an object of much interest, as well as furnishing a supply of seed from which to raise others.

Their propagation is, however, by no means difficult, as I have raised many from layers, and I have no doubt but they would strike readily from cuttings if put in at the proper season, which for most evergreens is about the middle of September—a time when they soon form a callus, and emit roots the following spring. If propagated in this way, it is necessary to put them in a sheltered situation, where they would be safe from cold cutting winds, and not exposed to the fall effects of severe frosts, as they are not so hardy as Laurel or Aucuba, and being of a more firm woody nature, have less sap to keep them alive. Layers may be put in at any time, and all that is requisite with these is to select the best of the lower branches, and bury them under some sharp sandy soil, of from 4 to 6 inches in depth, leaving out all the ends of the shoots, which in the course of a year or so will form so many plants. I have just been pleasuring to myself what exquisite looking evergreen edgings *Garrya elliptica* would form, and how beautiful it would almost every twig laden with the pendulous inflorescence with which they are clothed nearly the whole of the winter.

As it is a plant that stands cutting so well and may therefore be kept at any form or shape, no living screen could be all compare with it when used for such a purpose. Pruned and trained as a pyramid, to plant in conspicuous places on lawns or other positions, they have a most graceful effect, or left pretty much to themselves in the shrubbery they are sure to attract notice, and, in the rich garb they assume, assert their superiority over most of their competitors as decorative plants. The wet mild winter has suited them admirably, and I have never seen them in finer condition or better clothed with flowers—the result, no doubt, of the fine dry autumn we had, which was so favourable for ripening the wood of all our trees and shrubs—a blessing that will be shared in by all during the ensuing summer should we but get a favourable spring to set the blossoms, with the buds for producing which all kinds of trees are now bristling, but fear to rush forward a state of escape unless we see a check by a change in the weather. J. S.

BOTTOM HEAT WITHOUT COST.

THIS will no doubt be welcomed as a boon by many cultivators. For there can hardly be a doubt that one chief reason why bottom-heat has often been disparaged or derided arises from its cost. Whether generated from below or sent down from above, bottom-heat costs much in labour and material. The few examples examined of borders heated by something like a forest of hot-water pipes, however successful, assuredly presented a vivid illustration of the expensiveness of the heat thus provided; and banks of fermenting material also cost a good deal to move to and fro, and be kept warm enough for service when used as a source of bottom-heat. It must also be admitted that there is difficulty as well as danger in depending on the erratic irregularity of fermenting materials as a source of bottom-heat. The heat rises and falls at times in the most irregular and unexpected manner: when most is needed there is least—when least, most. Even the most skillful in these matters, cannot regulate a hotbed as they best stoke a fire. Only a short time ago, one of the worst gardeners told me of mishaps of this kind that lost him a crop of Grapes, and impaired the health of fine young Vines for a year or two. A bed of spent-looking material was renewed with a truckload of London dung: the latter went off almost like a charge of gunpowder, and before the violent character of the decomposition was discovered every root within a foot of the surface was destroyed. The mass when moved was so hot that the men could not stand upon it, and it smelt as if the dung had been saturated with some mineral oils. So offensive as well as hot was the whole mass, that it was burned up, as it was considered unfit for manure. No doubt this was an exceptional case, but it illustrates in a striking manner the danger (similar in kind, though less in degree) to which cultivators dependent on fermenting materials for bottom-heat are daily exposed.

No doubt hot water, judiciously arranged and wisely used, reduces the danger of bottom-heat to a minimum, and regulates its amount with almost mathematical precision. But every real advance in safety and exactness enhances the cost, and it would be quite impossible to produce bottom-heat without cost for horticultural purposes by means of hot water either in pipes, tanks, open gutters, or by any other manner or mode of distribution. Neither do I promise this boon by means of limekiln-heat. That system has done all I stated I saw it do, and probably more, and "I bate not a jot of heat or hope" of its past and present doings and future achievements. But I am not about to advocate the warming of Vine borders with limekilns, nor the vineries or Pine stoves themselves with hot-water boilers set astride their top or sunk into their hot, dusty throats. All that may be practicable enough, but my object now is quite different. In promising bottom-heat without cost, it may be wise to pause and inquire how comes it that bottom-heat is wanted. Nature's law is that terrestrial and celestial temperatures should run a sort of neck-and-neck race for supremacy or equality. As a matter of fact the two often run a dead heat: at other times and seasons the one may be slightly in advance of the other, but these two are ever struggling for an equilibrium of temperature. The earth and air exchange solar heat, and divide it between them; to do so, however, with effect and on anything like fair principles of reciprocity, the one must have free access to the other. Nature never attempts to shut out atmospheric heat from the earth, nor terrestrial heat from the air. The wisdom of cultivators, in devising means by which to place the roots of such plants as Vines, for instance, in a colder medium than their tops, would seem perfect and unique folly to Nature. That folly would seem to Nature to blossom into fatuity, if after doing so efforts were made to warm cold borders outside, when they might have been kept sufficiently warm without cost by simply making them inside. Hence our simple recipe for bottom-heat without cost is to place the roots of all plants in the same structures in which they are grown. The roots will be kept about the same average temperature as the tops, and this will be found sufficient bottom-heat for Vines and nearly all other plants.

On this point I am glad to endorse the views of such a distinguished Grape and Melon grower as Mr.

Widmirth. I also agree with his condemnation of half-and-half borders. It is difficult to conceive how this great source of bottom-heat, the ground-floor of vineries and other houses, has so seldom been utilised. Anywhere, almost anywhere, outside has been preferred to the inside. And yet the floors of vineries afford ample space for borders. No doubt they are often washed into mud or sodden into sores, but all that is readily altered, and no one can contend that as good borders may not be as easily formed and kept rich and good inside as out. They are also far more under control. Heat is provided for them by the operation of natural laws, that cost nothing to enforce. The supply of water may be adjusted at pleasure, food may be given or withheld as wanted, drainage and aeration are more easily managed on inside borders than out. More, inside borders are helpful to the tops; their surfaces are better evaporators of moisture and gaseous food than shelves, pipes, floors, or walls. Nothing seems so grateful or helpful to leaf and stem as the raw loose surface of freshly moved rich soil, such as good Vine borders are made of.

Vines ought to have bottom-heat, in fact they will not thrive without it. Late Vines planted outside have their roots sufficiently warmed by the direct solar rays, and the contact of warm air. Early Vines—that is, all that are expected to ripen their fruit before May or June, or early in July—may have sufficient bottom-heat without cost by simply growing them wholly in borders inside the houses in which the tops are grown. If any Vine-grower, in any way valid reason, or just cause or impediment, why Vines will not do as well or better in inside borders than out, perhaps he will now be good enough to declare it, or for ever after held his peace, and grow his early Vines in inside borders from this time forth, and thus obtain his bottom-heat for nothing. D. T. Fish.

P.S.—Since writing the above I observe that Mr. Henderson, one of the oldest and best Grape growers, objects to inside borders, on the ground that they are mostly faulty, as is proved by the fact that the roots are always trying to get outside. But such objections are readily answered. To contend that outside borders are *per se* better than inside, is really to assert that the climate of England is more suitable for Vine roots than the artificial climate of our vineries. All beyond this is matter of making and management; and if inside borders fall from faults of either, the fault is wholly the cultivator's, for the borders are wholly under his control. As to the roots trying to get out, that is a matter of solar attraction, as Mr. Henderson will find if he makes an outside Vine border on the north side of the vinery—the outside roots will show an equally strong tendency to come in. Besides, roots will generally find and hug walls very closely, and hence their proximity to them is no sure proof that they are trying to get either out or in, but rather that they find it good to be there.

New Garden Plants.

DENDROBIUM PETRI, n. sp.*

This is a rather promising, neat Dendrocarye. Imagine a reduced D. Farmeri, with one or two upright racemes of white flowers and very small bracts. It grows to the height of more than a foot, and its shining stems, as well as the small leaves and racemes, would make a good effect in a dense mass in the eyes of those Orchidists of a refined taste who think white an elegant colour, and preferable to the bright colours of the Poppy or Sunflower. It may be compared with the Dendrobium Moorei of Darwin von Müller, which has much smaller flowers, and in which the lip, in lieu of being rhombiform, is ligulate-acute, with two angulate teeth before the base. There is a peculiar, nearly square callus between the teeth, described as "raised lines." Our species is probably a Polynesian discovery of the zealous traveller, Mr. Peter Veitch, to whom it is dedicated, and who has sent it to the Chelsea nursery. H. G. Rehb, J.

* *Dendrobium (Dendrocarye) Petri*, n. sp. — Caulibus acutis superne viximatis, internodiis, trifloris, liliaceis, oblongis acutis, imbricatis; racemo solitario tunc racemis brevibus erectis glaberrimis; bracteis ovatis, mucronatis, mucronibus perianthii feracibus, quatuordecim partem, acutis; sepalis ligulatis, acutis, sepalo medio oblongo acuto; lobis perianthii; labello caudato rhombico utraque dimiduatione, collo ligulato a basi in ducibus, his retibus, semine basilico, utraque angulo; columna truncata. Flores albi. Polynesia (see Anahy). Petrus Veitch, qui locum nunciat. H. G. Rehb, J.

CURMERIA WALLISII, Mast.*

This is a new and beautiful stove foliage plant of the Aroid family, of tufted habit, with somewhat spreading stalked leaves of an ovate-oblong slightly oblique form, rounded at the base, acute at the apex, where they are somewhat abruptly prolonged into a short acumens. The margin of the leaf is entire and bordered throughout with a narrow band of white. The midrib is depressed upon the upper, prominent on the lower surface, and from both sides of it proceed in an arching manner to the margin a series of secondary nerves at short intervals, the intervals being filled with smaller nerves closely crowded together.

yellow blotches, the under surface is glaucous, pinkish beneath the green upper surface, paler beneath the yellow spots, the whole sprinkled with minute white dots.

The largest leaf seen by us measured about 6 inches in length (not including the stalk), by 3 in breadth, but we have little doubt that these dimensions will be exceeded as the plants increase in vigour. The leaf-stalks are channelled on the upper surface, and measure from 1-2 inches in length, half of that length being occupied by a sheathing base. We refer to the foot-note for the strictly technical characters of the inflorescence, but we may say that they are such as to induce us to place the present plant in the genus *Curmeria*, a genus founded in the *Illustration*

to *Curmeria picturata*. The three species may thus briefly be distinguished:—

C. picturata, Lind. et André, *Ill. Hort.* 1873, p. 45, t. 121.—Leaves on short stalks, cordate, with two rounded basal lobes, ovate, or ovate-oblong, pointed, marked along the midrib with a narrow silvery white band.

C. Roezlii, Mast. in *Gard. Chron.* 1874, p. 804, figs. 159, 160.—Leaves on long stalks, ovate-oblong, rounded or slightly tapering at the base, not cordate, tapering gradually at the apex, and with a few pale yellow scattered blotches on the upper surface.

C. Wallisii, Mast. *infra*.—Leaves on short stalks, slightly oblique, ovate-oblong, rounded and slightly tapering at the base, abruptly acuminate at

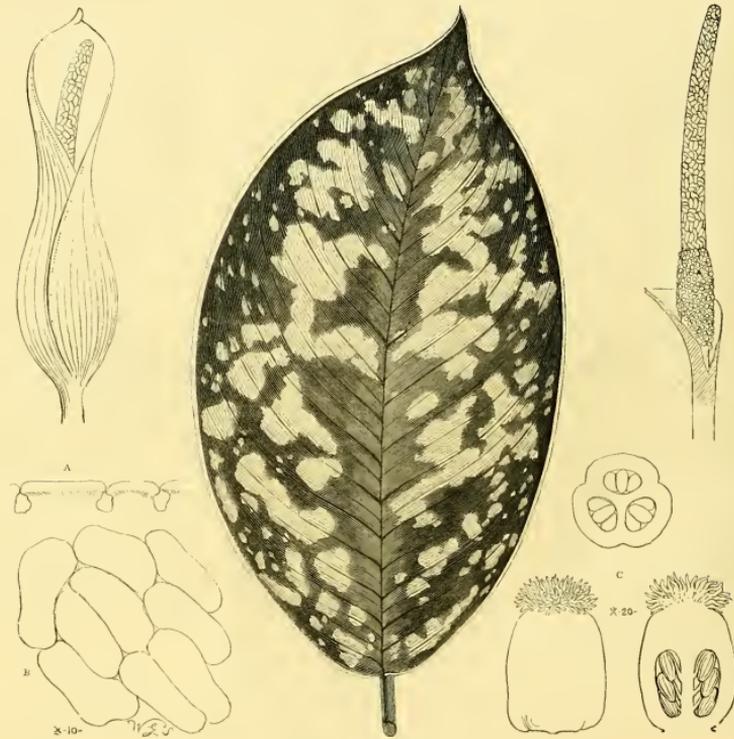


FIG. 16.—CURMERIA WALLISII. (SPATHE, SPADIX, AND LEAF, NAT. SIZE.)

A, B, Side and face of stamens, enlarged to diameters. C, Elevation and sections of ovary and stigma, enlarged 20 diameters.

The ground colour of the upper surface is of a rich velvety green, broken up by irregularly maplike

* *Curmeria Wallisii*, Mast., sp. nov.—Acaulis rhizomate perennante aromatica; foliis patensibus fasciculatis et nitris, petiolatis, petiolis 1-2 poll. long. maximo pro parte vaginatum, superne antequam canaliculis a latere compressis, lamina glabra superne intense viridibus irregulariter aureo-maculatis subtus pallidioribus glaucescentibus ovato vel obovato-oblongis basi rotundatis apice breviter subitotque detulde-acuminatis, albo-marginatis; spatia brevi pedunculata 3-3½ poll. long. basi convoluta ventricosa, medio contracta supra medium porum aperta, apice brevis-acuminatis pallide puncta maculis albidis minutis conspersa, intus nitida; spadice tereti spatia vix breviter nudique floribus obtecta.—Flores terre cunio et in conspectibus.

Hujus generis species tres sunt descripte nempe—1. *Curmeria picturata*, Lind. et André, *Ill. Hort.* 1873, t. 121. Foliis patentibus ovato-oblongis basi cordatis medio-argenteo-fasciatis. 2. *C. Roezlii*, Mast. in *Gard. Chron.* 1874, p. 804, figs. 159, 160. Foliis erecto-patensibus longe petiolatis oblongo-acuminatis basi rotundatis. 3. *C. Wallisii*, Mast. ut supra. Foliis patentibus brevi-petiolatis ovato-oblongis oblique detulde-acuminatis basi angustatis insigniter aureo-maculatis.

Horticult. 1873, p. 45, t. 121, by MM. Linden and André, on the plant known as *C. picturata*, and to which we were enabled to add a second species, *C. Roezlii*, in these columns—1874, p. 804, figs. 159, 160. The present plant, like the last mentioned, is a native of Colombia, whence it was introduced by Mr. Wallis, as the *C. Roezlii* was by the collector whose name it bears. All three species were introduced to commerce by Mr. W. Bull.

C. Wallisii has at first sight much resemblance to *C. Roezlii*, but is very superior to it as a garden plant, from the brightness and elegance of its variegation. It differs also in its relatively broader, more ovate, more abruptly pointed leaves, and especially in its shorter leaf-stalk, the relative shortness being especially observable in the petiole proper, or that portion which intervenes between the sheathing portion of the leaf (the latter not shown in the illustration, fig. 16) and the blade, in this respect approaching

the apex, bordered with a white edge, sprinkled above with bright golden blotches.

All the species are from Colombia, and have a more or less aromatic perfume when bruised. *M. T. M.*

ALFRED SMEE.

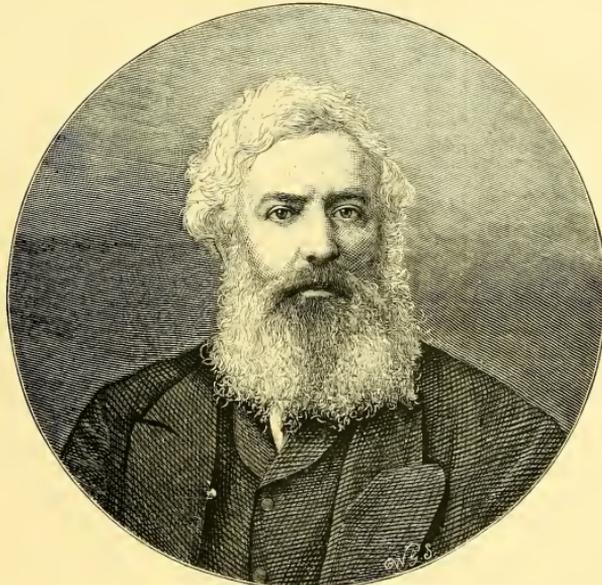
We avail ourselves of the opportunity afforded us by the publication of a portrait of the late Mr. Alfred Smea to give a few additional particulars of his career. Educated at St. Paul's School and King's College, London, he pursued his medical studies at St. Bartholomew's Hospital. This is not the place to dilate upon his strictly professional labours; it must suffice to say that he early attained eminence as a lecturer and teacher in surgery, and held many appointments in connection with medical institutions,

To the last he retained his position as surgeon to the Bank of England, where his father had been Accountant-General. Mr. Smece himself, in conjunction with the engineer, Mr. Hensman, and the printer, Mr. Coe, devised and brought out the present form of the Bank of England notes and cheques; while his professional knowledge made him a valuable coadjutor in various life insurance offices and similar institutions. Of one of these, the Gresham, which has attained a foremost position, he was one of the original founders. The bent of his mind was early turned to chemical and electrical studies, on which he published various memoirs, but in connection with which subject he will probably be longest remembered by the form of battery known as Smece's battery. His scientific attainments were speedily recognised, for he was elected a Fellow of the Royal Society at the unusually early age of 23, while the Society of Arts awarded him a gold medal in recognition of his in-

all plans for the increase and dissemination of knowledge was manifested in many ways, among others in the establishment of educational lectures at the London Institution, of which he was a Vice-President. In conjunction with Sir James Hannen, Mr. Justice Pollock, and other old Paulines, he succeeded, moreover, in modifying the scheme of the Educational Commissioners for the reorganisation of St. Paul's School. His love for Nature was a veritable passion. Many years ago the Fern-cases in his dwelling-house in Finsbury Circus were as remarkable, and attracted almost as much attention, as those of the late N. R. Ward. The writer of these lines well remembers the time when he was in the habit of passing and re-passing the windows in Finsbury Circus, with the sole object of ascertaining what were the species that thrived under such disadvantageous circumstances. In later years Mr. Smece became possessor of an extensive garden at Wallington, near Croydon, and here, having wider

luxuries of a greenhouse, a fernery, a stove, or a vinery. Mr. Smece's "poor man's houses" exactly realise this ideal. They are sufficient to give profit, pleasure, may, luxury to the mere labourer. Of course it is not to be expected that the keeping or the condition of the houses, or of the plants in them, would satisfy a head gardener on a ducal estate, but from the point of view of the proprietor they are all that could be desired or expected, and relatively to the outlay we should not be surprised if the produce were larger, as the pleasure to the proprietor was certainly greater, than in establishments of greater pretensions.

Insects, fishes, birds, fossils, nothing came amiss to the hospitable proprietor of this garden. How keen his interest, how great his delight in these matters, is evidenced in his work, *My Garden*, reviewed in these pages at the time of publication. This work is illustrated with a profusion of excellent woodcuts, and in its wide extent of knowledge and genuine sympathy



THE LATE ALFRED SMECE, F.R.S.

vention of Smece's battery, and of his metallurgical researches. His publications were indeed numerous and varied, displaying great industry, unvarying energy, a wide general knowledge of many subjects, an intimate acquaintance with a few, and a vivid imagination, which led sometimes to hasty inferences and fallacious analogies. Of this his papers on the Potato murrain, and the aphides which accompany or are consequent upon it, afford notable proof. It is, however, certain that, however much mistaken he might have been in this matter, full justice was never done to the acuteness of his observations, and even now the important though subsidiary part that aphides play in the destruction of the Potato, and which was first published by him, is hardly sufficiently recognised.

Alfred Smece was, indeed, a genuine enthusiast, actuated by the highest principle and deepest sympathy for science, but so hurried on by the fervour of his disposition that the careful and patient spirit which characterises the highest type of the man of science was overpowered by the rapid insight which characterises the man of genius. His sympathy with

scope, he devoted himself with characteristic zeal to the formation of a garden, which, if such an expression may be used, is encyclopedic. It contains something of everything. Though the surface is flat, landscape effects and artistic surprises are numerous. The visitor passes in a moment from a bold bit of lake scenery to a tiny Fern-clad ravine, through which meanders a crystal stream laving as it goes a host of lovely bog-plants; a turn, and the visitor is in a Rose garden, or admiring a choice collection of alpine. Now long shady walks invite attention, now the treasures of the herbaceous border attract notice. Nor is the more utilitarian part of gardening omitted—on the contrary, it is in places somewhat too obtrusively prominent. Be this as it may, the collection of vegetables, and specially of fruit trees, is very remarkable. No mere amateur's collection within our experience rivalled this one in extent and variety. As to the houses and garden structures they are numerous and efficient. They have no architectural pretensions, indeed one object of the proprietor was to show how at a comparatively very slight expense men of very moderate means might enjoy the pleasures and

for all natural objects is a worthy exponent of the author's character. Its range is wide rather than deep, but it is impossible not to catch from its pages some of the enthusiasm of the writer. As an encyclopedic treatise for the amateur as distinguished from the professional gardener, we know of none to approach this.

At the Royal Horticultural Society, of which Mr. Smece was for a time member of Council, President of the Fruit, and member of the Scientific Committee, Mr. Smece's sympathies were always strongly and unmistakably on the side of pure horticulture. Though his schemes and proposals were, we believe, not always sufficiently practical to commend themselves to his associates in the Council, yet no man had a sounder, juster notion of what the proper functions of a horticultural society should be. His public addresses on the scope and duties of the Royal Horticultural Society, and on the paramount necessity of making it a scientific and not a merely fashionable Society—of fostering its powers for the public good rather than for the frivolous pleasure of the few—were always no less sound and sensible than they were energetic. III

liberty of spirit and genial hospitality were marked characteristics, so much so, that few men had a larger circle of friends, or was more beloved by them than he. It may perhaps be allowable to allude to his garden parties, and to the much-appreciated hospitality he showed to his English fellow-jurors in Florence at the time of the Botanical Congress in that city.

Alfred Smeed died on January 11, and was buried on January 16 at Deddington, within sight of the garden of which he has given a history, which may fairly compare with that which White gave of his parish at Selborne.

Mr. Smeed leaves a widow, a daughter married to Professor Odling, the eminent chemist, and a son who follows with no uncertain step in his father's footsteps.

Foreign Correspondence.

BOTANIC GARDEN, GRAHAMSTOWN, SOUTH AFRICA: *Dec. 13, 1876.*—In an article on *Encephalartos Altensteinii*, which appeared in the *Gardener's Chronicle* of September 23, 1876, it is stated that the trunks are "quite glabrous, and marked with three- or somewhat four-lobed scars, indicating the place from whence former leaves have fallen away." Now, I must beg to say that the words in italics are incorrect, as not more than a fourth part of the scars to be found on the trunks of the species in question ever bore perfect leaves. Quite half of the whole length of the trunks of those species of *Encephalartos* with which I am acquainted were found in advance of the leaves; and in the case of *E. Altensteinii*, spaces of from 4 to 6 inches in length are to be found, at more or less regular intervals, the whole length of the trunk, which spaces were formed as stated.

It is pretty well known that the *Encephalartos* have periods of partial rest after the production of a set of fronds, but the resting is more apparent than real. Close inspection will show that active work is going on the whole time. It will be seen that the bases of the last-formed leaves are receding from the apex of the trunk, and that a cone, clothed with woolly scales, is taking the place of the leaves.

At length the period for the production of new fronds again comes round, and one result of the growth of leaves will be, to force out into line with the older portion of the trunk the said cone of scales, thereby adding some 4 or 6 inches to the height of the plant.

It is obvious that the above facts have some bearing on the question of the great length of time that some newly-imported trunks of *Encephalartos* are before producing fresh leaves, and an importer may, from the position of the last set of fronds, and the width of the cone of scales from the base of the fronds to the apex of the cone, form some idea as to when new fronds may be expected to appear. *E. Tidmarshii*, *Curtator*.

Florists' Flowers.

CYCLAMEN PERISCIUM.—Do we fully realise the fact that the Persian Cyclamen is really and truly an autumn and winter flowering plant? Years ago, when the old system of drying-off in summer and almost roasting the bulbs to death in hot weather, in order, as it was supposed, to drive them into bloom in spring, it was thought to be a floral feat to have the flowers as early as February and March! A more judicious treatment has happily superseded, though it is as yet only imperfectly understood, for not long since a journal accustomed to include horticultural matters among its contents was found gravely asserting that the bulbs must be well dried off in summer if a quantity of flowers were looked for in spring. The roasting process is still followed in some gardening establishments.

In order to thoroughly appreciate the glorious decorative value of *Cyclamen periscium* it should be seen in quantity, as one can see it at Mr. H. B. Smith's, Ealing Dean Nursery, where, at the beginning of the month, some 10,000 plants were gathered together, a large majority of them for market purposes. These are peculiar in the long, low, span-roofed manner, presenting an unbroken surface of varied colour, not in monotonous patches of white, purple, pink, &c., but mingled together, and presenting a

most charming floral aspect. The greater number of the plants were in 48-pots, and they were blooming with great freedom; the number of flowers on some of them was perfectly astounding, plants sixteen months from the seed-beds were producing something like 200 blossoms. They were carefully counted, so that no error of calculation might occur. And not only does the Cyclamen remain a long time in flower, but it is also invaluable for furnishing cut blooms, and they last a considerable time in water.

As far as the improvement of the cyclamen is concerned in the direction of form and colour, Mr. H. B. Smith is doing good service to floriculture. He has originated some purple and crimson flowers of great richness of colours, the petals large, broad, and stout, some exceedingly pretty pink and pale rose shades, and some pure white flowers of high-class quality.

The culture of the Cyclamen, as followed at Ealing Dean, appears to be of a simple character. The seed ripened in June and July is sown in August, in pans of light rich sandy soil, plunged in bottom-heat, and by the end of November the seedlings are pricked off into 60-pots, about fifteen plants in a pot, and still kept in a warm moist temperature. In February they are potted singly into small "Long Toms," and still kept close under glass; the next shift is into 60-pots, and finally into 48's in the month of May. They then go out-of-doors into cold frames, where they are kept growing, being freely watered, shaded from hot sun, and sprinkled overhead. There is no resting space, and the plant does not require any. It was stated by Mr. Smith that he had this season raised 11,000 seedlings, and they abounded on every hand.

The soil used for the Cyclamen is a light loam and leaf-mould, and a little sand. If the loam be at all heavy, a little peat should be mixed with it to keep it open. Good drainage is indispensable. The first batch of plants is sent to market in November, and the supply is continued as long as there are plants to send. *R. D.*

The Villa Garden.

ORCHARD HOUSE.—There is no reason why an orchard-house should not form a part of the gardening arrangements of a Villa residence; and we make this statement while fully aware that the system of orchard-houses has not made the headway that it was at one time confidently expected it would. Orchard-houses, like almost every other horticultural venture, have found their advocates and their opponents; the *pro* and *con* have been put with singular vigour, and they have been as vehemently supported as they have been contemptuously denounced, and probably, after all, the truth has lain somewhat midway between the two. It is very often the case in disputed matters that the happy medium is frequently the best point of advantage.

We are always contending that, the Villa Garden being generally restricted in extent, should yet be made as full of interest as possible. Thus it is we are found advocating the Villa orchard-house. High authorities have frequently been found writing and speaking against small orchard-houses, but in apparent defiance of these—high authorities are oftentimes not a whit more infallible than little ones—we yet advocate a small orchard-house.

What shall be the form of the orchard-house? It can be either span-shaped—that is, with an ordinary ridge roof sloping on either side from the middle of the west—or it may be a lean-to against a north, east, or side wall. The span-roofed house is perhaps to be preferred, but a very useful orchard-house can be had in the form of a lean-to. We do not decry large orchard-houses, but consider small ones the best for an ordinary Villa residence, where space is somewhat restricted.

The orchard-house need not be lofty. In a small house the trees would be in pots, as there would scarcely be accommodation for standard trees planted out, and as the pot trees should be as near the glass as possible, the roof should be low, for the fruit must not be too far from the glass, if we would have it finely flavoured and highly coloured. A certain height must be had, and the breadth of the house must be regulated as much by the necessities of free circulation within as by the strength of the house to bear gales of wind, if the house occupies an open and

exposed position, or is subject to a weight of snow on the roof.

Whether the house have a framework of brick, or is wholly of wood, revolving wooden shutters should be fixed in the walls to admit of plenty of ventilation when it is desirable to give it. Whether it be a span-roofed or a lean-to house, let there be some 4 feet of supporting wall of brick or woodwork, and on the top of this a foot or 18 inches of a strong glass frame, from the top of which the roof should spring. Top ventilation, *i.e.*, means of ventilating in the ridge of the roof when required, must be provided. Such a house—of which this is but a bare outline—is simple in construction and efficacious when properly managed. It would not possess the architectural elegance found in a greenhouse or conservatory, but if kept clean and painted would never be an unightly object from the dwelling-house.

In the case of a lean-to house the wall at the back might be utilised for cordons Peaches and Nectarines, Vines, &c., planted out at the proper time in a well-prepared border, but the Vines must not be allowed to cover too much of the roof to the exclusion of the sun from the plants beneath.

Supposing a house such as we have sketched be built, the next thing is the matter of furnishing it. Nurserymen invariably keep a collection of orchard-house trees in pots—for we are proceeding on the principle that the plants will be in pots—and the following varieties of Peaches are well suited for orchard-houses, viz., Earl of York, Grand Magnonne, and Royal George; Nectarines—Pitman's Orange and Hunt's Tawny; Pears—Jefferson, Green Gage, McLaughlin's Gage, and Standard of England; and the Moorpark Apricot. This selection can be added to with desirable varieties, and also with suitable selections of Apples and Pears, if it should be desired to include these in the collection. The trees should (when purchased) be fairly well set with fruit-buds, and re-potted in a suitable compost in October or November last.

At this time of the year the pots should be well bedded in leaves, as a protection from frost. We are dealing with a cold orchard-house; hence the necessity for keeping frost from the pots. The leaves may come just above the rim of the pots, and when it is desirable to examine the plants in case any require water, the leaves can be drawn on one side, and replaced when the task is finished.

Nothing has yet been said as to pruning the trees, and excepting that two or three of the early Peaches are put into a gentle heat of say 45°, to get them a little forward—in which case the necessary pruning must be done before the plants are removed there—the general pruning need not be done till the end of January. It should not be delayed later, for it is a law in practical horticulture "the sooner a shoot is pruned the stronger will it break." If any delay be made in the pruning, it should be in the case of plants that have put forth a gross growth; delay in this case has been found to impose a slight check on the plants, and, further, a well-known cultivator of orchard-house trees has remarked that "as a rule too much wood is left on orchard-house trees, and they produce too many flowers. Cultivators are far too anxious to secure a fine and plentiful show of bloom, forgetting that, the greater the quantity of bloom, the more trying it is for the plant, and the less likely are the flowers to set. A Peach tree in a 12-inch pot, for instance, with fifty or 100 flowers upon it, is just as good (if not better), and will produce as good a crop, as one with ten times the amount. In pruning, therefore, it is well to bear this in mind—that every flower-bud, if properly developed, will produce a fruit, and that only a few (if Peaches, one on each shoot) are required. Excepting where it is needed for the formation of the tree, the shoots of Peaches, &c., in pots, or all bush and pyramid specimens, should not be left more than 2 or 3 inches in length. Where the trees were closely pinched during the past year, the twiggly ends only require to be cut off. Care must be taken at all times to prune direct to a wood-bud, which may be known by being much more slender and pointed than the flower-buds. Where no wood-buds are to be found, the shoots must be kept at full length if they cannot be dispensed with."

And lastly, while the weather is so mild, and there is such a tendency on the part of plants of all kinds to come forward quickly, the house should be kept open night and day, so as to retard the trees as much as possible.

THE

Gardeners' Chronicle.

SATURDAY, JANUARY 27, 1877.

APPOINTMENT FOR THE ENSUING WEEK.
THURSDAY, Feb. 1—Meeting of the Linnean Society, at 8 P.M.

THE subject of the desirability of a more extended CULTURE OF HARDY FRUITS is one of those questions which, like the condition of Kensington Gardens, crops up at tolerably regular intervals to disappear in due time and to be no more heard of till the swing of the pendulum once more brings it under notice. It may be because the statements made are usually obvious and do not admit of argument that nothing comes of them. If they roused opposition or antagonism people would be stimulated to do something, whereas now they hear or read and nothing comes of it all.

Many years ago MR. ROACH SMITH took up the question, not being by any means the first to do so, but we do not know that anything more cogent has been since urged. Now, again, the question has been ventilated at the all-embracing Society of Arts, where Mr. G. C. T. BARTLEY has been illustrating his favorite topic of thrift by pointing out how much is lost to the country by allowing pieces of waste ground, railway embankments, and the like, to remain unused. MR. BARTLEY'S propositions, like those of his predecessors, will be unanimously assented to—viz., that the supply of fruit is less than it ought to be, and that it would be advantageous to increase it. How is this to be done? MR. BARTLEY advocates, amongst other things, the reclamation of waste pieces of ground and of railway embankments. Why not cultivate these, and make them productive? We believe the reason is that, under most circumstances, fruit culture would not be remunerative in such places. If they could be thrown into the allotment-gardens of the poor well and good, but in most instances they are detached pieces removed from habitations or ready means of access, and naturally ill adapted by site or soil for fruit-cultivation.

It will not pay to stick in a fruit tree in any description of soil, as if one were merely sticking a stake into the ground. To be made profitable the ground must be trenched and manured, and fruit trees of a kind suitable for the locality planted. This being so, there can be no doubt that, on the small disjointed scale we are now alluding to, fruit culture would not be profitable. Where fruit is grown for culture as a commercial investment it requires an outlay of capital and labour. If that capital and labour are to return a fair interest they must be intelligently directed and used under certain conditions, but if these conditions be unattainable, then fruit culture will involve a serious loss. Now we cannot help thinking, looking at the matter from a practical point of view, that such would be the result if MR. BARTLEY'S plan of utilising waste scraps of land were adopted. Add them to the adjoining fields, grow Jerusalem Artichokes on which require no special preparation or care—though like everything else, much improved by care, or let them remain as common pasturage for village cows and geese. The question of railway banks is different. There are doubtless miles of embankment which might be profitably used, as one sees them on the Continent, for growing Osiers, or for coppice-wood. Filberts and nuts might be used for this purpose, and in some places Strawberries might, as has often been pointed out in these columns, be most advantageously grown, their runners serving to keep up the banks, while their fruit would be sure to find a market.

The culture of fibre plants, such as the common Nettle and other fibrous "weeds," might be profitably undertaken in the neighbourhood of paper mills. Indeed, there are various means of utilising railway banks which might be adopted, and, as we believe, with generally better results than fruit-growing. The experiment of growing fruit trees on either side of the line, has been tried in Belgium, and we gave an illustration of the plan adopted in that country in our volume for 1869, p. 277. Subsequent enquiries made by ourselves in Belgium from competent authorities, have, however, led us to doubt whether the experiment is worth repeating in this particular direction.

For the domestic supply of fruit or for culture on the small scale, infinitely more might be done in our cottage gardens and on our cottage walls. We have often urged this subject on the attention of country gentlemen, and of the local horticultural societies. The cottagers want the instruction, which any good gardener could give them, as to what to plant and how to plant it. The Grantham Horticultural Society, at the instigation of Mr. W. INGRAM, if we mistake not, offers to successful cottagers competing for prizes at the show approved kinds of fruit trees for the situation and aspect on which their gardens and houses are placed. This is an example worthy to be followed, as there is no reason why the great majority of our cottages might not be clothed with Apricots or Pears, and why Apples and Gooseberries should not be found in every cottage garden.

If the Society of Arts can bring about so desirable a result, it will add to the obligations it has already conferred on the country, and it will perhaps shame the Horticultural Societies of the kingdom into a wider sense of the duties they owe to the community.

We have on more than one occasion called attention to the recent appointment by Her Majesty's Office of Works of an ex-military gentleman as Bailiff, or Chief Superintendent, of the Royal parks, and we are constrained to do so again through an article which appeared in our admirably conducted contemporary, the *Builder*, on the 13th inst. The *Builder* is usually so averse to jobbery, so anxious to uphold the dignity of art and the rights of the workman, that it is a little surprising to see it sanctioning an article so contrary to its usual high sense of what is fit and becoming. The writer of this article, which seems to have been officially inspired, first makes certain insinuations of a grave character against the present Superintendents as a justification for the appointment, and then offers an apology for the selection of an ex-officer of Engineers instead of a practical man.

We would remark that if the office of Park Bailiff is a good or necessary one—which is open to doubt—it cannot require the casting of aspersions on the character and efficiency of faithful public servants, who have no means of defending themselves before the public. Such insinuations are unwarrantable and unjust. The present Superintendents are men of ability and integrity, and were appointed to their respective positions as being the best qualified, and we maintain they have executed their trust well. It is a distinct breaking of faith with them, therefore, to suddenly usurp their powers and reduce their status, which the appointment of this new office and the new regulations do.

We join issue with our contemporary as to the wisdom of appointing a military gentleman to the office. The new Bailiff may be, for aught we know, a gentleman of very correct taste, and he is reputed to be a good maker of roads, but we never heard of him as a horticulturist or a landscape gardener, or a forster, or, indeed, as possessed of any knowledge fitting him for such an office. How,

then, is he to superintend or satisfactorily control the actions of the Superintendents under him who are possessed of that knowledge?

According to the *Builder*, such knowledge is not requisite "when it is considered that each of the Royal parks has Superintendents who are practical gardeners, &c. . . . It may be urged that special horticultural knowledge was not particularly requisite in the holder of the new appointment." This is strange doctrine, not likely to be accepted. What, then, we would ask, are the new Bailiff's qualifications, or what the duties that he can perform that could not be done quite as well without him? He cannot direct the actions of the Superintendents, in practical matters, but he can thwart and impede them. What service is the new official likely to render, from a gardening point of view, to MR. ROGER, of Battersea, who, treading in the steps of JOHN GIBSON, has made Battersea Park a model, to which, year after year, the horticultural critics point with just pride and admiration? Of what advantage will it be to Victoria Park, so ably managed by MR. MCINTYRE, to receive instructions as to matters of gardening details from an ex-officer of Engineers? How is such an officer to set about regenerating the plantations in Kensington Gardens? If this style of appointment is to prevail, we may expect to see the Royal Gardens at Kew, Edinburgh, and Glasnevin superintended by a nominee of the Government with no special knowledge of the work of his department. The Superintendents will now, instead of consulting with the Secretary or First Commissioner direct, have, we believe, to receive the sanction and approval of this new official even to the merest trifle. More red-tape! more economy!

The cost of this new office, including clerks and assistants, cannot be reckoned at less than £1000 per annum, so this is what the country will have to pay for this new deputy official. Will the "Office" be able to show any return for this great expenditure? We doubt it, but we again quote the *Builder*—

"It is reported that the holders of the larger privileges in connection with the Royal parks, such as the ownership of boats let out for hire for rowing or pleasure parties, at so much an hour, and those other privileges, as in the East-end parks, in the matter of swings and merry-go-rounds, will be subject to a change. In the Crystal Palace grounds, and other public places of entertainment, large sums are paid yearly by owners of like appliances to those seen in the Royal parks."

So here we have shadowed forth, not very lucidly, some of the duties which it is considered desirable for a military gentleman to accomplish. Seeing that this department has always been under the direct control of the Office itself, we fail to see why the Park Superintendents should be made the scapegoats for such an appointment.

The solution of the whole case seems to be, that the appointment of a practical man as Chief Superintendent of the Royal parks, which was first proposed by MR. AYRTON, and lately sanctioned by the Treasury, has been so arranged by the present Office of Works as to secure a mere official deputy, instead of a general surveyor of parks, as was originally intended. We doubt if the public will be satisfied with the change.

—We are glad of the opportunity of figuring the magnificent Australian *DEUTERIUM SPECIOSUM* VAR. *HILLII* (fig. 15), for its merits are less known than they deserve to be. Few more glorious sights have met our eyes than that which greeted us on opening a package lately from the Hon. and Rev. J. T. BOSCAWEN. Our page will only allow us to give a portion of one spike, but it may suffice to give an idea of its massiveness and beauty. The variety *Hillii*, figured in the *Botanical Magazine*, 5261, differs from the old specimen in its narrower and longer sepals and petals, as pointed out by Baron VON MÜLLER. The stems also are more elongated. The plant is a native of tropical Australia, Queensland, but the species extends into the cooler southern latitudes of New South Wales and Victoria. The flowers are of a creamy white colour, and have a pleasant fragrance.

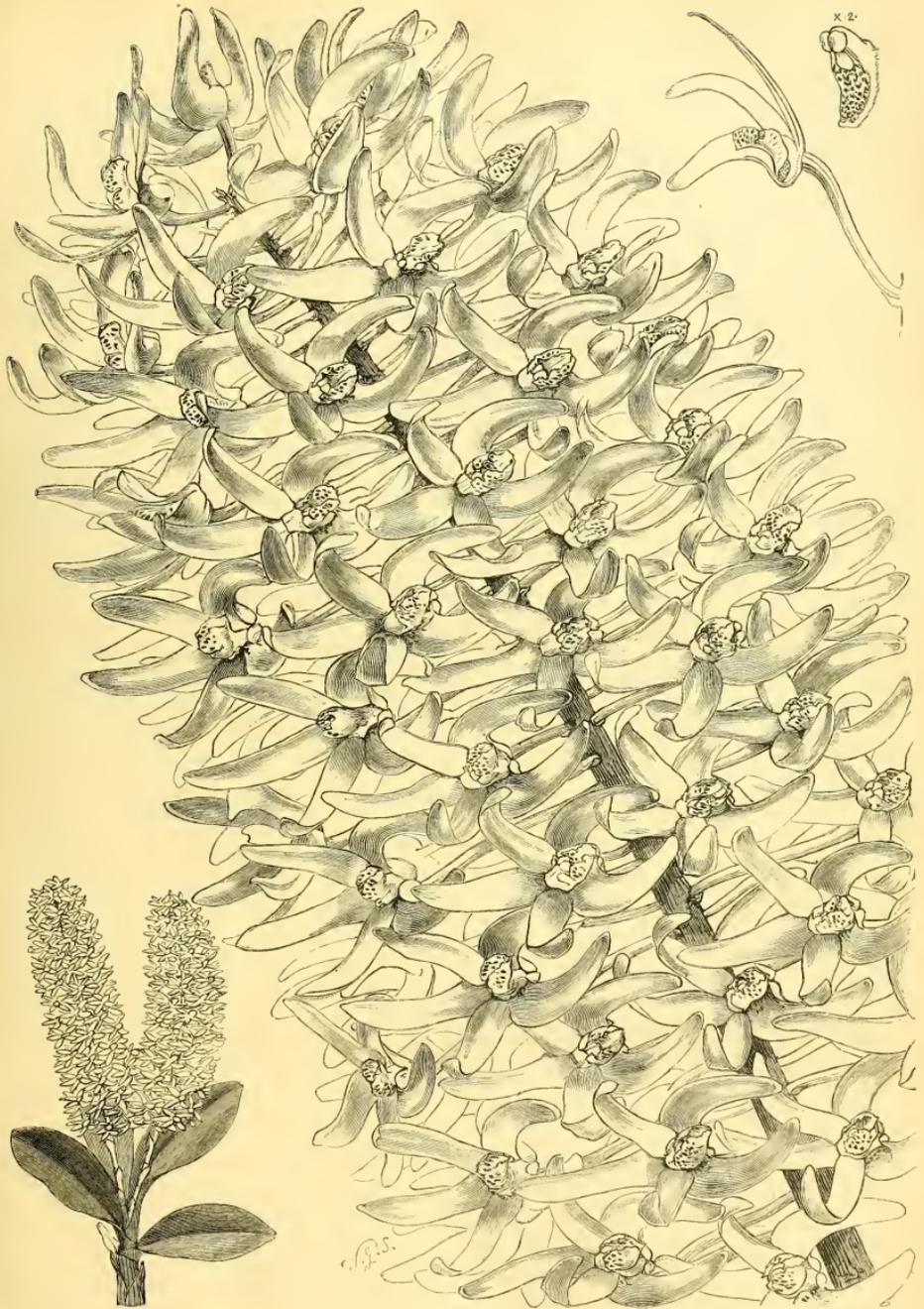


FIG. 18.—*DENDROBIUM SPECIOSUM* VAR. *HILLII*.

Compared with its Indian allies the present plant freely but little heat, and it usually flowers freely every year from the same bulb. Sometimes it flowers twice in the year, and last year Mr. BOSCAWEN'S plant flowered a third time from the same pseudobulb—a very unusual occurrence. Nothing could be finer and more healthy than the foliage which accompanied these magnificent spikes. Mr. BOSCAWEN'S plan of culture, however, is very simple. After flowering the plant is allowed to rest for a month or six weeks; it is then placed in an intermediate house and copiously watered every day till the pseudobulbs are formed, when it is placed out-of-doors or in an orchard-house in the sun.

— The proposed SOUTHERN SHOW OF AFRICULAS is, we are glad to say, likely to be successfully carried out. A meeting of the committee is to be held on January 31, to approve the prize schedule, which has been drawn up by MESSRS. TURNER, DOUGLAS, and DODWELL. We understand that upwards of £60 will be offered as prizes, and that some £120 more of subscriptions are necessary to meet this outlay and the necessary expenses, so that any supporter of florists' flowers or patron of horticulture who has not subscribed may yet have an opportunity of doing so. Subscriptions should be sent direct to the Hon. Secretary, Mr. E. S. DODWELL, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W.

— The successful candidates at the recent election of pensioners in connection with the GARDENERS' ROYAL BENEVOLENT INSTITUTION were Mr. JAMES GOSLING, Mrs. W. P. AYRES, and Mrs. MARY ANN ADDISCOTT.

— MILLA LEICHTLINII, a new and quite distinct species, is flowering in the Royal Gardens, Kew, both under glass and in the open ground. It was sent hither by Herr MAX LEICHTLIN, who received it from the Chilean Andes. In structure it approaches *M. porrifolia*, but agrees in habit only with *M. sessiliflora*, another Chilean species, not yet introduced. The peduncles and pedicels are so extremely short that the flowers appear low down among the leaves, and just above the ground. The leaves are about six to a corn, erect, bright green, 3–4 inches long, and $\frac{1}{4}$ inch broad. The flowers are fragrant, pure white, each segment with a greenish keel, and rather more than 1 inch in diameter. Two or three tubels are produced to a corn, and each umbel has two or three flowers. This interesting plant we know of now only in the Kew collection. It is quite hardy, and will doubtless be as easily grown as the other species. A figure was published in the *Botanical Magazine* of June last, and in our volume for 1875, p. 234, will be found the original description by Mr. BAKER.

— The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, Jan. 29, when the adjourned discussion on the paper read by Mr. W. T. MARKIOTT at the last meeting, entitled "Riparian Rights," will be resumed.

— A winter made up of mild muggy weather and an excess of rainfall is certain to prove one of unusual difficulty to the Potato grower. The present season has proved to be one of remarkable difficulty in STORING POTATOS in such a way as shall check that premature growth invariably so detrimental to the future crop. The great heat and drought of the past summer ripened off the Potato crop prematurely, and left the tubers in a most excitable condition. These causes, combined with the mildness of the winter, have tended to generate an early starting of shoots, especially where the tubers are stored in bulk, or influenced by the prevailing moisture. The most effective remedies are found in storing thinly on airy shelves, where on dry days an abundance of air can be admitted, and where also there is sufficient space to admit of a frequent overhauling of the stocks to pick out all diseased or decayed tubers. Seed Potatoes cannot have too much light and air during the resting season consistent with the exclusion of moisture and frost, and, if shoots are induced, these will never become attenuated or be otherwise than stout and healthy as long as there is an abundance of light and the small roots emitted at the base of each shoot are unable to find moisture. We recently saw at the

Aston Lower Grounds, Birmingham, an admirable arrangement for storing a large quantity of seed tubers in a most effective way, and yet in a small compass. Mr. SPINKS had imported the idea from France, and put it into successful operation. A series of shallow wooden trays, all of the same size, each one having legs at each corner about 3 inches in length was provided. As these were filled with a single layer of tubers closely set together they stood one on the other, and thus air was enabled to freely circulate amongst them. It is a capital arrangement for the storing of many kinds in small quantities.

— We understand that Mr. J. H. BURTON has been appointed successor to the late Mr. P. STEWART as gardener to CHARLES TENNANT, Esq., The Glen, Peebleshire.

— At a meeting of the Metropolitan Board of Works held on the 12th inst. Mr. LAMMIN introduced a deputation from the parish of FULHAM, who presented a memorial on the subject of the recent INUNDATIONS in their parish. The memorial was stated to emanate from certain proprietors who had received great damage to their stock and property by the recent high tides. They were last year subject to a similar calamity, since which time they had raised a portion of their banks at their own cost; but, although anxious to do all in their power, they found the work of greater dimensions than they could attempt, and concluded by asking the immediate assistance of the Board. Mr. HARRY VEITCH, in support of the memorialists, said he represented the most immediate sufferers, amongst whom the principal were the class of market gardeners of London, raising the more delicate descriptions of vegetables, acres of which crops had been destroyed. His (the speaker's) own firm last year estimated their losses at £2000, and had to burn 12,000 young trees from their plantations. At a meeting of the Fulham Board of Works held subsequently, Mr. VEITCH, together with Mr. WALDEN, an owner of Osier beds, and several other occupiers of land adjacent to the Thames subject to inundations, made a statement of the grievous losses to which they have been subjected, and to which they are still liable by the rising of the water. Mr. VEITCH said the destruction to his property and consequent loss in business would amount to £2000; Mr. WALDEN, a grower of Osiers, would lose £3000; Mr. MATHER, who had been drawing £20 a week for Mushrooms, has had all his stock and plant washed away; Mr. WALDEN has had all his cut Osiers washed away. There were altogether 180 acres of land under water.

— The spring, summer, and autumn flower shows of the ROYAL CALEDONIAN HORTICULTURAL SOCIETY will be held on the following dates:—March 28, July 11, and September 12.

— Some of the WINTER FLOWERING SUCCULENTS are extremely showy, and seem too little appreciated for floral decoration. In the succulent-house at Kew *Crasula lactea* was prominent in flower a short time since. *Echeveria fulgens* is just now very attractive, and likely to be so for some time. *Kalanchoe laciniata* has been very ornamental for several weeks. The bright yellow flowers remind one of *Chlora perfoliata*, and these, with the peculiarly cut leaves, form a novel and striking specimen. *Senecio macroglossus* is much to be valued among succulents as a winter-flowering climber. The flower-heads are bright yellow, and in point of size perhaps second only to *S. pulcher*. The leaves so closely resemble Ivy as to afford much interest from that circumstance.

— The HOLLYHOCK DISEASE has proved so destructive to the stock of Hollyhock plants at the Saffron Walden Nurseries, that Mr. CHATER has been driven to adopt means to mitigate as far as possible the severity of its attacks. Last season Mr. CHATER adopted a plan which, he reports, has answered admirably; and indeed the results far exceeded his most sanguine expectations. In the early autumn of 1875 large trenches were dug, similar to Celery trenches. The bottom was forked up, and a good dressing of decomposed manure was worked in, and the soil laid up rough, to be pulverised and rendered workable by the winter frosts. In these trenches the Hollyhock plants, to stand the summer,

were planted out, but previous to doing so the soil in the trenches was again forked over, mixing in with it the sides of the trenches also. Here the plants grew rapidly, and with great freedom, and, as Mr. CHATER remarks, "I obtained from them some of my finest flowers, which quite reminded me of past seasons, before the fungus made its appearance. Several of my new varieties came from these rows." The growth of the plants during the season was worth seeing." These plants were free from the disease, and at taking-up time they were quite healthy, have kept so all the winter, and they are furnishing a supply of young plants for sale in the spring, and Mr. CHATER is depending on these for material on which to found a spring catalogue. By some special perseverance, by thinly planting the Hollyhocks, by putting the plants in exposed situations, and mulching them during summer, Mr. CHATER hopes to be able to overcome the disease eventually. It does appear true that the moisture the season the less marked is the disease, and the more vigorous the growth of the plant the greater is the resistance to its advance. This system of growing the plants in highly manured trenches supplies an invigorating soil, coolness and moisture at the roots, and the mulching maintains a surface assistance which must exercise a beneficial influence.

— The question of the EFFECT OF COLD SPRING WATER ON PLANTS growing in a high temperature has again been raised by a correspondent of the *Revue Horticole*, whose experiments convinced him that plants thrive equally well under cold-water treatment, as when water at the temperature of the atmosphere of the house is given to them. He conducted his experiments during the months of January and February last year. Two pans each of the seeds of a variety of plants, ranging from hardy indigenous species to tropical ones, were sown at the same time and subjected to exactly the same conditions with the exception of the difference in the temperature of the water. In the one case it was taken from the tubs exposed to the outside temperature, and in the other it was applied at the same temperature as the atmosphere of the house. The writer adds that his experience leads him to prefer spring water to water taken from the river Seine, for syringing, especially for sown-wooded plants. How far this treatment will answer, practical experience alone can prove, but there is no doubt that plants will flourish under widely different conditions in respect of the temperature of the soil. We have seen, for example, on growth of a large Grape Vine, whose roots were all outside, in a house where it was usually started into growth at the beginning of the year, and the other part outside on a raised trellis on a slate roof, each bearing a good crop of fruit in its season. Another remarkable fact is the very high temperature some plants will bear without injury. The *Botanische Zeitung* lately called attention to the almost forgotten observations bearing upon this subject recorded by HUMBOLDT in his *Reise in die Aequinotiale-gegend des Neuen Continents*. Carefully read, the temperature of the water of a hot spring in Caracas was 90° of the Centigrade scale, or above 194° Fahrenheit, and the travellers were not a little surprised at the luxuriant vegetation immediately around and overhanging this almost boiling cauldron. Fig trees, delicate feather-leaved Mimosa, and a variety of other plants continually exposed to the vapour, and whose roots extended into mud at a temperature of 185° Fahrenheit, exhibited the most beautiful verdure. An arborescent *Aloué* was actually growing in the centre of a pool of slush which gave a temperature of 158°. We might add that some individuals of the human family swallow, with apparent impunity, beverages at almost any temperature between the freezing and scalding points.

— At a recent meeting of the Horticultural Society of Berlin a report was read on the results of the deliberations of a committee previously appointed to consider the means of providing YOUNG GARDENERS with a more complete EDUCATION than is at present within their reach. The report includes a scheme of a course of practical and theoretical instruction, which if carried out must prove a great boon to the gardening community. Even now probably no country can produce a better educated set of gardeners than Germany, and there is no doubt that there are fewer quite illiterate men among her good practical gardeners than would be found in this and some other countries. The

committee, consisting chiefly of some of the foremost shapblers in the vicinity of Berlin, was unanimously adopted, recommended the Society to petition the Minister for Agricultural Affairs to assist them in founding a high school for gardeners. It is unnecessary to say more than that the course of instruction proposed should confer a very liberal education. Candidates must have previously worked at least twelve months in some garden or nursery, and, after three years' instruction at the high school, undergo an examination—those who pass the examination to have the preference in filling up vacancies in all state appointments. Another subject before the Society was the formation of an arboretum and a nursery in the vicinity of Berlin, with a special view to the instruction of the public in the selection of trees and shrubs suitable to the climate and other conditions. This is real horticultural work, and of more service than an extravagant number of expensive shows. Reading the history of our own Society, we are struck with the fact that too much wealth has been the cause of most of its disasters, as well as the neglect of the more modest yet more useful duties of such a society.

— The WEST OF ENGLAND ROSE SHOW is fixed to take place at Hereford on Thursday, July 6.

— We hear that the NATIONAL ROSE SOCIETY is making good progress, and there is no doubt that after the next meeting, when the schedule for the show is arranged, and a fuller programme of its intended operations is circulated, it will have a large accession of members. Several well-known rosarians in different parts of the country have consented to act as local secretaries, and to advance the interests of the Society in their neighbourhoods.

— An excellent example of a highly successful MUSHROOM BED can now be seen at The Elms, Acton, the residence of C. O. Ledward, Esq. Mr. J. HEPFER, the gardener at The Elms, is a well-known exhibitor at the meetings of the Royal Horticultural Society, and at the one held on the 17th inst. he sent some baskets of Mushrooms of fine quality. They were grown in an ordinary Mushroom-house, the bed having been spawned on November 23, and the first crop of Mushrooms was gathered the week after Christmas. The bed presented an extraordinary sight a few days ago, for the Mushrooms were produced all over it in dense clusters. It is said that the mild, close weather has been eminently favourable to the production of heavy crops of Mushrooms; still there were evidences that the bed had been skilfully managed, and the large crop was owing to its excellent construction. Mr. HEPFER's method may be summarily stated, and that of other growers, but it may perhaps be useful to some to set it forth. The manure from the stable is mixed with three or four barrowful of road scrapings, and then shaken up well three or four times till thoroughly heated; it is then taken into the garden, placed in the wooden bed, and well rammed down into it. This occupies one day. The next day the bed is spawned by placing the pieces of spawn in the hot dung to the depth of 3 or 4 inches, and then the usual covering of soil is spread over it. A good loam is used, not sifted as is recommended by some, but simply crumbled small. Daily the bed is examined, and the temperature kept up to 90° for three weeks, and then altered to 65° or 70°, and ultimately reduced to 55°. This bed affords a constant supply, for two months at least, of such Mushrooms as a gardener may be proud to place on his employer's table.

— The annual exhibition of the RICHMOND (Surrey) HORTICULTURAL SOCIETY is announced to be held in the Old Deer Park on Thursday, June 28.

— We hear that Mr. WILLS has retired from his post as Floral Director of the WESTMINSTER AQUARIUM. The permanently planted specimens have had to suffer about as great hardships and torture as ever fell to the lot of plants, and the destruction from the effects of gas and a dry dusty atmosphere on the costly Tree Ferns, Palms, and other plants, is lamentable to witness. In spite of these disadvantages Mr. WILLS has contrived to the last to make a bright display of flowering plants, and in a few days since the display, with Hyacinths and other spring flowers. About 40,000 flowering plants have been used during

the season. Certainly the Aquarium is not the place to grow plants in, and it is no better adapted to show them in.

— There was again a very full attendance at the monthly dinner of the HORTICULTURAL CLUB, at 4, Adelphi Terrace, on Wednesday last. Subjects of interest were discussed, and the following members elected—George P. Hawtree, Lanley Place, Slough; James Boyd, Paisley, N.B.; and E. Dixon, Covent Garden.

— We learn from M. LINDEN, of Brussels, that the ADIANTUM SPECIOSUM noticed and figured by us at p. 41, and described as having been sent out by Messrs. VEITCH & SONS, was introduced by him. It came from the neighbourhood of Haancabamba, in Peru, and the stock was disposed of to Messrs. VEITCH & SONS, by whom it was distributed. M. LINDEN also informs us that another fine species of *Adiantum*, *Fern*, *A. peltatum*, imported by him from Moyobamba, was disposed of in a similar way to the Messrs. VEITCH. We are glad to be able, in making this rectification, to give more definitely the habitats of the plants, which are two of the finest species of *Adiantum* in cultivation.

Home Correspondence.

The Royal Horticultural Society.—Since I was illegally deprived by the Society of a Life Fellowship granted for horticultural services, I have seldom adverted to its doings, or those of its supporters. It seemed more consistent with one's sense of self-respect to retire into the background and attempt to distinguish in renovating the Society or launching a new one. However, your oft-repeated remarks upon the devotion of horticulturists to the old Society as assumed to be proved by the good display at the little or great shows at South Kensington, suggests the utterance of some serious thoughts that have often occurred to me. You have been strong in the condemnation of the policy of the old Society. Even its last advance of policy—the admission of guinea Fellows denuded of all powers or honour but that of nomination to see the welfare of the Society to its present disreputable condition shall in their superior wisdom provide for them—has met from you the condemnation which it deserves; and yet, running parallel with this, every show or other attempt to assist the Society in its present state receives the fellest, some call it fulsome, praise. How is this? Can a wrong be righted by supporting the wrong and praising all who support me or societies in wrong-being or wrong-doing? Is it or is it not true that the Royal Horticultural Society has sacrificed the credit or the interests of horticulture to gratify a faction or conciliate fashion? If not this, where is the justice or the wisdom of the charges that are being constantly made against it by yourselves and others? And if these charges are true, why should the wisdom or public spirit of all those who support the Society in its said courses be held up to admiration or imitation? All such praise and such support seem to many of us to render reform more difficult, and reconstruction almost impossible. It seems quite a new doctrine virtually to advocate that the best way to remedy an evil is to support it to the utmost of your ability. This is what all those who are making efforts to uphold the Society as it is seem to say to me, and I do not think it true. In this matter, who stand aloof from the shows are probably better friends to horticulture than the horticulturists who, no doubt with the best intentions, hasten to make the exhibitions successful. There can hardly be a doubt that, as long as these and other courses of revenue are available, the Society will adhere to its present policy. Now that all other legitimate means of reforming have been tried to little purpose, the time seems opportune and ripe for a new policy on the part of horticulturists, and the wonderful reform thus—Either make the Society in fact as in name, horticultural in government, fellowship, policy, or no more horticultural products shall be forthcoming to support it this would quickly starve the Society into submission or ruin. We have heard about the old ship *de navigation*: if she will consent to be overhauled, and if need be new manned, and above all will take a new tack, well; but if not, the sooner she founders the better. A larger vessel, with sounder timbers, and better rigging, and a better crew, is needed, as is needed to do justice to the horticultural wants and capacities of the present day. Adaptation, enlargement, or reconstruction, these call for the earnest consideration of every true horticulturist. In all such matters, the horticulturists of the Society simply because it is so, and that wholly by its own faults—which it still per-

sists in—got into bad repute, is a policy wholly unworthy of the commanding genius and wonderful business and common-sense capacities of horticulturists. D. T. Fish.

“Oh, most lame and impotent conclusion!”—after all this has been thrown back into the arms of the South Kensington ensnarer, and the Society to continue its existence as a parasite on a rich London district. Is it not about time to form a new Society—a national society of horticulture—which will be maintained by the now great and every-day-increasing body of horticulturists of the country? I have too many ties to the old Society, and too many friends among those who work it, to make me like to take an active part in raising a new one; but if any competent, energetic man will come forward, who, partly for the love of the cause, and partly for the promotion and a post, is disposed to work the matter, I will show him that there is abundance of power and will through the country, which only wants being brought together and organised to make a great Society; and meanwhile, as there may be another turn of the wheel, and the Council may be driven to seek their main support from the more earnest horticulturists, let me beg those who are collector names of would-be guinea Fellows of the Society when free, to increase rather than relax their exertions. George E. Wilson.

I have noticed a few remarks from the pen of Dr. Hogg in the *Standard* of January 20, and presume they may be taken as the official utterances of the Council, and there are one or two points in them that appear to be of very considerable interest at this moment. I will assume that the statement respecting the debentures being a charge against the surplus income after payment of its expenses only is a satisfactory one. I presume, therefore, that the same our Councils in times past been doing? Should not the first moneys they had have been placed to the credit of their rent account? I know my landlords have always given me pretty clearly to understand that the first duty of the tenant is to provide for their calls to the moment, but here, according to the Secretary's own words, the Council have been guilty, to say the very least, of a great piece of folly in paying the interest of the debentures on some occasions, which he says are only an after-charge, and leaving the whole of the Society's property at South Kensington at the mercy of our landlords, whom he sees reason to think will assert their authority, and bid us depart bag and baggage. Viewed in the mildest light, it is about as unbusiness-like a way of acting as could be devised. I am sure our tenants must have great doubts as to the real status of the debenture-holders to have acted in this way; for if not, they would seem to have acted disloyally in paying an after-charge, and leaving a debt unpaid on which, it might be said, the interest was due. The Society seems to depend. The Secretary further states that the Council, in total opposition to the vehement and oft-expressed opinion of the great body of the horticultural Fellows, are again coquetting with the South Kensington trustees, and are more to have been kept in their dreary splendour—we are to have pensions, hands, &c. All this has been tried before, and did not pay. Why, then, will they try to exist on the traditions of the past? Why do not they recognise the necessity of moving with the times? It is useless to go over again all the old sores, heartburnings, and discontents without a satisfactory issue from them seeming possible. I sincerely hope in Mr. Wilson's scheme of reconstruction he will not forget to make some proper provision for the nomination, as well as the election of members of the Council, &c. Our present form of receiving a printed notice of the names whom the Council recommend to fill the vacancies has long been a source of irritation and discontent to a large body of horticulturists, and has been the cause of more than the proper power of resistance. A day for nomination prior to the election would change all this, and give some real life and vitality to the impulses of the Society's affairs. *Robert Ernie Glouin*. [The remarks of the Secretary above alluded to have struck consternation into the breasts of the well-wishers to the old Society. We know not what to think, but we trust some explanation may be forthcoming. If not, the labour of the past few years has been indeed labour in vain. Eds.]

Double White Hepatica.—In the *Gardener's Chronicle*, Oct. 11, 1876, p. 494, reference is made to the double white Hepatica. It has been for many years renowned amongst growers of herbaceous plants that such a variety existed, but scarcely any one ever saw it. The late Mr. Donaldson frequently mentioned it if he met any one, and I think I can clear away the mystery respecting it. Some years since, when in the employment of Messrs. Hugh Low & Co., the late Mr. Hugh Low requested me to put a quantity of double white Hepatica just to do it. I did so, and the plants were sown in a row on the north side of a wall; most of them flowered, showing they were the right variety. Some time in

June or July following many of them threw up a second lot of flowers, every one of which were pure white and double. I remember showing some of them at Mr. Low's. They think do not vary with the double white Hepatica as a distinct variety, as all the plants that were not sold produced double blue flowers the next spring at their natural season of flowering. *William Hodge.*

The Rainfall at Dynevor Castle, Llandilo.—It may interest some of your readers to see the amount of rain we have had in the west part of Carmarthenshire:—January, 3.83 inches; February, 5.84; March, 3.12; April, 3.12; May, 0.60; June, 2.10; July, 2.43; August, 6.35; September, 6.40; October, 7.65; November, 5.96; December, 10.69—total number of inches, 59.62. The number of days on which 0.1 inch or more fell was 201, the greatest fall was on August 2, when 2.48 inches fell; 2.28 inches also fell on October 8; and over 1 inch fell respectively on eight other days in the year. *J. Ticehurst, Llandilo.*

Blackberries.—I think I before have recommended your readers to set up a Blackberry bed. The last year I had such a splendid crop, and so much enjoyed them, that I again most warmly recommend all who have not yet done so to once get a stock from Fisher, Holmes & Co., Handsworth, Sheffield, from whom I had mine, with directions for their growth. With the addition of one-third Berries, or a Lemon or two, they make a delicious tart; and for a month or six weeks the beds here are always occupied by youngsters (and oldsters also) picking the fruit at a time when there is not much to be had in the garden. In your columns of September 4, 1875, Blackberries were so much commended, and again in number for November 6 ("J. J.") gives such excellent recipes for jelly, &c., that I feel sure many would much enjoy a row or two of them right sort in their gardens. Fisher & Co. call them "Parsley-leaved," and their leaves are so prettily cut that they are almost worth growing as an ornament, independent of their fruit. The last summer and autumn were with us so dry and burnt up that all our bush fruits failed except the Blackberry bed. I should be glad if any of your readers would give their experience of the American kinds, and where they were procured from. *W. D. F.*

Fruiting of *Trachelospermum jasminoides*.—I have sent to you a few pods of seed of this plant, best known as *Rhynchospermum jasminoides* (fig. 19). We have several large plants on balloon trellises, they bloomed profusely last April and May, and as the flowers went off large numbers of these pods remained on all the plants. I have grown and flowered these same specimens for some years, and have not noticed their fruiting before, nor do I recollect having seen them in fruit elsewhere; but for all that the occurrence may not be singular. When the pods are first seen, and for some time after, the tip ends of each pair are united, as in the specimens you will see marked; after a time they disunite and grow apart. *John Wallis, The Gardens, Orwell Park, near Ipswich.*

How to Preserve Seeds.—Nearly every one knows to his cost the sad havoc made amongst early sown Peas and Broad Beans by rats and mice; but, perhaps, all do not know that these pests will not touch any seeds that have been mixed with a little red lead and water before sowing. I have never known this treatment fail to protect Peas, Beans, Radishes, Broccoli, Lettuce, Mustard and Cress, &c., from the ravages of rats, mice, as well as of all kinds of birds. No nets are required for seeds of any kind where red lead is used, and it does not affect the germinating power of the seed in the least. It may be powdered lead that is used, and the cost is about 4d. per lb., but the cheapest way of purchasing it is to get a small barrel, and a propagating glass is a handy thing to mix it in. Just enough water should be used to make the lead stick to the seeds; stir it round until it dries on and sow at once. *Robert Coock, Edinborough.*

Fair Dealing in the Seed Trade.—The conduct of one of our old customers, who succeeded his father, an equally good man, has been so exceptional in a matter of business, and so thoroughly what an Englishman's dealings in business ought always to be, that I consider it is quite worthy of a place in your columns. Your readers may be aware that it has of late years, through absurd competition, been customary for the seed trade, long before they can possibly know what the harvest may produce, to sell their Peas, Beans, and all kinds of seed at a speculative price, by which the seed is almost certainly damaged, and, as in this year of a generally deficient harvest, seeds have been sold in the summer at prices considerably less than their real value. The seed has, however, to be delivered at the price sold, while the seasons are less than usual, but the seeds have been sold at a higher price than they can be bought at after an abundant har-

vest, the seedman is expected to reduce his price, so that he has to suffer in either case. And now for the case of our old customer. He had bought very cheaply and fairly in the autumn at a given price, the harvest has been short and the Peas he bought are worth double the price they were sold to him at. In settling his quarterly account he writes thus:—"January 10, 1877.—As your imperfect knowledge of the value of the Peas in the autumn caused you to put too low a price on them, I see no reason why I should derive an advantage from the circumstance, and therefore I request to be allowed to pay the worth of them. I have added £— to your account." If every man in

The Rainfall at Alnwick Castle in 1876.—As the fall of rain during the last year has been in this part much above the average of former years, it may be interesting to some of your readers to know the quantity fallen during the various months, as recorded in the gardens here:—January, 0.88 inch; February, 4.23; March, 3.13; April, 4.40; May, 1.35; June, 3.42; July, 1.44; August, 2.60; September, 3.74; October, 1.06; November, 3.99; December, 8.38; total rainfall in the year, 39.52 inches. The rain gauge stands 178 feet above the level of the sea, and 4 inches above the ground; the funnel is 5 inches diameter. The rain is measured always at 9 A.M. *Alnwick Ingram, The Gardens, Alnwick Castle, Jan. 15.*



FIG. 19.—TRACHELOSPERMUM JASMINOIDES.

A, B, Fruit with plumose silky hygroscopic pappus. A, Pappus in moist air. B, Pappus in dry air.

business would treat his fellow with the same upright, generous, honourable spirit, that our old friend (who has little idea that we are writing of him) has done us, trade would be far more honest, and peaceable, and profitable, and the knaveries and trickeries of business would be unknown. *A Seed Merchant.* [Surely the names of those who act thus honourably should be made known. EDS.]

The Rainfall at Dale Park, Arundel.—The rainfall here for the past year was as follows:—January, 0.60 inch; February, 2.73; March, 3.85; April, 2.20; May, 1.12; June, 1.28; July, 0.86; August, 3.28; September, 6.04; October, 1.77; November, 3.47; December, 8.76—total, 35.06; being an excess of 4.38 inches on the previous year. *E. Sandford.*

The Best Late Grapes.—Herewith I send you a bunch of each of the three sorts of late Grapes that, in my opinion and experience, have proved to be best—Muscat of Alexandria, Lady Downe's, and Gros Colman. You will observe that Gros Colman is extraordinarily thin-skinned for a late Grape, and that the flavour is by no means second-rate. *W. H. Williams.* [The sample of Lady Downe's was first-rate. Gros Colman was tender and agreeable, but not equal to it in flavour. As always, Muscat of Alexandria comes first. EDS.]

Dracæna indivisa.—"J. G. M., Penzance," has mistaken what I wrote respecting this fine plant. I did not say that a specimen 9 feet high was only two years old, but that it was "about as many (*i.e.*, nine seasons) old." Nor was that other plant which stood

two winters out on an exposed cliff only two years old, for it was previously a well-established pot-plant, five or six years old, which, as the winds prevented its increasing in height, naturally subdivided into half-a-dozen easily detached portions. We have, in the garden, a very lovely *D. australis* which has twelve stems, all about equally tall, and spreading outwards. Such a plant as this would be much remarked anywhere. But I am pleased to hear that *Dracena indivisa* reaches to 12 feet high in Cornwall, for, if so, then here in the Channel Islands we may also look to see it quite as lofty. As yet it is, comparatively, unknown in the

November 9 last, Mr. Roberts, gr. to the Countess of Charleville, exhibited some very fine examples of this Grape, three bunches of which weighed 45 lb. 6oz. Mr. Roberts has kindly favoured us with a photograph of the heaviest of the three bunches, which weighed 16 lb. 6 oz., and the form and massive character of this excellent example of Mr. Roberts' skill as a Grape grower is well portrayed in the accompanying illustration (fig. 20). Mr. Roberts considers his true variety of Gros Guillaume, which is different to the ordinary forms in cultivation. At the same exhibition Mr. Roberts staged three bunches of Chald of Hale, weighing 18 lb., and also a fine sample of Gros

capital position. Care should be taken not to let them get too wet until growth commences, which will be in about three weeks. When fairly rooted they should be removed to a cold frame, always kept close to the glass, and never be overcropped. They may be potted in July into 4 or 5 inch pots, and should be watered with a little well-rotted manure and sand, again placing them in a cold frame close to the glass, and exposed to the light and air till the end of September, when they should be hoisted and receive a little fire-heat on cold nights. The temperature should never fall below 55°. A little weak guano-water may be given weekly when the pots become filled with roots. Plants grown in this way are stout and very short-jointed, retain their leaves to the pot's edge, and rarely exceed 12 inches in height, with scarlet heads 8 to 12 inches in diameter. If very dwarf plants are required they may be had by later propagation. *J. H. Goodacre, Elvaston.*

A Question for Vine Growers.—I should feel very much obliged to any of your correspondents who occasionally favour us with their useful and practical remarks on Vine culture in your columns, if they would give me their advice in the following case. I have some very long ranges of Vines, Black Hamburgs and Muscats, which have been forced for early work for twenty-five years past and have borne good crops during that time. They have received good treatment and have not been over-cropped, but the last few years they have shown signs of getting tired of the forcing, breaking weaker and with less fruit, this being more especially the case with the Hamburgs, the Muscats producing much stronger wood. The borders are outside and on the side of a hill, with porous rocky bottom. They are mulched each year with stable-manure, and now and then the surface-earth is peeled off and replaced with fresh, but the main roots have gone deep, so that this only seems to affect the surface ones. Would there be a chance of bringing them once more into bearing if the old rods were cut down so as to allow a young cane to take their place, or will it be necessary to root out the worn-out Vines and plant young canes? The latter course would be expensive, on account of the loss of crop. I feel sure there must be many whose houses are in a somewhat similar state to mine, and I shall be grateful to any one who will give me a practical hint as to the best course to pursue. *E. L., Jersey.*

Luminous Mycelium.—With reference to the letter of "W. G. S." in your last number, I had hoped to have sent him a piece of the luminous mycelium with the fungus upon it. Unfortunately the recent rains have caused a landslide, which brought the whole stump down and covered it with earth; there were some fragments of luminous wood, but only a small piece of fungus could be recovered. *H. King, Chit-hurst, Jan. 22.*

Euonymus japonicus.—I herewith send you two small branches of fruit of the *Euonymus japonicus* or Japanese Spindle Tree. The plant from which I gathered them is 10 feet high and nearly as much through. It is covered with the berries, which have proved useful during the past festive season in the absence of Holly berries. My attention was called during the past summer to a plant growing at Havre des Pas, near the sea, which was then covered with clusters of small greenish white flowers. I have watched that and other plants, all growing in very sheltered situations, and seeing the pretty fruit in such abundance on this particular plant this morning I sent it to you. Although I have known this plant more than forty years I never recollect to have seen it in flower or fruit before. It, as well as the golden-leaved variety, is used extensively here for planting hedges with, and answers the purpose admirably where no particular power of resistance is required. *Charles B. Saunders, Jersey.*

Cedars of Lebanon.—In Mr. Evershed's interesting article on the Cedar of Lebanon he observes, at p. 40 of the *Gardeners' Chronicle*.—"In Evelyn's *Silva* of 1664 he does not mention the Cedar of Lebanon, and we may, therefore, be sure that it had not then descended from its Syrian mountain to the congenial level of the banks of the Thames," but though Evelyn in the pages which he devotes to the tree he loves so well by reputation, points to his knowledge of it as not growing then in England, it seems due to his great desire to introduce it to note his endeavours towards its growth. In the opening sentence of vol. ii. of the same work he mentions the cedar of Lebanon, and in no way backwards in his own exertions, for at p. 9, after a description of the trees on "Mount Lebanon," he observes relatively to the

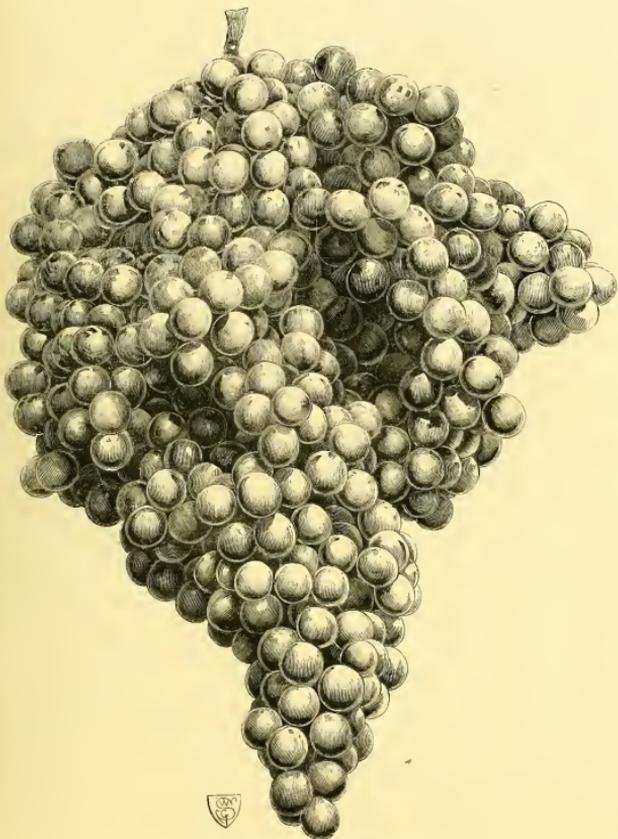


FIG. 20.—GROS GUILLAUME GRAPE GROWN BY MR. ROBERTS.

islands. Attention has been lately drawn to the beauty of this plant in a contemporary, and young specimens are now being offered for sale at very high prices, so that, considering how readily some parts of the Scilly Isles could be made into nurseries of it, there may be persons willing to do so. But the particular reason of my mentioning the fact of its doing fairly well on the seashore was to show how much less delicate its habit is than is supposed, while on lawns its peculiarly striking appearance would be a desirable feature, even if a little protection were given during the severest weather only. *Thos. C. Erbsaht.*

The Gros Guillaume Grape.—At the autumn fruit show of the Royal Horticultural Society of Ireland, held in the Exhibition Palace, Dublin, on

Colman. For these highly meritorious productions the Council of the Society subsequently awarded Mr. Roberts a silver medal. Eds.

Poinsettia Culture.—A simple and successful mode of Poinsettia cultivation that may suit "Enquirer's" convenience came under my notice about twelve years ago, and up to the present time I have not seen a better. Commenting with the ripened plant, which generally swells up its buds about April and May, let these buds be taken off with an inch of the old wood attached and put into 3-inch pots horizontally, in a similar manner to Vine eyes, with the point of the bud just level with the surface of the soil. Then plunge into a bottom-heat of about 75° or 80°; round the sides of a Cucumber or Melon frame is a

culture:—"The seeds drop out of the cones as the Fir and Pine kernels do when the air, sun, or moisture open and unglue the scales, which naturally it else does not in those of the Cedar till the second year, but which after all the preparations of burying in holes in the earth and sand in which they are after to rot, may more safely be done by exposing the clogs discreetly to the sun, or before a soft and gentle fire, or, I think best of all, by soaking them in warm water." Hence, according to the author, the seeds are not so delicately to the Cedar, and in his letter on the "damage" to his trees by frost of the preceding winter, written April, 1684 (see *Philosophical Transactions*, 1684), and printed in the collection of his miscellaneous writings, he remarks, when speaking of his "Exotics"—"The Cedars, I think, are lost," may refer to other species. Still whether or not Evelyn was as Loudon thinks probable, the introducer of the Cedar into England, there is much of interest in the certainty of his having himself imported the cones from Lebanon, and experimented on their treatment. O.

—We have here an old Cedar of Lebanon, variously estimated at from 200 to 260 years old, and which at 4 feet is 19 feet 9 inches in circumference. It is in the neighbourhood of the base of the spread of the two longest lateral branches is 92 feet. *C. v. Crousthorst, Gr. to A. Duncan, Esq., Holbrooke, Chiltolhurst.*

Weather Folk-lore.—It is an old saying with the people round here (Atherstone), "When the wind is on Martinmas Eve (November 11), there it will be the wind of the winter. It is pointed out so far—it was south on the Eve, and it has been there most of the time ever since. Another saying is, "When there are two full moons in one month there are sure to be large floods." This also has proved true—there were two full moons in December, and disastrous floods. *W. Brown, Merle.*

Condition of Vine Roots.—I am glad to be able to send you some information respecting the condition in which I found the roots of some Vines that I uprooted here in June, immediately after the fruit was cleared off, in order to replant with young Vines the same season. These Vines were started at the end of November, and were planted in an inside border with apertures in the front wall to enable the roots to ramble outside at pleasure. When clearing out the old border we found very few living roots inside the wall, the greater part, and by far the healthiest, were outside—the roots were only just starting, and were outside in both inside and out at the same time. The outside border had been covered with a slight botch to protect it from severe weather. The Vines were tolerably healthy, and produced a moderate crop of fruit. Had I the opportunity to bury the roots as I pleased, experience teaches me to have inside borders for (very) early and (very) late Grapes only, for Vines planted in small inside borders flourish only for a short time. Ordinary season Grapes, say from July till November, may be made to flourish with a good longer duration, especially where there is good drainage. The finest house of Black Hamburgs I ever saw was where all the roots were outside, and the best finished Muscats were all inside. As a constant reader of the *Gardener's Chronicle*, I can answer for myself that I do not wish in any way to discourage Mr. Wildsmith from putting his views before the gardening world, but shall be ever ready to accept them at their worth. It would be well, however, for him to remember that Heckfield is very favourably situated in many things, and that Vines flourish there, while in other places things very hardy will only just live. *J. H. Goodrich, Elyston.*

Reports of Societies.

Botanical, of Edinburgh: Feb. 11.—Dr. Cleghorn in the chair. The following communications were read—

1. **Obituary Notices of Members Deceased during 1875-76.** By Professor Balfour and Mr. F. M. Webb. *N. Veridicus*, a new species of *Neris*, in Invernesshire, in July last, by the Scottish Alpine Botanical Club. By Mr. John Sadler, Secretary to the Club. [This paper we shall publish shortly.]

3. **Notice of some British Plants in the University Herbarium, at the Royal Botanical Garden, part 3.** By Mr. F. M. Webb.

4. Of Elodea (the American Water-weed) Mr. Webb mentioned that the earliest specimens contained in the collection were from Dr. Johnston, 1848. He also sent a series of the Irish plant sent by Professor Oliver, in 1874; and of the Scotch plant the original specimens picked August 13, 1875, by Messrs. Robb and Sturrock, with Mr. Robb's letter asking identification. The collection of Potamogetons he stated to be very good, including many from Mr. Kirk, and their value increased by the

whole having passed through the hands of Dr. Boswell in the preparation of *English Botany*. Of Salix he stated the Herbarium contained a very fine series, including the original and recent specimens of Rev. J. E. Lee, in his collection of alpine plants, and of the plants therein described, besides representing the determinations of Mr. Crowe and Sir J. E. Smith. In speaking of S. Grahami, he quoted Mr. Watson's statement, that Dr. Graham assured him the plant was brought from Sutherlandshire only herbaric, and stated that if the plant now labelled S. Grahami in the Edinburgh Botanic Garden was the same, it had certainly again reverted to S. hercatica, for it undoubtedly was nothing more. Perhaps, however, the original had been introduced from the West Indies to the genus Willows, viz., S. Sadleri, Mr. Sadler had given his original specimens to the collection. Of the Oaks, Mr. Webb said the collection could fairly challenge competition, it numbered some eighty sets of specimens, including the material Dr. Johnston had collected as the basis of his paper read to the Society, March 11, 1841, in which he showed that the book botanical characters by which *Quercus pedunculata*, *intermedia*, and *sessiliflora* are distinguished pass insensibly and completely into each other. Referring to the genus *Ranunculus*, he showed specimens, and gave a list of localities in the three Lothians, Fife, and Roxburgh, for *R. pratensis*, which is not mentioned in the *Flora of Edinburgh*; he also spoke of *R. conspersus* as likely to be found where *R. domesticus* (aquaticus) prevailed, and pointed out the occurrence in large quantity, by Tweed above Kelso, along with that species; and of *R. rupestris*, only recently brought into the British list, but found in Jersey, and distinguished as a distinct plant by the Rev. W. W. Newbould in 1841. Mr. Webb also mentioned the interest of specimens of *Erica vagans* Professor Balfour at Babbicombe in 1839, which, with queries and interrogations, had lain undetermined from that time in the Ramex folios of the Herbarium.

4. **Notes on the Localities for Erica vagans in Scotland.** By Professor Balfour.

Dr. Balfour stated that he had lately received a letter from Mr. James Gilmour, Birmingham, informing him that a gentleman (Mr. John Douca) had gathered in September last specimens of *Erica vagans* growing on the hillside within half-a-mile of the inn at Stronachlach near the head of Loch Katrine, Fifehire. Dr. Balfour was at first doubtful of the genuineness of which was exhibited) and the locality, but the question was as to its being in a wild state and a native in the locality. This has not been proved, and Dr. Balfour looked upon it as an accidental escape from some garden. *Erica vagans* seems in Britain to be introduced from Perthshire in 1830, and has never been reported from other counties, but the localities are all very doubtful. The English counties mentioned are Devon, Gloucester, Worcester, Glamorgan and Derby, and the Scotch counties Argyll and Inverclyde, and Perthshire. Dr. Balfour was informed by the late Mr. Robert Traill, of Aberlady, that the plant grew on the hills near Lochliphead, and accordingly visited the district in September in 1868, but failed in finding it. After visiting the hills he went to Sir John Orle's house at Kilmory, which is in the district, where he saw abundance of the *Erica vagans* both in the garden and outside of it. The plant seeds well, and is scattered far and wide.

In 1836 Mr. George Dodds, then a student of Cornwall, sent me some specimens of the Heath from the neighbourhood of Inverness. *Proceedings of the Botanical Society for 1837*, the following statement occurs—"Mr. W. H. Campbell read a letter from Mr. Robert Ball, of Dublin, to Sir W. Hooker, mentioning that *Erica vagans* had been discovered by Dr. Barlow on an inlet on the coast of Waterford, near Tramore, in Ireland." In Baker and Tate's *Flora of Northumberland* it is stated that there are fine specimens of the plant in Robertson's collection in the Newcastle Museum, labelled *N. Veridicus*, and now Perthshire, 1841. *Cyclops vol. iii. p. 150.* Mr. H. C. Watson says that *Erica vagans* is only known with certainty, in a few localities in Cornwall, chiefly on the Lizard. In his *Topographical Botany of 1873* he mentions only Cornwall, as a plant, and refers to the other stations as misreported or planted.

5. **Holly in Flower at Christmas.** By Mr. M'Nab. At the last meeting of the Botanical Society I called attention to the great scarcity of Holly berries on the trees and bushes round Edinburgh. Since that time I have received a number of letters from my correspondents in various parts of the kingdom. From these I learn that the scarcity has been very general, and different causes are assigned for it. The only places where an abundant supply of berries was noticed were in some of our Highland districts, such as at the Trochais and Loch Katrine, also at Loch-

ard in Aberfoyle. One correspondent, at Knaclagh, near Dublin, informs me that, on sending into the garden before Christmas to collect what sprigs of Holly could be got with berries, instead of berries, he got only a few twigs, and he accordingly found that several of the trees were covered with clusters of white and cream-coloured flowers. I immediately wrote for specimens, which I now place before the Society, on which all the flowers, both open and closed, are preserved. The cones assigned for this early blooming was, that the blossoms must have been destroyed by snow and frost on April 14 last year. During the past summer many of the plants had nothing to do in the way of maturing fruit, so flower-buds had been formed and the blooms opened before their time. What the result of this early blooming will ultimately have on the Holly, another year will tell. On looking over the Holly bushes now in the garden young buds are observed to be very abundant, but so backward that flowers cannot be expanded for months to come. There is a fair appearance of fruit for next Christmas, if no untimely frost should occur. Some correspondents allege that the late wet autumn had much to do in causing the berries to fall off white in a green condition. This I do not believe, as the berries were not there when they were not in such quantities as to fall. The few which did ripen are those which must have been in the best condition, and perhaps partially sheltered at the time the general blooming was destroyed.

6. **Effects of the Late Moist Autumn on Certain Plants.** By Mr. M'Nab.

The autumn of 1876 has been particularly unsuitable for ripening the flower-buds of many of those plants which are generally lifted from the open air during the months of August, September, and December, for the purpose of subjecting them to artificial heat, and thus bringing them into flower during the winter season, both for conservatory and table decoration. Rhododendrons, particularly the late-flowering varieties, known and cultivated as the *R. nobilissimum* &c., are exceedingly useful for this purpose. They are lifted in flower-bud, and forced almost every year. Although many of those lifted last autumn were apparently well-budded, very few of them seem to have been properly ripened, and the flowers have developed in a state of scarcity of Rhododendron flowers at this season seems very general, particularly in the gardens and nursery establishments round Edinburgh, and I am inclined to think, from the high price of flowers quoted in Covent Garden, that the scarcity is not at all confined to this district. Judging from the unripened state of those Rhododendrons already experimented on, I have no hesitation in saying that the number of imperfect blooms has in a measure been caused by the unusually great deficiency of sun during the autumn and winter months, and the incessant rains experienced during that time. At this period the effect is well marked on all the early flowering Rhododendrons, but what it will be on the late-flowering varieties, as well as on the blossom of other plants, I do not know, and it is difficult as yet to say. Rhododendrons, as a rule, particularly if the buds are well ripened in autumn, and even under an ordinary clear sky, are generally much more easily forced into bloom than those specimens put into heat, and which have not been subjected first to a certain amount of autumn or winter frost. Even the frost of last November has had no effect on those already tried, the buds not being sufficiently matured beforehand for this purpose. The early ripening of Hyacinths, Tulips, and Narcissus, as well as many other plants, and the almost universal frost, strongly owing to the late sunless weather experienced since they were subjected to heat.

Dr. Paterson mentioned that at Airthry Castle the Peach blossoms this season were all white instead of pink, which was probably for want of sun.—Mr. Dunn stated that in some of the cases and in some of the peach-houses at Dalkeith, and moreover the flowers were small and thin in the petals, nevertheless they were setting well.

Miscellaneous Notices.—1. A letter was read from Mrs. Dalziel stating that the Holly bushes in the neighbourhood of Loch Katrine had the second year's crop of berries. Specimens of fruiting branches were exhibited. Mr. Dunn stated that at Drumlanrig, in Dumfriesshire, the Hollies had fruited abundantly this season.

2. Mr. John M'Credden presented specimens of *Cyclopteris fibellata*, *Utricularia*, and *Leprodendron* growing from Wigan coal-field.

3. Dr. Paterson, Bridge of Allan, exhibited a large growing plant of *Lycaste Skinneri* with monstrous flowers.

4. Dr. Cleghorn presented dried specimens of *Eriostachys purpurata*, the stems and leaves of which, when pounded up are used for poisoning fish in some parts of India. Also specimens of *Reptonia buxifolia* from Peshawar Valley. The tree, which grows from 6 to 12 feet in height, yields a small edible berry. It is called Gurghrah.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, JAN. 24, 1877.

Table with columns: MONTH AND DAY, BAROMETER, TEMPERATURE OF THE AIR, Hygrometric observations, WIND, RAINFALL. Rows for Jan 18-24 and a Mean row.

- Jan. 18.—A dull overcast day. Occasional rain. Mild.
19.—A very gloomy day. Rain fell in morning. Strong wind. Very mild.
20.—A dull gloomy foggy day. Mild.
21.—A fine, cold day. Bright and clear. Fog in morning.
22.—A very fine clear day. Cool. Hoar-frost and fog in morning.
23.—A very fine bright day. Hoar-frost and slight fog in morning.
24.—A fine day, light clouds. Cool. Rain fell in early morning.

LONDON: Barometer.—During the week ended Saturday, January 20, in the vicinity of the metropolis the reading of the barometer at the level of the sea decreased from 30.07 inches at the beginning of the week to 29.56 inches by the morning of the 14th, increased to 30.14 inches by the evening of the 15th; decreased to 29.8 inches by the evening of the 18th, and increased to 30.55 inches by the end of the week. The mean reading for the week at sea level was 29.97 inches, being 0.22 inch above that of the preceding week, and 0.06 inch above the average.

Temperature.—The highest temperatures of the air observed by day ranged from 58° on the 19th to 45° on the 15th; the mean for the week was 51°. The lowest temperatures of the air observed by night varied from 33° on the 15th to 47° on the 19th; the mean value for the week was 35°. The mean daily range of temperature for the week was 12°, the greatest range of the day being 14° on the 20th, and the least 9° on the 17th. The mean daily temperatures of the air were as follows:—14th, 43°; 15th, 38°; 16th, 46°; 17th, 45°; 18th, 44°; 19th, 53°; 20th, 43°; 21st, and the departures in excess of their respective averages were:—7, 4, 2°, 3, 9, 5, 11°, 5°, 7°, 0, and 6°. The mean temperature of the air for the week was 45°; 5, being 8.7° above the average of sixty years' observations.

The highest reading of a thermometer with blacked bulb in vacuo placed in sun's rays, was 81° on the 16th, 77° on the 15th, and 65° on the 19th; on the 14th 51° was the highest reading. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 30° both on the 15th and 19th, and 24° on the 16th; the mean reading for the week was 33°.

Wind.—The direction of the wind was S.W., and its strength brisk at times. The weather during the week was generally dull, cloudy, and showery, but still very mild. Fog prevailed on Saturday the 20th.

Rain fell on five days during the week; the amount collected was 0.45 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 58° at Blackheath and 57° at Cambridge; at Plymouth 54° was the highest temperature. The mean value from all stations was 55°. The lowest temperature of the air observed by night was 31° at Manchester; at Portsmouth and Liverpool 36° was the lowest temperature. The mean from all stations was 34°. The range of temperature in the week was the least at Brighton and Portsmouth, both about 19°, and the greatest at Manchester, 26°. The mean range of temperature in the week from all stations was 22°.

The mean of the seven high day temperatures was the highest at Truro, 57°, and the lowest at Hull, 48°; the general mean from all stations was 50°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 34°, and the highest at Portsmouth, 43°; the mean value from all stations was 39°. The mean daily range of temperature in the

week was the greatest at Birmingham, 14°, and the least at Bradford, 8°; the mean daily range from all stations was 11°. The mean temperature of the air for the week from all stations was 44½°, being 5½° higher than the value for the corresponding week in 1876. The highest was 47½°, at Portsmouth, and the lowest 41°, at Wolverhampton.

Rain fell on every day in the week at Plymouth, Nottingham, and Exeter, and on five or six days at most other stations. The amounts measured during the week varied from an inch and six-tenths at Plymouth, an inch and four-tenths at Truro, and an inch at Liverpool, to three-tenths of an inch at Cambridge and Norwich; the average fall over the country was seven-tenths of an inch.

The weather during the week was cloudy and dull, showery, but very mild. At Brighton on January 19 the highest temperature was 54 7/8°, and is the highest temperature in January during thirty-seven years; and Saturday, January 20, was the first day without rain since December 24, 1876, at Brighton.

SCOTLAND: Temperature.—The highest temperatures of the air varied from 53° at Leith to 48° at Dundee; the mean from all stations was 50°. The lowest temperatures of the air varied from 27° at Perth to 34° at Dundee; the mean value from all stations was 32°. The mean range of temperature from all stations was 18°.

The mean temperature of the air for the week from all stations was 40°, being 4° lower than that of England, and 1° higher than the value for the corresponding week in 1876. The highest occurred at Paisley and Leith, both 42°, and the lowest at Perth, 38°.

Rain.—The amounts of rain measured during the week varied from 2 1/2 inches at Greenock and 2 1/4 inches at Paisley to rather more than three-quarters of an inch at Aberdeen and Leith; the average fall over the country was 1 1/2 inch nearly.

DUBLIN.—The highest temperature of the air was 54°, the lowest 29½°, the range 25°, the mean 43½°, and the fall of rain 1.05 inch.

JAMES GLAISHER.

Obituary.

It is our sorrowful duty to announce the death of Mr. ALEXANDER CAMPBELL, which took place at his residence, 11, Thyssa Street, Chorlton Road, Manchester, at the advanced age of four score and two years. Mr. Campbell, who some fifty years since was gardener to the Comte de Vandes at Bayswater, left that situation in December, 1857, to take charge of the Botanical Gardens, Manchester, and rich faithfully did he discharge his trust for nearly thirty years; for not only was there a rich collection of flowering plants, Palms, &c., got together, but at one time there was also a fruit department in the gardens, and Pine-apples, Grapes, and Peaches "claimed kindred there;" and as the "olive branches" of our merchant princes were constant visitors to the gardens, and childlike craving information, the curator was always a centre figure in the group,—"A man he was to all the country dear."

How many grown-up amateurs have dated their first knowledge of plants from Mr. Campbell may never be known, but the seeds were sown, and we are happy to say the crop is heavy, for the gardens within thirty miles of Manchester are at this day rich in floral wealth, as the grand annual exhibitions amply testify. Mr. Campbell, by his extensive acquaintance with the great growers of new and rare plants in London and in the provinces, collected a mass of choice specimens with which the gardens were enriched. Mr. Campbell's kindly welcome to strangers visiting the gardens may have had much to do with their making him presents of plants and seeds in return, for friendship's sake, for he was passionately fond of plants, and seemed always thankful for any addition to his collection, which he had loved so long and so well; and now that he has gone to his last resting-place in the Salford Cemetery (Mrs. Campbell had gone before him some years since), loving hands placed a wreath of flowers upon his coffin.

Mr. Campbell, who by his name, as so many suspect, was a native of Scotland, having been born in the parish of Contin, Ross-shire, never wholly discontinued the northern form of speech. His name may yet be found in the Gaelic Family Bible, as is the customary register of that time and place. His long and extensive experience made him like a book of reference to those who sought information on a plant. He was a corresponding member of the Horti-

cultural Society in its palmy days; and the late Mr. J. C. Loudon constantly consulted him when he was his neighbour at Bayswater. He has left a valuable library of books on botany, natural history, &c., to his son and heir, who has seen the press to his honoured parent in his declining years. Mr. Campbell was able to walk until within a few months of his decease; he had no particular ailment, and died from decay of Nature. The writer saw him only one day before he died, in his last peaceful sleep, breathing calmly as a child. A. F.

Enquiries.

Has that gentleman much shall learn much.—BACON. 162. CHARCOAL FOR VINE BORDERS.—Which is the best way of putting charcoal in vine borders for assisting Grapes to colour? Is it any one putting charcoal into old borders for that purpose? If so, what quantity is required for a border 15 feet by 20 feet? E. B. [See Mr. Wildsmith's communication at p. 718, vol. v. Eds.]

163. RAISING STOCKS IN SCOTLAND.—What month do they use for raising stocks in Appie and Peat pips, for stocks in Scotland? W. H.

164. ROMAN HYACINTHS.—M. M. asks if any one can tell him the origin of the early-flowering white Roman Hyacinths, which have been largely cultivated for many years during the past few years. They seem quite constant to the diminished growth and loose spikes of smaller flowers which have characterised them from the first, and their odour is different—sweeter than that of the common Hyacinth, and suggestive of specific difference. The flower, too, is different in form and shorter and broader in the tube than the blue specific types of Hyacinth grown in botanic gardens. They have been sometimes referred in gardens to Bellisaria romana, but have nothing to do with that plant, being true Hyacinths. Do they come from any distinct wild stock or are they selections selected and perpetuated by the Dutch florists?

165. DIGGING MACHINE.—Has such an implement as a digging machine, capable of being worked by a small steam engine, or, in fact, any other form of digging machine, ever been invented and brought into practical use? [Mr. J. H. Knight, Weybame House, Farnham, is the inventor of a digging machine, which we understand, and we believe, to be actually, in one of the Kentish Hop-gardens, last autumn. Eds.]

Answers to Correspondents.

BONE DUST: North Lincoln. 8 to 10 cwt. per acre of bone-dust is a common dressing in Cheshire. It would probably be a more economical, and equally permanent, dressing during the past few years, to get a growth of grass by applying a cwt. per acre of nitrate of soda at two dressings, in March and April respectively, and then feed off the growth with sheep and cattle, giving them decorticated cotton-cake on the land all the summer.

CINERARIA LEAVES: Cor. The markings are the work of a grub which tunnels through the substance of the leaf. Watch in the evenings, and pick off and burn every affected leaf.

CHIMONANTHUS FRAGRANS: J. M. Hardly against a wall, and will grow well under ordinary treatment.

CORNUS ALBA, &c.: G. P. M. The red stems of this shrub are more ornamental than those of Cornus mas, which are green. C. alba should not be planted under trees. It will keep rain from falling on a wall, and will so far tend to dry it; but if the damp arises from an imperfectly built foundation it will not stop the damp from rising, nor will any other plant.

CREEPERS: North Lincoln. Cratogeomys pyramidalis, Heclera Regeneriana, Smilax rotundifolia, Lonicera brachyopoda (near evergreen), Bridesia spicata.

DARLINGTONIA: F. M. Dublin. The Darlingtonia of De Cadeville, in the collection of the late Duke of Devonshire, is a name to be abandoned, as it is a mere synonym of Desmanthus, Darlingtonia of Torrey, nat. ord. Sarraceniacus, is to be retained as correct, and superior to the latest views.

GARDEN ENGINE: B. B. The engine now inquired about is sold by Messrs. Barnard, Bishop or Barnard, Norwich. See our last vol. p. 175.

LOVE IN A MIST: J. P. The popular name of Nigella damascena.

MILDEW: P. B., Sunk Island. A low temperature in conjunction with a moisture-saturated atmosphere will produce mildew on Vines, and it is to be avoided by keeping the air in the house brisker and drier, and in dusting the affected parts with flowers of sulphur.

MONASTERS MUSHROOM: J. Hopkins. A not very unusual occurrence.

MOSES: J. B. Try Berkeley's Handbook (Reeve & Co.).

NAMES OF FRUITS: J. G. The name of Black Gillyflower is quite correct. See American fruit lists.

NAMES OF PLANTS: W. D. 1. Lobelia floribunda; 2. Justicia spicata; 3. Nephrodium molle. Of the others, send better specimens.

* Numerous communications are unavoidably postponed.

ERRATA.—At p. 80, col. c, for "M. Pringsheim," read "M. Prillieux." At p. 89, col. a, for "Thunja Cavendishii," read "Musa Cavendishii."

PUBLICATIONS RECEIVED.—The Various Contrivances by which Orchids are Fertilised by Insects, by Charles Darwin, M.A., F.R.S., &c., 2d edition, revised. Murray, W. & A., 10, Abchurch Lane, London. Paris, the following new publications and reprints:—Les Aliments; Guide Pratique pour Constatier les Falsifications des Farines, Féculés, Cafés, Chocolats, Thés, Epices, Aromates, &c. Translated from the German of A. Vogel by Ad. Facillon. —Les Ravageurs des Vergers et des Vignes avec un étude sur le Phylloxera, par H. de la Blanche. —Les Ravageurs des Forêts et des Arbres d'Alignement, par H. de la Blanche et le Docteur Eug. Robert. —Effet des Fumures, par M. de la Organisation, Chasse, Classification; par A. Depéret, 2d edition. —Les Champignons. 4th edition, par F. S. Cordier. —Les Prairies Artificielles, par Ed. Vienne. —Stormouth's English Dictionary, 3d edition. W. Blackwood & Sons, Edinburgh and London. —Proceedings of the Academy of Natural Sciences of Philadelphia. Part 2, 1876. Philadelphia: Academy of Natural Sciences. —The Popular Science Review. Hardwicke & Bogue, 123, Piccadilly. —Dictionnaire de Botanique, par M. H. Bailion. Paris: Hachette et Cie. —Flore Gallie, par A. Toscani di Orlicultura. —Illustration Horticole.—An Essay on New South Wales, the Mother Colony of the Australias, by G. H. Reid (Trübner & Co.). —Forage Plants and their Economic Conservation, by J. Hartley. J. & W. G. & Sons, 1, Pall Mall. —Design and Work. Part I, vol. 2. —The Cactus and other Succulents, by H. Allnutt. 200, Fleet Street.

CATALOGUES RECEIVED.—William Henderson & Co., Edinburgh Street, (Birdenhead). —Gardens' Calendar and Catalogue of Garden, Farm, and Flower Seeds. Messrs. Carter & Co. (237 and 238, High Holborn, London). Catalogue of Select Vegetable and Flower Seeds.—Messrs. W. Sanson & Co. (Nurserymen, Kilnmarlock). Spring Catalogue of Seeds, Plants, and Implements.—Messrs. Vilmorin-Andrieux & Co. (4, Quai de la Mégisserie, Paris). General Catalogue of the Vegetable and Flower Seeds of the Continent. Thomson (30, Waterloo Place, Edinburgh). Descriptive Catalogue of Vegetable and Flower Seeds, by Gladst. Implements.—Messrs. J. Parker & Co. (86, Golden Lane, Barbican, London). Wholesale Trade Catalogue of Garden, Agricultural, and Flower Seeds.

COMMUNICATIONS RECEIVED.—H. G. B. P.—R. (Hall's C. & Co.). J. B.—G. I. D.—H. E. O.—H. G. B.—J. J. (Thompson & Co.). R. W. H.—B. H.—J. J.—C. A. L.—R. C. M.—(many thanks). S. J. N.—P.—L. L.—C. A. L.—R. C. M.—A. E. (The Gardeners' Chronicle). W. W. Adeline.—J. C. F. W.—E.—J. C. B.—A.—E. Munich.—W. T.—C. E. W.

Markets.

COVENT GARDEN, January 25.
The supply of Apples is now confined to Golden Knobs, Blenheim Orange, and Wellingtons, with moderate consignments from America, all of which are now making good prices. Early forced vegetables are arriving in fair quantities; culivars of the season are in the market. Cucumbers are in good demand. Kent Cobs scarcely asked for. James Webber, Wholesale Apple Market.

VEGETABLES.

Artichokes, per bush	4 0-0	Leeks, per bunch	5 0-0
Asparagus, per doz.	1 0-0	Lettuces, per doz.	1 0-0
Beet, per doz.	1 0-0	Onions, per bush	1 0-0
Brussels Sprouts, per bush	7 0-0	Peas, per bush	1 0-0
Carrots, per bush	0 6-0	Potatoes, per bush	1 0-0
Celery, per bundle	1 2-0	Rhubarb, per bundle	1 0-0
Chilis, green, per 100	3 0-0	Spinach, per doz.	1 0-0
Cucumbers, each	2 0-0	Tomatoes, per doz.	1 0-0
Endive, per doz.	1 0-0	Turnips, per bush	4 0-0
Herbs, per bunch	0 2-0	Peas, per doz.	1 0-0
Radish, per bush	4 0-0	Peas, per doz.	1 0-0
Potatoes—Kent Regents	4 0-0	Potatoes—Kent Regents	4 0-0

to 4 5; Kidneys, 4 0 per ton.

FRUIT.

Apples, per 1/2 sieve	1 6-0	Oranges, per 100	5 0-0
Cobs, per 100	1 0-0	Peaches, per doz.	6 0-0
Grapes, per lb.	3 0-0	Pears, per doz.	1 0-0
Lemons, per 100	1 0-0	Pine-apples, per lb.	2 6-0
Melons, each	1 6-0		

PLANTS IN POTS.

Azaleas, per dozen	2 0-0	Heliotropes, per doz.	5 0-0
Begonias, per doz.	1 0-0	Hyacinths, per doz.	8 0-0
Bouvardias, do.	6 0-0	Roses, per doz.	9 0-0
Camellias, do.	2 0-0	Roses, per doz.	9 0-0
Cyclamens, per doz.	1 0-0	Mignonette, do.	6 0-0
Coleus, per dozen	3 0-0	Primulas, per doz.	3 0-0
Delphiniums, per doz.	1 0-0	Palm in variety, each	3 0-0
Cypresses, do.	3 0-0	Palm in variety, each	3 0-0
Dracena terminalis	3 0-0	Pelargoniums, scarlet,	0 10-0
Geraniums, per doz.	1 0-0	Prunella sinensis, doz.	4 0-0
Epiphyllum, per doz.	18 0-0	Solanums, per doz.	6 0-0
Ficus, in var., per doz.	6 0-0	Tulips, per doz.	1 0-0
Flowering plants, per doz.	9 0-0	Valerita purpur., doz.	12 0-0

CUT FLOWERS.
Anemone, 15 sprays, s. d. 4
Bouvardias, per bun. 1 0-0
Camellias, 12 blooms 2 0-0
Carnations, per doz. 4 0-0
Cyclamens, per doz. 0 12-0
Euphyllium, 12 blms. 2 0-0
Eucharis, per doz. 6 0-0
Euphorbia, 12 sprays 2 0-0
Gardenias, per doz. 4 0-0
Hyalanth., Rom., 12 sp. 6 0-0
Lily of the Valley, 12 sp. 9 0-0

Miconia, 12 buds, s. d. 4
Narcissus, 12 sprays 3 0-0
Pelargoniums, 12 spr. 2 0-0
Roses, 12 sprays 6 0-0
Tulips, 12 sprays 4 0-0
Primula, dill, p. bun. 1 0-0
Roses, 12 sprays 6 0-0
Christmas, bun. 6 0-0
Tulips, 12 sprays 4 0-0
Tropaeolum, 12 buds. 0 10-0
Violets, 12 buds. 1 6-0

Stephanotis and Gardenias blooms are very scarce.

SEEDS.

LONDON, Jan. 24.—Our seed market this week has been fairly attended, and more disposition to operate has been shown by country buyers. From America (in which country this season the chief interest is centered) the arrivals of red Clover seed continue on a most limited scale, and values in consequence, both here and there, exhibit remarkable steadiness; indeed, the firmness which characterises this leading article imparts a strong healthy tone to the whole trade. A good quantity of the Clover seed shipments from New York finds its way to our market in consequence. Of home-grown samples of red Clover seed there is a fair number offering, but they mostly represent exceedingly small quantities. There has been more business doing in Alsike at increased rates. White Clovers will sustain the late advance. Trefoil is quiet. The bulk of red Trefoil sold this week for export consumption, is held in London; and the unprecedented rise last autumn, and the tempting profits consequently offered, induced country houses to let go their seed holdings, at a considerable price, and to come upwards. Renal grasses, although not at present much dealt in, are quietly hardening in value. For Sainfoin and Lucerne occasional buyers are found at full rates. Rape seed must be noted 25. to 27. per cwt. dearer. There is more enquiry for spring Tares, and quotations in Kongberg are a good shilling higher. Canary seed is unchanged, and Hemp is still cheap and neglected. Blue boiling Grass, owing to the colder weather, are in somewhat improved request. Linseed is without alteration.—John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.

CORN.

At Mark Lane on Monday millers operated very cautiously in Wheat, and quotations were much the same as on Monday last. Fine dry samples of English Wheat, however, were held for rather more money, owing to the smallness of the stock, but steady prices of sale, and prices were unchanged. In Mail, superior qualities were decidedly firm. Oats changed hands quietly, on former terms. The bulk of red Potatoes available here for Malin, Penza, and Pesa. Flour was quite as dear, but not freely dealt in.—On Wednesday there was no new feature in the trade. Fine dry parcels of Wheat were firm, with a slight advance in quotations, and ill-conditioned samples were dull. The same remarks apply to Barley and other classes of spring corn. In flour there was a tendency towards further improvement.—Average price of corn for the week ending January 20.—Wheat, 52s. 11d.; barley, 30s. 7d.; oats, 24s. 11d. For the corresponding week last year—Wheat, 44s. 9d.; barley, 24s. 2d.; oats, 23s. 10d.

CATTLE.

At Copenhagen Fields on Monday prices for beasts advanced a little, although trade was not very brisk. The number of sheep was much smaller, and prices rather quiet. Choice calves made a high price. Quotations—Beasts, 4s. 6d. to 5s. 6d., and 5s. 6d. to 6s. 6d.; calves, 5s. 6d. to 5s. 10d.; sheep, 5s. 6d. to 6s. 4d., and 6s. 4d. to 7s. 4d.; pigs, 4s. to 5s.—Thursday's market was moderately supplied, and a quiet one, prices of all the more important classes for beef, but steady prices for sheep. Prime calves continued to bring high prices.

HAY.

At Whitehall market on Thursday there was a steady demand for fodder, and with only a moderate extent of previous quotations was the week ending in Prime Clover, 100s. to 142s.; inferior, 85s. to 95s.; prime meadow hay, 50s. to 120s.; inferior, 70s. to 85s.; and straw, 20s. to 26s. per load. There were fair supplies of Corn Threshed, but a dull trade, the weather being against demand. Quotations.—Clover, best, 100s. to 142s.; inferior, 85s. to 95s.; hay, best, 100s. to 125s.; inferior, 60s. to 145s.; and straw, 20s. to 26s. per load. Prime Clover, 100s. to 142s.; inferior, 85s. to 95s.; meadow hay, 130s. to 142s.; inferior, 110s. to 118s.; superior Clover, 125s. to 142s.; inferior, 115s. to 130s.; and straw, 50s. to 55s. per load.

POTATOS.

The Borough and Spinfields markets reports state that the quotations for Potatoes are not so good as of the better class there was only a moderate supply. A fair demand prevailed. Kent Regents, 100s. to 160s. per ton; Essex do., 100s. to 140s.; Scotch do., 95s. to 100s.; and 100s. to 120s.; Dutch do., 100s. to 120s.; Victoria 100s. to 150s.—Last week's imports into London comprised 21,457 bags 280 tons 55 casks and 25 casks from Antwerp, 26,508 bags Hamburg, 4617 bags 455 casks from Rotterdam, 294 casks Rotterdam, 126 bags 100 casks Boulogne, 136 bags 12 barrels and 100 bags Rouen.

To the Trade.
W. P. LAIRD AND SIBTHORP, NURSERY.
3729, Dundas, N. B., have to offer:—
"TRANSLATED"—Larch, 2 to 3 feet; Scots Fir, 4s. 1/2; Silver Birch, 2s. 1/2; Norway Spruce, 2s. 1/2; Fir, 2s. 1/2; Limes, 3 to 4 feet; Walnuts, 4 to 6 and 6 to 8 feet; Hollies, 4 to 6, 12 to 18, and 18 to 24 inches; Irish Junipers, 4 to 6 feet; Yew, 12 to 18 inches; Irish Yews, 4 to 5 feet.
SEEDLINGS.—Larch, 1 yr. and 2 yr.; Scots Fir, 1 yr.; Silver Birch, 1 yr. and 2 yr.; Norway Spruce, 1 yr.; Fir, 2 yr.; Beech, 1 yr.; Spanish Chestnut, 2 yr.; Hazel, 1 yr.; English Elm, 1 yr.; Turkey Elm, 1 yr.; Sycamore, 2 yr.; RHUBARB.—Johnson's St. Albans.
SEED POTATOS.—Garden sorts.
Special offer of above may be had on application.

MANURE.—Composed of the blood, bone, &c., of animals, which are boiled down and carefully manufactured into a powdered manure on the premises of a large slaughterer. This now famous manure, possessing as it undoubtedly does, the greatest amount of phosphoric acid, has been used with the greatest success by upwards of 500 Farmers, Nurseriesmen, Market Gardeners, and Farmers. Many testimonials. Sent in stone free to rail or wharf, 11s. per cwt., 4s. per ton. Samples free.
M. H. BENTOTE, Lausanne Road, Nunhead (near Junction).

ODAMS' MANURES.
FOR ALL CROPS.
Manufactured by the NITRO-PHOSPHATE and ODAMS' CHEMICAL MANURE COMPANY (Limited), consisting of London and Glasgow, and having Messrs. J. M. G. & Co., Chairmen.—ROBERT LEEDS, Keewick Old Hall, Norwich. Managing Director.—JAMES ODAMS, Secretary.
Sole Office, 100, Fenchurch Street, LONDON, E.C.
WESTERN COUNTIES BRANCH—Crown Street, Exeter. Particulars of all the above may be had of the Secretary, or may be had of the Local Agents.

COCOA-NUT FIBRE REFUSE,
newly made.—Reduced price, 20 bushels, 6s. 3d.; 100, 200, or on Truck-load, &c. Delivered free to any rail in London. See full particulars of all the above in our Catalogue, Batterssea, S.W.

COCOA-NUT FIBRE REFUSE,
FOR POTTING AND PROPAGATING.
3d. per bush; 100 for 20s.; 2 truck, 40s., per bush, in any Rail or Wharf.
As supplied to the principal Nurseriesmen.

M. H. BENTOTE,
FIBRE MAKER, LAUSANNE ROAD, NUNHEAD, S.E.
Fibrous Peat for Orchids, &c.
BROWN'S PATENT PEAT AT, best quality for Fichers, Stove Plants, &c., 4s. 6d. per sack. **BLACK FIBROUS PEAT,** for Rhododendrons, Azaleas, Hollyhocks, &c., 4s. 6d. per sack. Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 5s. 6d. each. Full particulars of all the above may be had of the Secretary, WALKER and CO., Farnborough Station, Hants.

SIMPSON'S RED SPIDER, THRIPS, &c., ANTI-DOTE. Testimonials of the highest order on application. Price, 6d. per pint, 6s. per pint, 3s. per gallon. Prepared by JOHN KILNER, Wortley, near Sheffield.

GISHURST COMPOUND.
Used by many of the leading Gardeners since 1850, against Red Spider, Millar, Thrips, Greenfly, and other Insects in solution of from 1 to 10 ounces to the gallon of soft water, and is sold at 16s. 6d. as a winter dressing for Vines and Fruit trees. Full particulars of all the above may be had of the Secretary, Sold Retail by Seedsmen, in Boxes, 1s., 3s., and 10s. 6d. Applied by PRICE'S PATENT CANOPY COMPANY (Limited).

GENUINE TOBACCO CANDLE of best quality, price, 10d. per lb., or 4s. per cwt. WM. KENYON, Tobacco-acc, 4, Pollard Street, New Town, Leeds.

RUSSIA MATS.—A large stock of Archangel and Petersburg, for Covering and Packing (price on application for Archangel)—Petersburg, 60s. to 100s. per 100; Archangel, 60s. to 100s. per 100; all other descriptions of MATS, 60s. to 100s. per 100; and all other descriptions of MATS, 60s. to 100s. per 100. J. B. JACKMAN and SONS, 4 and 5, Wornwood Street, London, E.C.

RUSSIA MAT MERCHANTS.—Seedsmen, Growers, and other large Buyers, can have the Whole of the above MATS, at Wholesale prices, of the following RUSSIA MATS, RAFFIA MATS, &c., on application to MARENDAZ and FISHER, James Street, Covent Garden, London, W.

RUSSIA MATS, for Covering from Frost, from 30s. to 70s. per 100; packing from 20s. GUNNY BAGS, from 2s. each, delivered free to any Station in London. SUFFOLK, 12, Abchurch Lane, 13, Fenchurch Buildings, London, E.C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every article, sent free on application. JAS. T. ANDERSON, 7, Commercial Street, Shoreditch, London, E.C.

HORTICULTURAL WOOD GLASS.
16s. 6d. per 100 feet. Large sizes, 5s. 12s., 12s. 6d., 21s. 6d., 25s. 6d., 30s. 6d., 35s. 6d., 40s. 6d., 45s. 6d., 50s. 6d., 55s. 6d., 60s. 6d., 65s. 6d., 70s. 6d., 75s. 6d., 80s. 6d., 85s. 6d., 90s. 6d., 95s. 6d., 100s. 6d. Forwarded for large and special quantities.
ALFRED SEY, Glass, Lead, Zinc, Oil, and Colour Merchant, 2, Pearsonville Road, London, E.C.

To Nurserymen, Florists, &c.
FOR SALE, a well-built and nearly new FLORIST'S VAN, suitable for stony ground or cob. To be sold at a bargain. Apply to the undersigned. Address, FLORIST, 100, High Street, Godalming, Surrey.



THE BEST BUILT HOTHOUSES, CONSERVATORIES, &c., AT THE LOWEST PRICES.

Plans and Estimates given for Horticultural Buildings of every description, either in Wood or Iron.
H. Ormson's Work, on an extensive scale, both Building and Heating, may be seen at the Royal Gardens, Kew,
and at many of the Seats of the Nobility and Gentry throughout the Country.

CAST-IRON AND SLATE FOUNDATIONS, IF PREFERRED TO BRICKWORK.

PLAIN AND INEXPENSIVE HOTHOUSES

Designed and Built with a strict regard to Economy in Price, the best of Materials and Workmanship, and Practical Adaptation.

ORMSON'S PATENT TUBULAR CORNISH BOILER and Ormson's Patent Divisional Hot-water Apparatus
SURPASS ALL OTHER SYSTEMS OF HEATING BY HOT-WATER.

HOT-WATER PIPES, BOILERS, &c., AT WHOLESALE PRICES.

Surveys made and Gentlemen waited on in any part of the Country. Plans and Estimates on application. Tenders from Drawings prepared by Architects.

HENRY ORMSON,
HORTICULTURAL BUILDER and HOT-WATER APPARATUS ENGINEER,
STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.

HARRISON'S NEW DWARF LATE BROCCOLI.

A VALUABLE INTRODUCTION.

We have much pleasure in introducing our NEW DWARF LATE WHITE BROCCOLI, which is undoubtedly the best variety of its class. It is the hardest Late White Broccoli extant. The heads are close, compact, and beautifully white, remaining longer fit for use than any other variety known, coming into use the beginning of May. The footstalk being so remarkably short (the heads almost resting on the ground), affords greater protection from frost, and also enables a much larger quantity to be grown on a given space of ground; thus proving a great acquisition to those possessing small gardens. The quality is excellent, and embraces everything to be desired in a Broccoli, either for a Gentleman's table or for Market purposes. We have received numerous flattering Testimonials from all parts of the kingdom, where it was grown last season, testifying as to its invaluable merits, a few extracts from which we subjoin:—

TESTIMONIALS.

From Mr. T. RABONE, *Gr. to the Earl of Shrewsbury,*
May 30, 1876.

"Broccoli thus far north has not done well this season, but yours has done the best. Nice compact heads, very white and tender, and worthy of a place in every garden, as it takes so little room."

From Mr. G. BRIGHTON, *Gr. to Earl Mount Edgcombe,*
May 31, 1876.

"I have no hesitation in pronouncing your Dwarf Late Broccoli as being the best late Broccoli I have ever grown. I have had it planted with other late varieties, and it has proved infinitely superior to them all. At the present we have some splendid heads."

From Mr. J. SIMPSON, *Gr. to Lord Wharffinch,*
May 5, 1876.

"We have been cutting your New Broccoli for the last week or ten days, and find it an excellent variety, and one which I shall add to my list in future. There is not a single plant of yours injured; it may, therefore, be put down as the hardest. The heads are good sized, of a clear, creamy white colour, compact, and in flavour excellent."

From Mr. J. RENSRAW, *Gr. to the Marquis of Anglesa,*
May 30, 1876.

"Your New Dwarf Late Broccoli is very good. Dwarf compact habit, with remarkably solid heads of medium size—just the thing for a gentleman's table."

From Mr. GRINDDALE, *Gr. to the Duke of Somerset,*
May 9, 1876.

"Your New Dwarf Broccoli is the best I ever had. I never saw anything to equal it. It is perfectly hardy, with fine flavour. I cannot speak too highly of it, and am thankful to get it. All that have seen it growing have greatly admired it, with many others."

From Mr. GEO. BENCH, *Gr. to the Marquis of Northampton,*
May 5, 1876.

"I am now cutting your New Broccoli. It is a very late one. I have had it cooked, and pronounce the flavour all that can be desired in a Broccoli. The heads are very firm and of average size, quite hardy, and calculated to stand the winter well. The footstalk of the test is very short, it is exceedingly dwarf, and the most compact Broccoli I am acquainted with."

The Stock being limited, we would impress upon our Customers the necessity of sending in their Orders early to ensure a supply for this season.

Price, Retail, 1s. 6d. per Packet,
or may be had of HURST AND SON, 6, Leadenhall Street, E.C.

HARRISON & SONS, Seed Growers, LEICESTER.



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

Under the Patronage of the Queen.
J. SMITH'S IMPERISHABLE STRATFORD LABELS.



The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS. The *Gardener's Magazine* says:—"We must give these palm before all other palm labels, as the very first in merit."

—Samples and Price Lists free.
J. SMITH, The Royal Label Factory, Stratford-on-Avon.
Indestructible Terra-Cotta Plant Markers.
MAW AND CO'S PATENT.—Prices, Printed Patterns, and Specimens, sent post-free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c.
MAW AND CO., Benthall Works, Broseley.

LABELS.

Secure Tree and Plant Labels.
PARCHMENT or CLOTH LABELS, TREE or PLANT LABELS. Punched parchment, 4 inches long, 3d. 6d. per 1000, or 30d. per 10,000; if cycled, 4s. per 1000. Yellow cartridges 4 inches long, 3d. per 1000 for 10,000. Sample Labels sent on receipt of postage stamp. Orders delivered free in London.
FISHER, CLARK AND CO., Label Works, Boston.

FLOWER WIRE, Manufactured by the Underigned. This most suitable and commended Wire is the best for the Fastening of Flower Stems; it is as soft as silk and quite clean, free from rust and fat. It is forwarded, in not less than three circles of 4 1/2 lb. each (but three different sizes may be selected), on application to **Mr. E. SCHULZ, Berliner Drahthandlung, Fennstr. 14, Berlin, N.**
—Set of samples sent free for 6d.

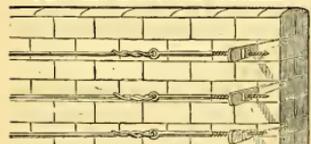
E. T. ARCHER'S "FRIGI DOMO."—Patented by Her Majesty the Queen, for Windsor Castle and Frogmore Gardens, the late Sir J. Paxton, and the late Professor Lindley, &c.

MADE OF PREPARED HAIR and WOOL. A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. A good covering for Pits and Forcing Frames.

PROTECTION FROM COLD WINDS and MORNING FROSTS.
"FRIGI DOMO" NETTING, 2 yards wide, 1s. 4d. and 1s. 6d. per yard.

"FRIGI DOMO" CANVAS.
2 yards wide 1s. 10d. per yard run.
3 yards wide 3s. per yard.
4 yards wide 3s. 10d. per yard.
ELISHA T. ARCHER, only Maker of "Frige Domo," Brockley Road, Forest Hill, London, S.E.; and of all Florists and Seedsmen. All goods carriage paid to London.
NOTICE—REMOVED from 2, CANNON STREET, CITY.

THOMAS'S FITTINGS for WIRING WALLS.
NEW and IMPROVED SYSTEM.



The following prices give the total cost of each line of wire, including halfpints, straining bolts, intermediate guiding eyes, 10 feet apart, and best quality galvanised wire.
Length of Wall:—20 yds. 40 yds. 60 yds. 80 yds. 100 yds. 120 yds.
No. 14 Gauge Wire 1 1 1 1 2 2 2 2 3 2
No. 13 " " 1 1 1 1 1 1 2 2 3 1 3 8
Illustrated Lists, full particulars of the above, and fittings for Expeller Trainers, on very economical principles, sent on application.
Five per cent. discount allowed for prompt cash, on orders amounting to 20s. and upwards.
Special quotations for larger quantities.

J. T. THOMAS & CO., PADDINGTON WIREWORKS, 285 and 365, EDGWARE ROAD, LONDON, W.
Metallic Hothouse Builder to Her Majesty.
HENRY HOPE (late Clark & Hope, formerly Clark).
HOthouse BUILDER and HOT-WATER APPARATUS ENGINEER.
55, Lionel Street, Birmingham. Established A.D. 1818.
BOOKS OF DESIGNS 2s. 6d.
The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed at this Establishment.

NOTICE.



NOTICE.

THE GREAT METROPOLITAN SEED ESTABLISHMENT,
BOROUGH END LONDON BRIDGE, S.E.

R. TANTON

Begs to announce that his usual EXHIBITION of the SEEDS OF THE HARVEST of 1876 will commence on the 29th instant.

Terms: Discount of 5 per Cent. upon all Orders for 20s. and upwards, and carriage free to any Railway Station in the United Kingdom.

AN ILLUSTRATED AND DESCRIPTIVE CATALOGUE WILL BE READY IN A FEW DAYS, AND SENT POST FREE.
Seed Warehouses; 16 and 17, HIGH STREET, BOROUGH, LONDON, S.E.

THE HUNTINGDON NURSERIES.

WOOD & INGRAM'S

CATALOGUE OF SEEDS FOR THIS SEASON
Is now ready, and will be forwarded free on application.

THE NURSERY AND SEED BUSINESS

So successfully conducted for a number of years by the late Mr. JOHN INGRAM, will be continued to be carried on in its various branches, as heretofore, by his Widow and Two Sons, in the name of **WOOD AND INGRAM**, who respectfully solicit a continuance of the kind and liberal patronage which has been given for a lengthened period to their Establishment.

THE NURSERIES, HUNTINGDON.—January, 1877.



JEFFERIES' LITTLE QUEEN COS LETTUCE,

Per Packet, 1s. 6d.,

Is the Earliest, Best Flavoured and Best Coloured Lettuce in cultivation.

MR. EARLEY, The Gardens, Valentines, says:—
"Your Little Queen Lettuce proved a good selection, although the weather was very adverse to the trial."
MR. MEADES, Gr. to the Rt. Hon. Viscount Barrington, Becket Park, says:—
"Your Little Queen Lettuce is a capital variety, as hard as a stone, and has kept well from running to seed this dry summer."

MR. FARR, Gr. to Sir R. Knightley, Bart., Pawley Park, says:—
"Your little Lettuce has proved a very useful one, although the season has been very trying for that class of stuff; its early bearing and crisp sweet flavour are sufficient to recommend it to all who are desirous of a small but good Lettuce."

A Packet of this excellent Lettuce will be included in all our Collections of Vegetable Seeds.

JEFFERIES' HALF GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' TWO GUINEA COLLECTION OF VEGETABLE SEEDS,
JEFFERIES' THREE GUINEA COLLECTION OF VEGETABLE SEEDS,
Are the best obtainable. For particulars, obtain our "Illustrated Garden Guide."

JNO. JEFFERIES & SONS,
GIRENCESTER.

ESTABLISHED



A CENTURY.

NOW READY,
WM. ROLLISSON & SONS'
NEW AND GENUINE

Flower Seeds, Vegetable Seeds, Farm Seeds,

CAREFULLY SELECTED FROM
THE BEST ENGLISH AND FOREIGN STOCKS.

SEED CATALOGUE FOR 1877
GRATIS AND POST FREE ON APPLICATION.

Also TENS of THOUSANDS of
WELL GROWN STOVE, GREENHOUSE and HARDY PLANTS
OF EVERY DESCRIPTION ARE ALWAYS TO BE SEEN AT
THE NURSERIES, TOOTING,
LONDON, S.W.



MESSENGER & COMPANY,
CONTRACTORS, MIDLAND HORTICULTURAL BUILDING AND HOT-WATER
ENGINEERING WORKS, LOUGHBOROUGH,



Beg to call attention to the above illustration, which shows a very advantageous arrangement of Glasshouses which has been adopted for several important Works on M. & Co.'s recommendation.

Only thoroughly well-seasoned timber used. Glasshouses erected on Messenger's patent principles are, owing to mechanical arrangements, very strong, most durable, light, elegant; perfect efficiency for purpose intended is guaranteed; are economical in cost and maintenance. Messenger's Patent Boilers, Flexible Jointed Hot-water Pipes and Valves, are now in use in many thousands of instances, with the greatest success. Particulars on application.

Plans and Estimates forwarded. Ladies and Gentlemen waited upon. The Plans of Architects and others carried out. Illustrated Circular Free.

T.H.P. & Co.
Dennis.
ANCHOR
IRONWORKS
Chelmsford.

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MANSHION
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ART-WITH-ECONOMY-APPLIED-TO-CONSERVATORIES

In consequence of the increasing demand for Conservatories, in which pure art is combined with moderate cost, T. H. P. DENNIS & Co. have been led to introduce designs of a character hitherto unknown. One of these designs, showing a house 22 feet 6 inches x 13 feet 6 inches, is annexed, and the result, as regards the extremely low price (which includes fixing, glazing, painting, carriage, &c.), has been attained only by special machinery and a system of interchangeable parts.

T. H. P. DENNIS & Co. are also prepared to provide and fix Hot-water Heating Apparatus and Horticultural Buildings of any dimension or description.

Full-sized specimen of Greenhouses, &c., and Hot-water Apparatus in work, can be inspected at Mansion House Buildings, London, E.C.

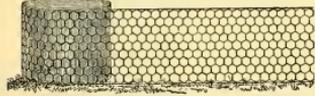
Gentlemen waited upon at their residences by experienced designers.

Estimates and Plans free.

SHAW'S TIFFANY ELASTIC NETTING, CANVAS, POULTRY FENCING, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW and CO., 29, Oxford Street, Manchester.

The Sole International Prize Medals for GALVANIZED WIRE NETTING

Have been awarded to Messrs. J. B. BROWN and CO., at the VIENNA EXHIBITION, 1873, and at the PHILADELPHIA CENTENNIAL and INTERNATIONAL EXHIBITION, 1876.



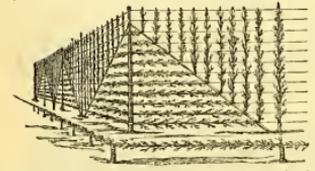
Prices per Lineal Yard, 24 inches high:—

Size of Mesh.	Mostly used for	Gauge, or Light.	Gauge, or Medium.	Gauge, or Strong.
2 in.	Dogs or Poultry.	19 3/4d.	18 4 1/2d.	17 5 1/2d.
1 1/2 in.	Small Rabbits, &c.	19 4 1/2d.	18 5 1/2d.	17 6 1/2d.
1 in.	Smallest Rabbits.	19 5 1/2d.	18 6 1/2d.	17 8d.

* * * Price Lists, with further particulars of WIRE NETTING, IRON FENCING, POULTRY FENCES, GALVANIZED and other TRELLIS WORK, on application.

J. B. BROWN & CO.,
Offices—90, CANNON STREET, LONDON.

THE FRENCH SYSTEM OF TRAINING FRUIT TREES, &c.



Extreme standards of 7 or 10 angle, for ends or angles, for training the wires from, self laced; also stays for these standards, at prices as under:—

Intermediate Standards, 10 ft. apart, at half these prices.

Painted Galv.	Painted Galv.
4 1/2 ft. high... 5s. 6d. ... 7 1/2 ft. high... 8s. 0d. ... 11s. 0d.	
5 ft. high... 6 0 0 ... 8 6	8 ft. high... 9 0 0 ... 11 3 0
6 ft. high... 6 9 0 ... 9 6	10 ft. high... 10 0 0 ... 13 0 0

RADISSEURS, for Tightening Wires, one to each wire, 2s. 6d. per doz. Key for winding, 4s. each.

SCREWS AND NUTS, center than Radisiseurs, 2s. 6d. per doz. No. 13 WIRE, 10 inches apart, 2s. 6d. per 100 yards.

* * * Prices of Material for WIRING GARDEN WALLS on the FRENCH SYSTEM on application.

J. B. BROWN & CO.,
90, CANNON STREET, LONDON, E.C.



R. HOLLIDAY, PRACTICAL WIREWORKER, 22, 24, Fotherby Terrace, Notting Hill Gate, London, W. He can call the attention of all Gardeners who are absent to have their Garden Walls Wired to his system of Wiring Walls, as being superior to all others for neatness, strength, and durability.

FOR NEATNESS—Because all the Wires are kept perfectly tight, without the use of the Radisiseur.

FOR STRENGTH—Because every wire stronger Wire can be used, therefore no stable tie is drawn out of the horizontal line by the branches of trees.

FOR DURABILITY—Because, being able to use the strong Wire, it is not so likely to be eaten through with the galvanism as the thin Wire, as used in the French system.

The above engraving is an Example of our system of Wiring Garden Walls. We have recently completed the Wiring of the New Garden Walls for the Marquis of Salisbury, Hatfield House. The Walls are 12 feet high and 2 1/2 yards long, wired on both sides, making a total length of 1500 yards—our system being chosen in preference to any other.

Illustrated Catalogues of Garden and Conservatory Wirework, Rabbit-proof Hurdle Fencing, &c., may be had on application as above.

R. H. HAMPSON, Egerton Mills, Stockport, R. H. Manufacturer of HORTICULTURAL SHADINGS for protecting Wall Trees from Frost and Insects, &c. 54 and 60 inches wide, any length up to 100 yds. Prices on application.

Established over a Quarter of a Century.



Is in use over many thousand miles, And has been awarded the Medals and Highest Commendation of all the leading Agricultural Societies.

It is constructed with POWERFUL WINDING STRAINING PILLARS, RIGID INTERMEDIATE IRON POSTS, STRONG and DURABLE WIRE CABLE STRANDS, Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

Continuous Bar Iron Fencing.



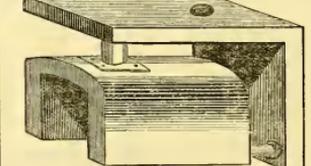
With bars secured by F. M. & Co.'s Patent Self-locking Joints, which effectually prevent the uprights being pushed aside, and are independent of loose pins, wedges, or staples.

IRON ENTRANCE and FIELD GATES, IN WROUGHT and CAST IRON, Designed for the Mansion, Villa, or Farm, WICKET and GARDEN GATES, In Great Variety of Patterns.

Iron Hurdles, Railing, Tree Guards, FRUIT ESPALIERS, WALL FRUIT TRAINERS, &c. Illustrated and Described in F. M. & Co.'s New Catalogue, sent on application.

LONDON BRANCH:
1, DELAHAY ST., WESTMINSTER, S.W.

JONES' PATENT "DOUBLE L" SADDLE BOILER.



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

Sizes.		To heat of 4-in. Pipe.		Price.	
High.	Wide.	Long.	Feet.	£ s. d.	£ s. d.
20 1/2	18 1/2	18	300	7	0 0
20 1/2	18 1/2	24 1/2	400	5	0 0
20 1/2	18 1/2	30 1/2	500	5	0 0
24 1/2	24 1/2	24 1/2	700	12	0 0
24 1/2	24 1/2	30 1/2	850	14	0 0
24 1/2	24 1/2	36 1/2	1,000	16	0 0
24 1/2	24 1/2	42 1/2	1,400	20	0 0
24 1/2	24 1/2	60 1/2	1,800	25	0 0

Larger sizes if required.

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

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- It cuts longer grass. It needs less repairs.
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- It rolls the ground. It cuts the borders.
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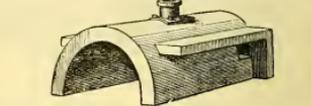
PRICES: (Including Collecting Boxes)

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" 10 "	13 0 0	" 16 "	10 6 6
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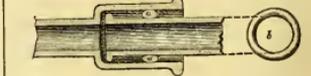
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 UFACTURERS. Estimates and Plans free. Best Construction!
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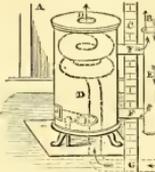
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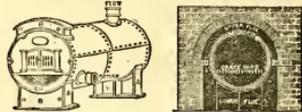
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Great Economy of Fuel and Steadiness of Heating Power,

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List of Places where the System is in Operation, with full address in each case, will be sent post-free on application.

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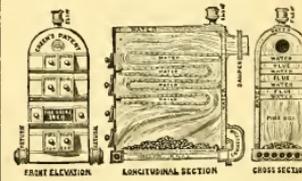
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 21, WHITEHALL PLACE, LONDON, S.W.,
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 Wrought-iron Hot-water Boilers,
 With Shelves and Hollow Gate Bars.**

Specially adapted for heating Greenhouses, Conservatories, Churches, Chapels, Schools, Public Buildings, Entrance Halls, Warehouses, Workshops, &c.

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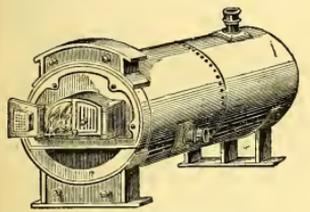


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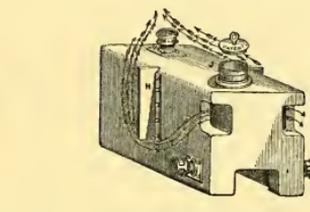
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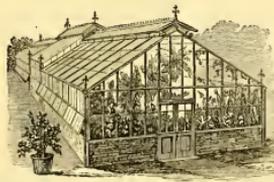
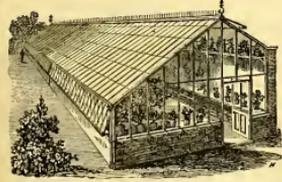


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 "TRENTHAM IMPROVED" BOILER, with Water-way End and Smoke Consumer.
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AN ENORMOUS CROPPER. | INDISPENSABLE FOR SHOW PURPOSES.

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POTATO.

From SHIRLEY HIBBERD, Esq., *Stoke Newington, November 8, 1875.*
"Your new 'Magnum Bonum' Potato singularly combines beauty of appearance with high quality, and I believe it will prove the most generally useful variety ever put into commerce. It is a first-rate sort for the table; the flesh white, dry, and mealy; the flavour all that can be desired. When grown here for trial in 1874 the stools averaged 2 lb. to 7 lb. each of handsome roots. In 1875 the stools averaged 6 lb. to 9 lb. each, grown in ridges on my undrained clay."

From Mr. W. WILDSMITH, *Gardener to the Right Hon. Viscount Eversley, October 13, 1876.*
"I had one gallon of 'Magnum Bonum' Potatoes from you, the yield from which was 45 bushels, four-fifths of them being as fine as those I showed in my collection at the Alexandra Palace. As to quality I cannot speak too highly, the flesh being perfectly white and mealy, and of a real Potato flavour. I have noted it for one of my main crop Potatoes next year, and I do not but, when sufficiently known, many will follow my example."

From Mr. J. P. BELLIS, *Gardener to Major Thoyts, Sullingtonstead, November 15, 1876.*
"I bought of you in March, 1876, 1 lb. of 'Magnum Bonum' Potatoes, cut them into fifty sets, and planted them 3 feet apart. The hauls covered every foot of ground, and I am convinced that 3 feet square was not more room than was necessary, being a strong growing variety. I lifted the crop in October, and from two sets I dug 21 lb., and altogether 275 lb. of good sound Potatoes."

Per Peck 5s. 0d.
Per Bushel .. 17s. 6d.

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"Sandringham, Jan. 17, 1877."

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From Mr. W. WILDSMITH, *Gardener to the Right Hon. Viscount Eversley, October 13, 1876.*
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Editorial Communications should be addressed to "The Editor," Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW, & CO., Lombard Street, Finsbury, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County—SATURDAY, JANUARY 27, 1877. Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 162.—VOL. VII. { NEW SERIES. } SATURDAY, FEBRUARY 3, 1877. { Registered at the General Post Office as a Newspaper. } Price 6d. POST FREE, 5½d.

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All who have a Garden should send for **WEBB AND SON'S SPRING CATALOGUE OF VEGETABLE AND FLOWER SEEDS**, the best work on Gardening matters yet published, which will be found invaluable to the Amateur as well as to the Professional Gardener. Post-free, 1s.; gratis to customers.

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To the Trade.

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WANTED, three or four Hardy CLIMBERS for training up Verandah; must be at least 6 feet high; house faces east. Address by letter, stating price and full particulars, **E. J. C.,** Five Ends, Dalwath, S. E.

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Winter-flowering Orchids.

CALANTHE VESTITA RUBRA Oculata. Price, 9s. per dozen, or 50s. per 100.

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SILVER FIR.—Fine clean grown and clean leaders. Transplanted Silver Fir, 9 to 12 inches, 2000 per 1000; 15 to 18 inches, 250 per 1000.

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HAWKS, or THORN QUICK SEED.—Sound Hawks, fit for sowing at present, or spring coming, guaranteed free from soil or other mixture, and thoroughly well preserved. Also Double-Lark, in large quantities, apply to **GRANT AND CO., Park Nursery, Portadown, Ireland.**

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POT VINES.—3000 Pot Vines, of all the best varieties, for sale at the Garston Vineyard, 6 miles from Liverpool. Prices LIST post-free.

COWAN PATEN'S COMPANY, Garston, near Liverpool.

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B. S. WILLIAMS begs to announce that his are now ready for distribution.

G. R. GRAPE VINES this year are unusually fine and are below seed for distribution.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

To the Trade.

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Johnston's St. Martin's Rhubarb.

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THE GARDENERS' CHRONICLE

VOLUME FOR JULY TO DECEMBER, 1876

W. RICHARDS, 41, Wellington Street, Strand, W.C.

CRYSTAL PALACE.—The Great Annual Show of CANARIES and BRITISH and FOREIGN CAGE BIRDS will take place from February 17 to 22, inclusive. A Silver Cup, or Gold Medal, value 5s. and 1 Gold Medal, value 2s. 6d. are offered as First and Second Prizes for the best Collection of Foreign Birds, irrespective of class. Schedules on application to **GENERAL MANAGER.**

CRYSTAL PALACE.—ARTIFICIAL FLOWER and FRUIT SHOW.

March 1 to 27, 1877.

Intending Exhibitors may obtain Schedules on application to **GENERAL MANAGER, Crystal Palace.**

BURTON-ON-TRENT FLORAL and HORTICULTURAL SOCIETY.

THE FIRST-PRIZE OF THE SEASON OF PLANTS, FLOWERS, FRUITS, and VEGETABLES will be held on **WEDNESDAY, June 27.** Subscribers, Prizes, and any information may be obtained from the Secretary, to whom Nurserymen and other wishing to become Subscribers should apply.

S. W. SNWELL, Secretary.

19, Market Place, Burton-on-Trent.

INTERNATIONAL HORTICULTURAL EXHIBITION, 1877.

A GREAT INTERNATIONAL HORTICULTURAL EXHIBITION will be held at Carlisle on **THURSDAY, FRIDAY, and SATURDAY, September 6, 7, and 8,** when nearly 4000 Exhibitors will be seated in a few weeks. It is hoped that Gentlemen interested in the Advancement of Horticulture, and inclined to give SPECIAL PRIZES, will communicate with the Acting Secretary, in time to insure their appearance in the Schedule. A select number of Advertisements will also be inserted at 2s. per Page. A full Half-page. Copies for Advertisements must be sent not later than February 10, to

Mr. JOHN MOUNSEY, Acting Secretary.
Victoria Buildings, Lower Street, Carlisle.—Jan. 25.

Gentlemen's Gardeners, Amateurs, and Others

GARDEN POTTS of best quality, are requested to send their orders to **J. MATTHEWS, Royal Pottery, Weston-super-Mare.** Prices on application.

To the Trade.

JAMES BIRD, NURSERYMAN, Downham, has to offer extra fine Standard MAJDUKE CHERRIES.

JOHN PERKINS and SON beg to offer the following—

BEECH, fine transplanted, 2 to 3 feet, 18s. per 1000.

BLACKBORN, 1½ to 2 feet, 10s. per 1000.

Billing Road Nurseries, Northampton.

SALES BY AUCTION.

Otontoglossum crispum (Alexandri) (Blunt), OTONTOGLOSSUM CRISPUM (Blunt) ... MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, February 7, at half-past 12 o'clock precisely, a fine collection of Otontoglossum crispum (Alexandri) (Blunt), Otontoglossum glaucum; also established plants, mostly with flower-pikes, of Phloxes, Schillars, P. amabilis, Loddonians, P. rosea, and P. grandiflora; good plants of Lydia Dyeria, Otontoglossum crispum, O. hastatum, O. glaucum, Saccolabium, Dendrobium, &c.; an importation of Dendrobium speciosum, comprising the whole stock at present received from this nursery; also a quantity of the following Hallii, Oncidium Kogerii, Cattleya superba, &c.; a fine Orchid from Messrs. J. Backhouse and Son, including three plants of the rare and beautiful O. Loddoniana; Lodeborghianum; also many other rare Orchids rather in the flowering period; also an importation of a rare hardy Tree Fern from Belgium.

On view the morning of Sale, and Catalogues had.

Valuable Lilies. MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 8, at half-past 12 o'clock precisely, a fine importation of good BULBS of the beautiful LILUM NEILGHERENSE. The white flowers of this magnificent Lily are deliciously fragrant, and of great substance. It bears several flowers on a stem, each flower nearly a foot long. Also some excellent bulbs of the following new varieties of Lilium neilgherense, viz. LILUM NEILGHERENSE ROSAEUM—the exterior of the flower-tubes of this variety is pink, the interior white. LILUM NEILGHERENSE FLAVUM—a handsome yellow-colored form of this charming Lily. LILUM NEILGHERENSE TIBIFLORUM—a magnificent pure white Lily, with very long flowers; figured in Wight's Icones Plantarum Indiar Orientalium.

LILUM NEILGHERENSE TIBIFLORUM LUTULUM, a very handsome yellow-flowered variety tubiflorum. And some splendid flowering bulbs of other CHOICE Lilies, including Bloomerian, Cypripedium, porphyrocephalum, Hamulidula, glaucopetalum, parvum, multiflorum, and Wallchianum. Also a quantity of CHOICE BULBS and young plants from California, viz. Platium autumnum, Brodiaea, Tritelia, Calliparis, Erythronium, Bionera, &c.; and some fine BLOOMING BULBS of the handsome Garden-hyacinths, C. australe, C. parviflorum, and C. tuberosum-rooted Begonias, Pansies, Anemones, Amaryllis, North American Cypripediums, with a variety of other Bulbs and plants, and a large quantity of fine Platium autumnum.

On view the morning of Sale, and Catalogues had.

Plants and Bulbs. MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, February 10, at half-past 12 o'clock precisely, a fine selection of the following FRUIT TREES, HARDY ORNAMENTAL TREES and SHRUBS, LILiums, GLADIOLI, RANUNCULI, &c., and some choice plants of the following description: On view the morning of Sale, and Catalogues had.

Established Orchids. MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 15, at half-past 12 o'clock precisely, part of the Collection of ESTABLISHED ORCHIDS, in the possession of the late Mr. G. and sold in consequence of removing. Amongst them will be found many rare and choice varieties. On view the morning of Sale, and Catalogues had.

Auction Mart, Tokenhouse Yard, London, E.C. SALE of 6000 LILUM AURATUM, just arrived in splendid condition from Japan; an unusually fine importation of Garden-hyacinths, in the possession of the late Mr. G. and some which are starting into growth, including magnificent trunks of Cyathus dealbatus, Dianthus, aquarum, and Scabellum, together with a quantity of GLADIOLI and other Hardy Bulbs.

Messrs. PROTHEROE and MORRIS will sell the above by AUCTION, at the Mart, London, E.C., on MONDAY, February 12, at 12 o'clock precisely. On view the morning of Sale. Catalogues may be had at the Mart, and of the Auctioneers, 98, Cracechurch Street, E.C., and Leytonstone, E.

Edgware, N.W. IMPORTANT CLEARANCE SALE OF VALUABLE NURSERY STOCK, comprising a great variety of Lawn Trees, including the following: Water and Gas had on 1000 specimens, Lonicera, magnifica, Douglasii, 4 to 10 feet high; a valuable collection of choice and rare Green shrubs, including the following: Edgware and Ornamental Planting; also a fine collection of Orchids, in all choice varieties, and a number of Camellias and other Greenhouse Plants.

Messrs. PROTHEROE and MORRIS will sell the above by AUCTION, on the Premises, on the View Road, Edgware, N.W., on SATURDAY, February 17, at 12 o'clock precisely. On view the morning of Sale, and Catalogues had at the Premises, and of the Auctioneers as above.

Noting, S.W. PRELIMINARY NOTICE. MESSRS. FLETCHER and MORRIS are instructed to sell by AUCTION, on the Premises, the Exotic Nursery, Sitting, S.W., on THURSDAY, February 22, at 12 o'clock precisely, a fine and thriving young NURSERY STOCK. May be viewed prior to the Sale, and Catalogues may be had on the Premises, and of the Auctioneers as above.

TO BE LET, a NURSERY, with Immediate Possession, seven miles from London, containing a seven-acre Dwelling-house in good repair. Water and Gas had on four newly-erected Greenhouses. Heated with Hot-water, with Range of Pits, situated in a healthy position, and well supplied with water, with or without the Nursery. Lease of years term (unexpired); all at the low rental of £25 per annum. The above to be disposed of, on account of ill health, on moderate and liberal terms. Apply personally, on the Premises, to W. HOWITT, Hford, Kent.

Productive Fruit and Vegetable Gardens. TO BE LET, with possession, the WALLEDEN GARDENS of a MANSION, distant about 7 miles from Reading, comprising Gardeners' Cottages, Vineries, Forcing Pits, Potting Sheds, Fursure-and Premises, embracing an area of nearly 2 acres, and well adapted for producing early Fruit and Vegetables for London, Reading, or other markets. The Garden is well-stocked with all varieties of Fruit and Vegetables. The tenant will be required to pay the valuation of the outgoing tenant. For further particulars, apply to Messrs. RAWLANCE and SOUTAREY, Salisbury; and 29, St. George Street, Westminster, W.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—At a General Meeting of the Members of this Institution, held on January 19, for the purpose of ELECTING PENSIIONERS, £1000 was on the Funds, the following was the result of the Ballot:—

CANDIDATES. Table with 3 columns: Name, Age, Votes. Includes Henry Butcher (65, 605), John Blackshaw (61, 204), Mrs. Adair-Scott (64, 718), Henry Ashton (64, 786), William Black (51, 477), James Costling (57, 675), Stephen West (54, 338), William Truist (60, 749), Elizabeth McKay (64, 614), George B. Linton (63, 777), James Major (60, 59), Matthew Nisbet (60, 53), and John Rogers (61, 211).

The Meeting then declared James Costling, Elizabeth McKay, and Mary Ann Adair-Scott, as having the greatest number of Votes, duly ELECTED PENSIIONERS of this Society. J. HOWE, R. GULLER, Secretary. 14, Tavistock Row, W.C.—January 29, 1877.

HARRIET SCOTT, WOODBROKER, Broom-maker, and Dealer in all kinds of Garden Materials, begs to notify that Mr. W. Davis, her late Manager, is now no longer in her employ, and requests that all Orders may be given and ACCOUNTS PAID TO HER SON, who will be glad to attend to them. W. W. Davis, Woodstock, S.E.—February 1, 1877.

Transit Agency for Plants, Seeds, &c. C. J. BLACKITH and Co., established 1829, Cox's and Hammond's Quay, Lower Thames Street, London, S.E.—Forwards to all parts of the World.

The Best Cucumber in Cultivation. SUTTON'S DUKE OF CONNAUGHT, the best of the Royal Dukes, &c. to the Right Hand, King's Lane, July 29.—Your new frame Cucumber, Duke of Connaught, is the best kind I ever saw; suitable for exhibition. Price 1/6 per dozen. Price 1/6 per dozen. SUTTON and SONS, The Queen's Seedsmen, Reading.

Broccoli Seed (Purple Sprouting). Several Cwt., saved from Stock that has been carefully selected for the last twenty years. Price 1/6 per cwt. H. PAGE, Market Gardner, Teddington, S.W.

SEED POTATOS in several excellent Garden varieties, grown specially for Seed. List, with prices of 100 or 200, on application. A change of Seed of the following description: W. P. LAIRD and SINCLAIR, Seed Merchants, Dundee.

TO THE TRADE. TELEGRAPH CUCUMBER SEED, fine true stock price per oz. or lb. on application. A few Bushes of DWARF POTATOS for sale per cwt. Cash, put on railway station.—J. and A. G. LOWE, Ulburgh.

Genuine Garden Seeds. WM. CUTSHURD and SON have for many years had some of the finest STOCKS of SEEDS in the Trade, and they believe that no house can possibly supply better quality. CATALOGUES post-free on application. HIGGATE, LONDON, N.; and BARNET, Herts.

TO THE TRADE. STANDARD and DWARF ROSES of the well-known and popular variety, 2000 best in the Trade, well-ripened wood—about 15000 Standard and 5000 Dwarf, guaranteed true to name. For lowest prices apply to GRANT and SONS, 10, Abchurch Lane, London, E.C.

Roses, Fruit Trees, Evergreens, &c. WILLIAM FLETCHER'S CATALOGUE is now ready, and may be had post-free on application. The Nursery Stock generally is very fine, healthy, and well-rooted. Early orders respectfully solicited. Ottersham Nurseries, Chertsey, Surrey.

Special Culture of Fruit Trees and Roses. THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUITS (by Thomas Ryvius) is now ready, also CATALOGUE of TREES and ROSES. Post-free on application. THOMAS RIVERS and SON, Sawbridgeworth, Herts.

Downie and Laird, Royal Winter Garden, Edinburgh. are now offering for sale the following: ROSES, the finest in cultivation, at 9d. per dozen (selection list to D. S. L.); also HOLLYGOLDS, best sorts, 12s. and 24s. per dozen to the Trade; at 16s. per dozen to the Retailer; finest early, 6s. and 12s. per dozen; do, late, 6s. and 12s. per dozen; PENTSTEMONS, finest, 6s. and 12s. per dozen.

CABBAGE PLANTS, SEEDS, ROOTS, &c., of all kinds, for the Farm or Garden.—"The superior Bedfordshire Cabbage is now being offered at a low price, and is a true and reliable variety."—Vide Bedford Mercury, July 29, 1876. "The only reliable and healthy facility for obtaining the best bringing away plants, &c., and under the skill and perseverance of Mr. F. Gee they are turned to good account."—Vide Agricultural Gazette, July 29, 1876. For further particulars, apply to Messrs. J. and A. G. LOWE, Ulburgh, or to Messrs. J. and A. G. LOWE, Ulburgh, or to Messrs. J. and A. G. LOWE, Ulburgh, or to Messrs. J. and A. G. LOWE, Ulburgh.

Now Ready. CHARLES TURNER'S Descriptive CATALOGUE of SEEDS. Post-free on application. The Finest Dwarf Marrow Peas in the World. M. MACLEAN. See CATALOGUE, now ready. New Early Prolific Pea. ALLAN'S CHAMPION. Full description in CATALOGUE, now ready.

Schoolmaster. FINEST EARLY POTATO. Description, with testimonials, in CATALOGUE, now ready. CHARLES TURNER, The Royal Nurseries, Slough.

ARCHER, 2 to 3, and 3 to 4 feet, extra fine; 4 to 5 feet, extra fine; 5 to 6 feet, extra fine; MORE, 2 1/2 to 3 1/2 feet; Silver Fir, 1 1/2 feet. Price on application.

W. HALSTADT, The Nurseries, Lancaster. To the Trade. WM. WOOD and SON, The Nurseries, Maresfield, Uckfield, Sussex, have to offer:—ACUCIA JAPONICA, fine bushy plants, 9 to 12, 12, 15, and 18 to 24 inches. CEDRUS DEODARA, splendid stock, each plant a specimen, 1 to 1 1/2, 1 1/2 to 2, 2 to 3, and 3 to 5 feet. Price on application.

Spring Seed Guide. LITTLE and BALLANTYNE, the Queen's Seedsmen, Carlisle, respectfully intimate that their illustrated CATALOGUE of SEEDS now ready, and may be had post-free. It contains every requisite for the Garden and the Farm, and much valuable information to Amateurs.

Fox and Game Cover. ENGLISH BULLOCK, 2 to 4, fine, 5s.; extra, extra fine, 10s. per 1000. ENGLISH BROOD, 2 to 3 feet, 12s. per 1000. MAHONIA AQUIFOLIA, extra bushy. WILLIAM MAULE and SONS, The Nurseries, Bristol.

To Fruit and Fish Salesmen, &c. GREEN PARSLEY.—Five Tons to be disposed of. Parties wishing to purchase the same, to be delivered weekly, at 10s. per ton, apply to JOHN SALSBURY, Market Gardner, King's Newton, near Derby.

To the Trade. H. of HOME-GROWN GARDEN and AGRICULTURAL SEEDS of 1876 growth, is now ready, and may be had on application. Seed Growing Establishment, Wilschek.

ARECA BAUERII (Scarfthoria robusta).—A of this rare species, one of the finest of Greenhouse Plants, a fine stock growing in pots, is to be had, and offered at unusually low prices, viz. 1/6 per plant. Nice young plants, in single pots, 3s. per dozen. Early orders solicited. JEAN YVONNES VERSCHAFFELT, Leideberg, Ghent, Belgium.

Green Ivies of Sorts in Six Kinds. ROBERT PARKER, having a Surplus Stock of fine Plants in pots of the above-named, will be pleased to Dispose of them in small lots, at very low prices. Names, sizes, and prices per dozen, 100, or 1000, will be given on application. Exotic Nursery, Tooting, Surrey, S.W.

R. and A. MORRISON. LARCH, transplanted, 2 to 3 1/2 feet, at 25s. per 1000; 12 to 16 inches, 17s. 6d. per 1000. 15 to 20 seedlings, 6s. 10s. per 1000. FIR, Scotch, 9 to 18 inches, at 17s. 6d. per 1000. True Native SCOTCH PINE SEED, price 9s. lb. or cwt. on application. Pinfold Nurseries, Elgin.

Pelargoniums, Pelargonium. JAMES HOLDEN and SON have a fine healthy Stock of the above, offered at the following low prices for Cash, viz. 35s. per 1000, distinct sorts, hamper and package included; also extra strong plants, in 30-pots, 12s. per dozen; 24-pots, 9s. per dozen; 18-pots, 6s. per dozen, and packing extra. Crown Nursery, Reading.

GARIBALDI STRAWBERRY.—This Fruit Certificate was awarded a Cultural Certificate by the Fruit Congress of 1876, at Exeter, on the 29th of December. The Raisin can supply for cash strong plants at 5s. per 100, package free. See Gardener's Chronicle for Jan. 6, page 21. THOS. ARMSTRONG, Nurseryman, Moorville, Carlisle.

GARRYA ELLIPTICA.—Healthy, well-grown plants of the above, from open ground, 1 1/2 to 2 feet, 6s. each, 6s. per dozen. Also LIMES, extra fine, 7 to 8 feet, 6s. per dozen, 30s. per 100; 8 to 9 feet, 9s. per dozen, 60s. per 100. Other Stock on list. Apply to J. J. MARRIOTT, 10, Abchurch Lane, London, E.C.

Notion. EDMUND PHILIP DIXON'S CATALOGUE of NEW and CHOICE SEEDS is now ready, and may be had post-free on application. EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

Large Evergreen Trees for Screens. WILLIAM MAULE and SONS have to offer:—New Norway SPRUCE and CEDRUS DEODARA, 10 to 15 feet high, well-rooted—the former at 2s. each, the latter 10s. each. Price on application. The Best Late Broccoli. BROCCOLI, Christie's Self-protecting Late White.—Pronounced by all who have seen it as the finest self-protecting Broccoli in cultivation. Price per packet, 1s. 6d. Full description in CATALOGUE, now ready. EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

Shallot Seed.

DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild, with ordinary treatment have been grown to and even to 2 inches in circumference—by far the best method of growing the Shallot. Treatment same as Onions. Price 12 per packet. May be had of all Seedsmen in sealed packets, and of Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C., or R. DAVIS, Nursery and Seed Warehouse, Yewville.

Superb Ridge Cucumber.

CUCUMBER, Foster's X.L. Superb Ridge.—This variety is a remarkably fine hardy, long dark green Cucumber, and one that can be recommended with the greatest confidence, as very prolific and of fine colour to the last; all who have seen it growing are satisfied that it cannot be surpassed, and those who have it to 18 inches. Price 6d. and 12 per packet: price to the Trade on application. EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

NEW DRACENAS.—Twelve of the finest in cultivation for 21s., well established young plants, growing freely. If potted on now will do for exhibition in autumn.—D. H. LEY, Royal Nurseries, D. Imperiali, &c., included. Packages gratis for cash with order.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcutt, Reading.

WEBB'S NEW GIANT POLYANTHUS, Flowerist Flower, and Giant COWSLIP SEEDS; also Plants of all the varieties with Double PRIMROSES of different colours; ARIZONS, both Single and Double; with every sort of Early Spring Flowers. LIST on application. Mr. WEBB, Calcutt, Reading.

Garden Seeds, Gladioli, &c.

IRELAND and THOMSON have much pleasure in intimating that their Descriptive PRICED CATALOGUE OF VEGETABLE and FLOWER SEEDS, GLADIOLI, IMPERIALI, &c., is now ready, and is sent post-free on application.

CELOSIA PYRAMIDALIS PLUMOSA, AUREA and RUBRA, per packet, 1s. and 2s. 6d. each. EAST LOTHIAN INTERMEDIATE STOCK, in three colours, per packet, 6s. 6d. and 9s. 6d. each.

WHITE WEAVER-EAST LOTHIAN INTERMEDIATE STOCK, per packet, 1s., 2s. 6d., and 3s. each. Seed Warehouse, 20, Waterloo Place, Edinburgh.

SEEDS—SEEDS—ALL KINDS.—Before ordering your Seeds, send for Illustrated CATALOGUE, which contains full Directions.

How, When and What to Sow. FENIGLEY and POOL (successors to the Heathside Nurseries Company), 59, Queen Victoria Street, London, E.C.

WILLIAM HOLMES has to offer JASMINUM NUDEUM, in pots, strong, 50s. per 100.

IVIES, Irish, in 2 1/2, extra fine, 10s. per 100. From ground, 2s. per 100.

CLYVES, old English, true, 20s. per 100. And in the spring—ALTERNATHERA AMENEA, 12s. per 100.

PARONICHODES, 8s. per 100. MAGNIFICA, 2s. per 100. Frampton Park Nursery, Hackney, London, E.

EAST LOTHIAN INTERMEDIATE STOCK (true).—New Seed of the above splendid Stock, for present sowing, in White, Purple, Scarlet, and White, well-leaved, at 1s., 2s. 6d., and 5s. each colour. Price per ounce to the Trade on application.

THOMAS MITHAM AND SONS, 15, Princes Street, Edinburgh.

PYRUS or CYDONIA, the NEW JAPAN APPLE or QUINCE.—This gorgeous hardy variety May flowering fruit tree ripens a fine crop of golden, deliciously-scented fruit in September last, notwithstanding the general failure of our common Apple crop. The jam made is most delicious, which may be tasted at the nursery, or sample sent to those who really take an interest in the delicacies of the dinner-table.

Original plants 21s. and 25s. each; younger, 10s., 7s. 6d., and 5s. each. WILLIAM MAULE and SONS, The Nurseries, Bristol.

To the Trade.

CELESTY, Calderston's, the finest old grown, 10s. per lb.; also GOOSEBERRIES, Lancashire Prize, 3 1/2, old, 21s. per 100.

N.B.—Remittance must accompany orders from unknown correspondents. N. CREWS, Nurseryman and Seedman, St. Helens, Lancashire.

From Paris.—Roses, Frenchie, Camellias LEVEQUE and SON, NURSERYMAN, 26, Rue du Liège, Ivry-sur-Seine, near Paris, have many thousand ROSE TREES, Standards, Half-standards, Dwarfed, and on over root.—New Old roses.

LEVEQUE and SON respectfully solicit Gardeners and Nurserymen visiting Paris to inspect their Stock, the largest in Paris.

SPLENDID PYRAMID CAMELLIAS, price 12s. to 50s. each; small, at 6d. to 1s. CATALOGUES and LISTS on application.

From Paris.—Large Bulbs of Gladioli Seedlings, and NAMED SORTS.

LEVEQUE and SON, NURSERYMAN, 26, Rue du Liège, Ivry-sur-Seine, near Paris, have many beautiful flowering BULBS of GLADIOLI. The Seedling Bulbs are particularly recommended—their flowers equal to the named sorts (seeds have been taken from the best sorts of the collection).

Seedlings, 8s. per 100, 1s. per 1000, 2/6 per 10,000; mixed white, red, pink. Separate colours, 12s. to 300 per 1000; yellow, 10s. per 1000. Named sorts, 25s. to 25s. 2s. 6d.; 50s. or 100s. (the best), from 25s. to 25s. 2s. 6d. to the nursery. All good flowering bulbs. English Cheques on London, or Post-office Orders on Paris accepted in payment.



From the Head Gardener

To H.R.H. the PRINCE OF WALES, K.G.

(to whom Messrs. Sutton are the specially appointed Seedsmen):—

"The Seeds supplied by you have always given the greatest satisfaction.

(Signed) "CHARLES PENNEY.

"Saxdringham, "Jan. 17, 1877."



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A CONSTANT SUPPLY AT A VERY MODERATE COST OF THE BEST VEGETABLES IS ENSURED BY PURCHASING SUTTONS' COMPLETE COLLECTIONS OF CHOICE VEGETABLE SEEDS.

SUTTONS' COMPLETE COLLECTIONS OF CHOICE VEGETABLE SEEDS. BEST QUALITY. SPECIALLY ARRANGED FOR LARGE, MEDIUM & SMALL GARDENS FOR A SUPPLY OF THE BEST VEGETABLES ALL THE YEAR ROUND. CARRIAGE FREE TO ANY RAILWAY STATION IN ENGLAND. 5 PER CENT. DISCOUNT FOR CASH CHEQUES & ORDERS TO BE MADE PAYABLE TO.

Suttons' logo with a crown and decorative border. THE QUEEN'S SEEDSMEN. READING BERKS.

New and Choice Seeds for 1877.

R. AND G. CUTHBERT, SEEDS, CATALOGUE of the above, containing only the best varieties in cultivation, is now ready, and may be had post-free on application. Southgate Nursery and Seed Establishment, Southgate, N.

BEST PLANTS FOR GAME COVERTS.

—Evergreen Privet, Snowberry, Beech, Mahonia, Portugal and Common Laurels, Yew and Box Trees, Spruce Fir, Australian Fines and Cotoneaster Sumneri. Great stock of good plants to be sold very cheap. Larch, 2 to 1 feet, and 3 feet. W. JACKSON AND CO., Nurseries, Beddles, Yorkshire.

SMITH'S BERKSHIRE CHAMPION

ONION is undoubtedly the finest Onion in Cultivation, either for Market or Exhibition; grows to a large size, very handsome, with excellent flavour; a long keeper. New seed, now grown, 10s. per cwt., free by post, with Hints on Cultivation. THOMAS SMITH, Seed Grower, Long Wittenham, Aylesbury.

To Wholesale Potato Merchants.

SNOWFLAKE POTATO. — Notwithstanding the large demand for the above, the undersigned is anxious to say that he has still left 20 to 30 Tons of his own Growing still on hand. Price LIST will be forwarded only on receipt of Trade Card.

CHRISTIAN GUILLAUPE, Potato Grower and Merchant, Peterborough.

GROS QUINQUE LAMBE GRAPE.

(Roberts' Variety). The largest Black Grape in cultivation. Eyes or Scions from fine strong well-ripened wood, 20s. 6d. each. Ditto ditto ditto second size 12s. 6d. each. For particulars of this remarkable New Grape, see Gardeners' Chronicle of January 27, pages 102 and 117, or apply to Messrs. W. TAIT AND CO., Seed and Nursery Establishment, 45, Canal Street, London, W.

GLOXINIA CRASSIFOLIA GRANDIFLORA.—Magnificent strain, quite distinct; sown now will flower in autumn. Erects and horizontal, separate or mixed, 12s. and 22s. 6d. per packet.

PETUNIA, Double, 12s. 6d. per packet. Yields a large percentage of double flowers, 12s. 6d. per packet.

STEPHAN POTIS.—Remarkably free-flowering variety from the Mauritius, 12s. 6d. per packet.

CATALOGUES free on application. JAMES TYNAN, Seed Warehouse, 63, Great George Street, Liverpool.

To the Trade.

W. P. LAIRD and SINCLAIR, NURSERYMEN, Dundee, N.B., have to offer:—

TRANSPLANTED.—Larch, 2 to 10 feet; Scots Fir, 2 1/2, 1 1/2, and 1; Silver Fir, 9 to 10 inches; P. Laricio, 2 1/2, 1 1/2, 1 1/2, 1 1/2, 1 1/2; Walnut, 4 to 6 and 6 to 8 feet; Green Holler, 6 to 12 and 12 to 24 inches; Irish Juniper, 4 to 6 feet; Laurustinus, 12 to 18 inches; Irish Yew, 4 to 5 feet.

SEEDLINGS.—Larch, 1 1/2, and 2 1/2; Scots Fir, 1 1/2; Silver Fir, 2 1/2, and 3 1/2; Pinus austriaca, 2 1/2; P. Strobus, 2 1/2; Beech, 1 1/2; Chestnut, 2 1/2; Hazel, 2 1/2; English Oak, 1 1/2; Turkey Oak, 2 1/2; Sycamore, 2 1/2.

RHUBARB.—Johnstone's St. Martin's. BIRD POTATO.—Special offer of above may be had on application.

ISAAC DAVIES, NURSERYMAN, Ormskirk, has to offer the following:—

RHODODENDRUM PRINCE.—Raised by me and sent out eighteen years ago, is still a great favourite with all lovers of early-blooming plants. I can now supply good bushy plants, covered with flower buds, at 15s. per dozen.

SWEET-SCENTED RHODODENDRONS.—Also raised and sent out by me, and which I find constant that they will be highly esteemed for many years, being of a bushy habit, early, and very free-blooming, the flowers large, white, and most deliciously fragrant.

I am happy to state that these plants have been found to withstand the winter in the open ground without the least injury. In respect of the undoubted value of these novelties, I should be glad to refer to the Curator of the Botanic Gardens, Manchester.

Prices and full descriptions of these and other novelties post-free to any address on application.

The Best Scarlet-fleshed Melon.

SUTTON'S SEED OF BATH.—From Mr. W. Widdis, Gr. to the Right Hon. Viscount Eversley.—"I consider your Hero of Bath the best scarlet-fleshed Melon yet in commerce, being of a quality, appearance, and productiveness. His Lordship, who previously had a prejudice against scarlet-fleshed Melons, pronounces this variety superior."

From Mr. Thomas Lockie, Gr. to the Right Hon. Lord Otha Fitzgerald, at Great House, County of Wick, Ireland.—"The best I have ever grown of the scarlet-fleshed class. It is very handsome, of good constitution, and excellent in flavour." Price 3s. 6d. per packet.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

Special Offer.

GEORGE FARNSWORTH has to offer large quantities of the following:—

ASH, Mountain, 25s to 35s feet, 15s. per 1000; 1 1/2 to 5 feet, 20s. per 1000.

BIRCH, 1 1/2 to 2 1/2 feet, 20s. per 1000. BIRCHES AQUILA, 1 1/2 to 2 feet, 40s. per 1000. 2 to 1 1/2 feet, 8s. per 1000.

CHESTNUT, 1 1/2, 7 to 9 feet, 10s. per 1000. ELM, 2 to 4 feet, 25s. per 1000. LARCH, 2 to 3 1/2 feet, 25s. per 1000.

LIME, 2 1/2, 3 1/2, 4 1/2, 5 1/2, 6 1/2, 7 1/2, 8 1/2, 9 1/2, 10 1/2, 11 1/2, 12 1/2, 13 1/2, 14 1/2, 15 1/2, 16 1/2, 17 1/2, 18 1/2, 19 1/2, 20 1/2, 21 1/2, 22 1/2, 23 1/2, 24 1/2, 25 1/2, 26 1/2, 27 1/2, 28 1/2, 29 1/2, 30 1/2, 31 1/2, 32 1/2, 33 1/2, 34 1/2, 35 1/2, 36 1/2, 37 1/2, 38 1/2, 39 1/2, 40 1/2, 41 1/2, 42 1/2, 43 1/2, 44 1/2, 45 1/2, 46 1/2, 47 1/2, 48 1/2, 49 1/2, 50 1/2, 51 1/2, 52 1/2, 53 1/2, 54 1/2, 55 1/2, 56 1/2, 57 1/2, 58 1/2, 59 1/2, 60 1/2, 61 1/2, 62 1/2, 63 1/2, 64 1/2, 65 1/2, 66 1/2, 67 1/2, 68 1/2, 69 1/2, 70 1/2, 71 1/2, 72 1/2, 73 1/2, 74 1/2, 75 1/2, 76 1/2, 77 1/2, 78 1/2, 79 1/2, 80 1/2, 81 1/2, 82 1/2, 83 1/2, 84 1/2, 85 1/2, 86 1/2, 87 1/2, 88 1/2, 89 1/2, 90 1/2, 91 1/2, 92 1/2, 93 1/2, 94 1/2, 95 1/2, 96 1/2, 97 1/2, 98 1/2, 99 1/2, 100 1/2.

LAMBS, 2 1/2, 3 1/2, 4 1/2, 5 1/2, 6 1/2, 7 1/2, 8 1/2, 9 1/2, 10 1/2, 11 1/2, 12 1/2, 13 1/2, 14 1/2, 15 1/2, 16 1/2, 17 1/2, 18 1/2, 19 1/2, 20 1/2, 21 1/2, 22 1/2, 23 1/2, 24 1/2, 25 1/2, 26 1/2, 27 1/2, 28 1/2, 29 1/2, 30 1/2, 31 1/2, 32 1/2, 33 1/2, 34 1/2, 35 1/2, 36 1/2, 37 1/2, 38 1/2, 39 1/2, 40 1/2, 41 1/2, 42 1/2, 43 1/2, 44 1/2, 45 1/2, 46 1/2, 47 1/2, 48 1/2, 49 1/2, 50 1/2, 51 1/2, 52 1/2, 53 1/2, 54 1/2, 55 1/2, 56 1/2, 57 1/2, 58 1/2, 59 1/2, 60 1/2, 61 1/2, 62 1/2, 63 1/2, 64 1/2, 65 1/2, 66 1/2, 67 1/2, 68 1/2, 69 1/2, 70 1/2, 71 1/2, 72 1/2, 73 1/2, 74 1/2, 75 1/2, 76 1/2, 77 1/2, 78 1/2, 79 1/2, 80 1/2, 81 1/2, 82 1/2, 83 1/2, 84 1/2, 85 1/2, 86 1/2, 87 1/2, 88 1/2, 89 1/2, 90 1/2, 91 1/2, 92 1/2, 93 1/2, 94 1/2, 95 1/2, 96 1/2, 97 1/2, 98 1/2, 99 1/2, 100 1/2.

LIMES, Common, 2 to 3 1/2 feet, 30s. per 1000. POPLARS, Italian, 2 1/2, 3 1/2, 4 1/2, 5 1/2, 6 1/2, 7 1/2, 8 1/2, 9 1/2, 10 1/2, 11 1/2, 12 1/2, 13 1/2, 14 1/2, 15 1/2, 16 1/2, 17 1/2, 18 1/2, 19 1/2, 20 1/2, 21 1/2, 22 1/2, 23 1/2, 24 1/2, 25 1/2, 26 1/2, 27 1/2, 28 1/2, 29 1/2, 30 1/2, 31 1/2, 32 1/2, 33 1/2, 34 1/2, 35 1/2, 36 1/2, 37 1/2, 38 1/2, 39 1/2, 40 1/2, 41 1/2, 42 1/2, 43 1/2, 44 1/2, 45 1/2, 46 1/2, 47 1/2, 48 1/2, 49 1/2, 50 1/2, 51 1/2, 52 1/2, 53 1/2, 54 1/2, 55 1/2, 56 1/2, 57 1/2, 58 1/2, 59 1/2, 60 1/2, 61 1/2, 62 1/2, 63 1/2, 64 1/2, 65 1/2, 66 1/2, 67 1/2, 68 1/2, 69 1/2, 70 1/2, 71 1/2, 72 1/2, 73 1/2, 74 1/2, 75 1/2, 76 1/2, 77 1/2, 78 1/2, 79 1/2, 80 1/2, 81 1/2, 82 1/2, 83 1/2, 84 1/2, 85 1/2, 86 1/2, 87 1/2, 88 1/2, 89 1/2, 90 1/2, 91 1/2, 92 1/2, 93 1/2, 94 1/2, 95 1/2, 96 1/2, 97 1/2, 98 1/2, 99 1/2, 100 1/2.

Black Malton, 2 1/2 to 3 1/2 feet, 15s. 6d. per 1000; 4 to 5 feet, 20s. per 1000; 5 to 6 feet, 25s. per 1000.

RHODODENDRONS, Hybrid and Fotherly, mixed, 3 1/2, 4 1/2, 5 1/2, 6 1/2, 7 1/2, 8 1/2, 9 1/2, 10 1/2, 11 1/2, 12 1/2, 13 1/2, 14 1/2, 15 1/2, 16 1/2, 17 1/2, 18 1/2, 19 1/2, 20 1/2, 21 1/2, 22 1/2, 23 1/2, 24 1/2, 25 1/2, 26 1/2, 27 1/2, 28 1/2, 29 1/2, 30 1/2, 31 1/2, 32 1/2, 33 1/2, 34 1/2, 35 1/2, 36 1/2, 37 1/2, 38 1/2, 39 1/2, 40 1/2, 41 1/2, 42 1/2, 43 1/2, 44 1/2, 45 1/2, 46 1/2, 47 1/2, 48 1/2, 49 1/2, 50 1/2, 51 1/2, 52 1/2, 53 1/2, 54 1/2, 55 1/2, 56 1/2, 57 1/2, 58 1/2, 59 1/2, 60 1/2, 61 1/2, 62 1/2, 63 1/2, 64 1/2, 65 1/2, 66 1/2, 67 1/2, 68 1/2, 69 1/2, 70 1/2, 71 1/2, 72 1/2, 73 1/2, 74 1/2, 75 1/2, 76 1/2, 77 1/2, 78 1/2, 79 1/2, 80 1/2, 81 1/2, 82 1/2, 83 1/2, 84 1/2, 85 1/2, 86 1/2, 87 1/2, 88 1/2, 89 1/2, 90 1/2, 91 1/2, 92 1/2, 93 1/2, 94 1/2, 95 1/2, 96 1/2, 97 1/2, 98 1/2, 99 1/2, 100 1/2.

Also other Nursery Stock as per LIST. The Nurseries, Malton.

The Best Medium and Late Kidney Potato in

SUTTON'S MAGNUM BONUM. A remarkably good cooking Potato. An enormous cropper. Almost entirely free from disease. Indispensable for show purposes.

From Mr. J. P. BELLIS, Cr. to Major Thoys, Sulhamstead, Nov. 25, 1876. "I bought of you in March 49 lbs. 1 lb. of Magnum Bonum Potatoes, cut them up 50 sets, and planted them 3 feet apart. The hauls covered every foot of ground, and I am convinced that 3 feet square was not more room than was necessary, being a strong growing variety. I lifted the crop in October, and from two sets I dug 23 lb. and altogether 297 lb. of good sound Potatoes."

Price 2s. per bush, 12s. 6d. per bush. SUTTON'S DESCRIPTIVE LIST of choice Seed Potatoes gratis and post-free.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

Centauria canadensis (Wholesale Price). WOOD AND INGRAM offer for summer-sown-plants, of the above, thoroughly established in thumb-pots, at 20s. per 100. Package 3s. per 100, or 12. 6d. for 50, not less than 2s. 6d. and all the price.

The Nurseries, Huntingdon.

EWING AND COMPANY'S LIST OF NEW ROSES for 1877 is now ready, and may be had gratis. Additional Houses have this season been built specially to extend the Production and Growth of NEW and FEA ROSES. The plants are making vigorous, strong growth, and will be unusually large and fine. These GENERAL LISTS of Roses, Fruit Trees, Ornamental Trees for Avenues, Conifers, Evergreens, Clematis, &c. (10s. per set), with full descriptions, gratis.

The Royal Norfolk Nurseries, Eaton, near Norwich.

VALUABLE LILIES.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 8, at half-past 12 o'clock precisely, an Importation of good Bulbs of the beautiful LILIUM NEILGHERRENSE. The white flowers of this magnificent Lily are deliciously fragrant, and of great substance; it bears several flowers on a stem, each flower nearly a foot long. Also some excellent Bulbs of the following new varieties of Liliun neilgherrense, viz.:-

LILIUM NEILGHERRENSE ROSEUM—the exterior of the flower tubes of this variety is pink, the interior white.

LILIUM NEILGHERRENSE FLAVUM—a handsome light yellow-coloured form of this charming Lily.

LILIUM NEILGHERRENSE TUBIFLORUM—a magnificent pure white Lily, with very long flowers; figured in Wight's Icones Plantarum Indice Orientalis.

LILIUM NEILGHERRENSE TUBIFLORUM LUTEUM—a very handsome yellow-flowered variety of tubiflorum. And some

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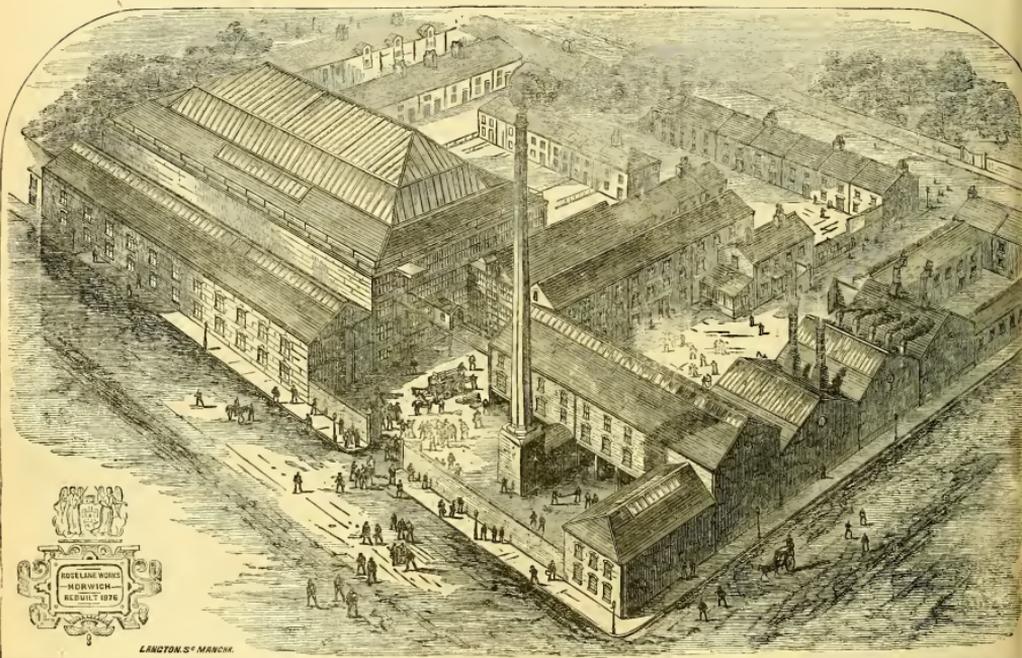
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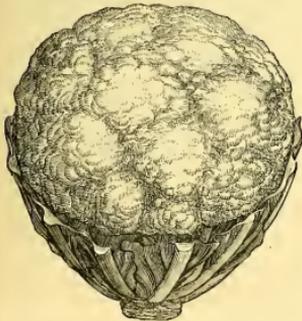
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SATURDAY, FEBRUARY 3, 1877.

WALKING-STICKS.

(Continued from p. 105.)

IT will readily be conjectured that a large stock of these roughly cut sticks, both of British and foreign produce, would appear when stacked together like so much firewood, and this is the impression one has on passing through the several floors of the store-house for raw material belonging to Mr. Henry Howell, of 150, Old Street, City Road, London, the largest manufacturer of naturally grown walking and umbrella sticks in England. This building, which is nearly 100 feet long and about 60 feet high, has four separate floors, in which are classified the various English and foreign sticks; and although each one of the hundreds of thousands of sticks thus stored has been carefully selected for the purposes of the trade, to the uninitiated they all appear like so many stacks of faggots; but if we pass on to the factory (an immense building of several storeys, which, together with the warehouse, covers a space of some thousands of square feet), we shall see the various processes through which each stick passes till it is finally ready for the retail market.

In a great many sticks, whether of British or foreign growth, much labour and discrimination are needed to reduce and form them to the necessary shape. In the Ash or Holly, for example, the naturally grown branches are mostly too thick to allow of them to be simply straightened, polished, and sent into the market; they have, therefore, to be reduced by a process of planing and rasping, by which the required taper is given and the knob or hook formed, after which it is smoothed and polished, or perhaps before polishing it is artificially coloured in imitation of other sticks, or carved and figured according to the fancy of the manipulator or the demands of fashion. The young saplings of the Ash, however, prepared with their bark on, require but little treatment at the hands of the workmen besides forming the heads, cleaning and polishing, and when finished they make excellent sticks. Very few, indeed, of British-grown sticks are in their natural condition sufficiently straight for use as walking-sticks, and indeed some of the foreign produce are even more crooked; for instance, the Carob (*Ceratonia siliqua*), quantities of which are imported from Algeria—these have all to be straightened by mechanical means. They are buried in hot sand over a stove till they become quite pliable. In front of the heap of sand is a stout board, 5 or 6 feet long, fixed at an angle inclined from the workman; in the edge of this board are square notches. When the stick has become sufficiently pliable by being buried in the hot sand, the workman places it in one of the notches, and strains and bends it till he has succeeded in producing a perfectly straight stick. In this way the most crooked, and, to all appearance, worthless sticks, are made so straight that the result appears almost impossible, more especially when it is borne in mind that the workman has no other guide but his well-trained eye to help him. When straightened to his satisfaction the sticks are placed on one side, and as they cool they become perfectly rigid.

Efficiency in this branch of walking-stick making is only attained after many years of training and practical experience on the part of

the workman, and this can be easily imagined when we remember the different effects produced by heat on the various kinds of wood—the degree of heat necessary to straighten one kind of stick being often sufficient, if applied to one of a different kind, to completely spoil it. The application of heat in various forms, as will readily be supposed from the above illustration, is an important element in the operations of the stick-maker. The same power which makes a crooked stick straight can be applied to make a straight one crooked, and so we find that the hard and brittle stems of the Bamboo, the partridge and the Rajah canes, as well as the various kinds of English sticks where Nature has not provided any kind of knob or crook, are by the application of heat curled into the necessary shape to form a handle. Most of our readers will, however, be aware that the naturally-formed knob or hook is more highly valued by connoisseurs of walking-sticks.

Of the final processes of cleaning, polishing, and ornamenting we need say nothing, it will suffice to show the enormous extent of the trade when we say that in the establishment above referred to nearly 200 skilled workmen are constantly employed in the preparation of naturally grown walking-sticks and umbrella-handles.

This trade is essentially a British industry, but large quantities of sticks are also made in France and other parts of the Continent. Though we import so many in their rough state from all parts of the world, the imports of manufactured sticks are comparatively few. From France we get some tastefully mounted canes, and from Hamburg we import the cheaper kinds of painted canes; but for substantial and well-got-up sticks, more especially for natural sticks, the British manufacture is noted, not only at home, but in the foreign markets, large quantities being exported to North and South America, as well as to other parts of the world.

I am indebted to Mr. Howell for many of the particulars contained in this article, as well as for the following list of sticks known in commerce, the botanical origin of many of which is quite unknown. Perhaps some of the readers of the *Gardeners' Chronicle* may be able to throw light upon those to which the scientific names are not attached.

Sticks from Algeria.

Olive— <i>Olea europæa</i>	Chestnut— <i>Castanea vulgaris</i>
Myrtle— <i>Myrica communis</i> ?	Cork— <i>Quercus suber</i>
Pomegranate— <i>Punica granatum</i>	Bastard
Carrot— <i>Cerastium cilicium</i>	Bay-tree
Orange and Lemon— <i>Citrus sp.</i>	Dwarf fig—petioles— <i>Phoenix</i>
Eucalyptus— <i>E. globulus</i>	Dactylifera
	Wild Bamboo

West Indies.

Pimento— <i>Pimenta vulgaris</i>	Supple Jack— <i>Foullonia sp.</i>
Coffee— <i>Coffea arabica</i>	Orange and Lemon— <i>Citrus sp.</i>
Flowered Ebony— <i>Erya Ebecum</i>	Myrtle
Souppwood— <i>Spandium saponaria</i>	Black Torch
Birao— <i>Xanthoxylon Clava</i>	Grass— <i>Acrosmia sclerostachya</i>
Herculia	Wild Bamboo

English.

Blackthorn	Ground Ash
Osier	Holly
Crab	Rowan
Warded Crab	Birch
Whitehorn	Mountain Ash
Hazel	Cherry
Maple	Dogwood
Furze	Chubbe (Jersey)

Bamboo, chiefly from China.

Ordinary yellow-rood Bam-	Doghead Cane
boo and black do.	Beeble Cane
Mountain Reed	Whangce— <i>Phyllanthus?</i>
Carolina Reed	Whangoo Bamboo

Australian.

Milken (perhaps a species of <i>Drosera</i>)	Loya
Cardwell	Bramble

Other Varieties from the East.

Partridge cane (a Palm)	China
Pennang Lawyer (Licuala)	Borneo
Calamus (Calamus stipitatus)	Penang
Rajah	Java
Red Rutan (Calamus)	Singapore
Black (a Palm)	Java
Jungle (a Palm)	Java
Zeppoy	East Indies
Chi-Chi	Java
Tea tree (not Thee)	China

Miscellaneous.

Assyrian Thistle	Smyrna
Marcor	France
Black Jacks	South Carolina

—and a fine knotted stick recently imported in considerable quantities under the name of Ceylon Vine, the native country, however, of which is doubtful, and it may prove to belong to the order Sapindaceæ. *John R. Jackson, Museum, Kew.*

PLANT PORTRAITS.

ARIES FIELDINGI, Orchidaceæ (*Belgique Horticole*, 1876, t. 18, 19).—The well-known Fox-brush *Aries*, referred as a variety to *A. multiflorum*, Roxb. With this plant is given a list of the cultivated species, with comments thereon.

BILBERGIA HORRIDA, Regel, Bromeliaceæ (*Belgique Horticole*, 1876, t. 22).—A species with strongly toothed, white-handled leaves, and erect racemes of white flowers, the tips of whose petals are tipped with blue. It is a native of Brazil.

BILBERGIA SPECIOSA, Bromeliaceæ (*Revue Horticole*, 1877, p. 10).—A Brazilian species, supposed to be a variety of *B. Crociana*. The leaves are tufted, strap-shaped, obtuse, serrated, highly covered with bran-like scales. The flowers crowded in spikes or racemes, with numerous rosy red bracts; the calyx of carmine-red, the petals violet, shaded with red. The plant is of vigorous habit, and flowers several times in a year.

BILBERGIA VIRIDIFLORA, H. Wendland, Bromeliaceæ (*Belgique Horticole*, 1876, t. 20 and 21).—A species with long loose panicles of greenish flowers. It is supposed to have been procured from Brazil.

COLOMBIER PEACHI, *Revue Horticole*, 1876, p. 30.—Of this a coloured figure is given. It is said to be of merit *tout à fait hors ligne*, and was raised by M. Leprieux, jun., of Montreuil. The glands of the leaves are globular, the flowers of medium size. The fruit is a freestone of medium size, perfectly spherical, downy, richly coloured, and finely speckled on the sunny side. The flesh is melting, of exquisite flavour. The kernel oval, deeply furrowed. The fruit ripens in the first fortnight of September. M. Carrière, a good judge, speaks of it in the highest terms. It is in the hands of M. Jamin, of Bouris-la-Reine, and M. Colomlier, of Vitry-sur-Seine.

DENDROBIUM GIBERTI, *Illustration Horticole*, t. 258.—A species with a dense panicle of pale yellow flowers, the lip being of a darker orange colour. It is nearly allied to *D. densiflorum*.

DIMORPHIS KIRKII, *Potanical Magazine*, t. 6276.—A pretty bulbous plant, with spotted leaves, like those of a *Lachenalia*, and a spike of small white bell-shaped flowers. The figure was taken from a plant which flowered at Kew in July, 1873. The plant is a native of Zanzibar.

LIVISTONIA AUSTRALIS, *Potanical Magazine*, t. 6274.—A noble Australian Fan Palm, for many years one of the choicest ornaments of the Palm-house at Kew, where it flowered every year, but at last lost owing to its accommodation. The figure gives but a poor notion of the beauty of this fine species.

MADREVALLIA ATTENUATA, *Potanical Magazine*, t. 6273.—One of the more inconspicuous white-flowered species, with long-spreading tails to the flowers. It was described in our columns by Professor Reichenbach in 1871, p. 834, and was introduced into commerce by Messrs. Veitch. It flowers at Kew in December.

× **NEGELIA**, *HYACINTHINA* *Revue Horticole*, woodcut, p. 29.—A dwarf-growing hybrid *Negelia*, producing a profusion of pale blue-coloured pendulous flowers in a dense spike. It appears to be a desirable variety, and is to be sent out by M. Jules Vallrand, of Bois de Colombe, France.

NEPENTHES VERTICILLATA, *Illustration Horticole*, t. 261.—A Bornean species, known in gardens as *N. lanata*, or *N. villosa*. See Dr. Moore in *Gardeners' Chronicle*, 1873, p. 542.

PHILODENDRON GLORIOSUM, *Illustration Horticole*, t. 262.—Described as a truly glorious plant. According to the figure it is a scandent plant, with large bold cordate ovate-acute leaves of a deep rich green colour, the midrib and secondary nerves being of a snow-white colour, and the margins of the leaves bordered with a thin edging of a pink colour. M. André met with it in a virgin forest on the borders of the River Gustavina, in Colombia, and was, as he says, struck with admiration at its beauty. It has been successfully introduced into the establishment of M. Linden, of Ghent.

SONERILA MADAME VICTOR ALESCHI, *Illustration Horticole*, t. 259.—A hybrid raised by M. Linden,

with leaves of a bronzy green, marked and spotted with white, and resembling those of *Tydea anabilis*.

TELEPACHIA OCCIDENTALIS, *Potanical Magazine*, t. 6272.—A *Cacumbia*, of singular and striking appearance, of climbing habit, pedate 5-foliolate leaves, tendrils and white bell-shaped flowers $\frac{1}{2}$ inch to 2 inches in diameter, with a purple centre, and five deeply fringed segments. The Gourd is 2 feet long, ovoid-oblong, with ten prominent winged ribs, and the cells filled with golden-yellow pulp. The seeds are numerous. The plant is a native of West Tropical Africa, where the seeds are eaten by the natives, and used for extracting oil. It flowered at Kew in September, 1876.

TILLANDSIA FRUINOSA, Swartz, Bromeliaceæ (*Belgique Horticole*, 1876, t. 16 and 17).—A rootless plant, with a thick, rather elongated, bulbous stock, from which proceed numerous long, linear, ciliated leaves with sheathing bases. From the centre of these rises the inflorescence, consisting of a spike of rose-coloured bracts enclosing purplish flowers. The plant may be grown suspended from the rafters of a greenhouse. It is a native of the West Indies.

TYDEA CECILIE, *Illustration Horticole*, t. 260.—One of M. André's discoveries in the mountains of New Grenada, between 2000 and 3000 feet above the sea, in a temperature of +30° C. at noon. The plant was growing amid the fissures of the rocks. The leaves are a velvety violet colour, with white markings. The flowers are pink, with the limb spotted with darker spots of the same colour.

XANTHISMA TEXANUM, *Potanical Magazine*, t. 6275.—A hardy annual Composite, with sessile, linear, dentate leaves, and heads of yellow flowers like a *Crocopsis*. The plant, which is a native of Texas, flowered at Kew in November last.

ASPECTS FOR PLANT HOUSES.

It is so universally recommended for span-roofed plant-houses to be built with the ends facing north and south, so that the sides face east and west, that it will doubtless be considered an act of temerity to dispute the soundness of the advice, yet I do dispute it, at least so far as to say it is not the best position—that an aspect for the sides south and north, with ends east and west, is quite as good, and I think a great deal better.

The greatest drawbacks to the perfection of the first position, viz., ends north and south, are, first, that during the winter when the sun has but little power except when within a few degrees on either side of the south the bars and framework of the house, be they ever so slight, cast a shade over its interior which is of great disadvantage to the plants, and on a frosty morning in midwinter the ice on the glass will remain unmelted a good hour longer than upon a house facing south.

In the second place, when the sun rises early in summer the east face of the house receives the full glare immediately it is above the horizon, which endangers tender foliage. Houses in this position are often hotter at 5 o'clock on a summer's morning than they are at 10 o'clock, owing to the interposition of the bars and rafters as the sun works round.

And in the third place, in the fall the afternoon of a summer's day, pouring as it is, its full force direct upon the west face, renders it almost impossible to close the house till late in the day unless a heavy shading is left on after closing; and unless your house is a stove for foliage plants only, this is a great drawback.

Now the position I advocate—viz., ends east and west, with broadside north and south—has none of these disadvantages, for in the first place it receives the full force of the little sun we have in winter, which shines right through the house, reaching the back stage as well as the front most cheerfully.

In the second place, the hot summer sun rises upon the face of the house gradually, giving time for the drying up of condensed moisture, and the danger of scorching is less than where the glare is sudden.

And in the third place, as the sun approaches the west in the early summer, the house may be closed, the blinds raised, the plants well syringed, and the atmosphere and temperature of the tropics maintained for hours in broad daylight without danger of scorching, giving the foliage of your flowering plants time to dry before night comes on, the advantage of which will be appreciated by all cultivators.

All the great plant-growers with whom I am or have been acquainted have had greater difficulties to contend with in the structures they have had at command than are here enumerated, yet, as far as my experience goes, building houses facing east and west, where the ground allows of the north and south aspects being used, is a great mistake. *John Bester.*

FERTILISATION OF PLANTS.*

(Continued from p. 48.)

The first series of experiments was made on the so-called *Convolvulus major* (*Ipomoea purpurea*), which, having conspicuous corollas, is greatly interested by humble-bees, but is also highly self-fertile, so that the number of seeds produced by intercrossing and self-fertilisation differed very slightly. Mr. Darwin experimented on this plant for ten years, planting seedlings of exactly the same growth on opposite sides of pots, and the general results were that the excess in height per cent. of the former over the latter varied from 14 to 46; or, taking the intercrossed plants as 100, the mean height of the self-fertilised was 77. The intercrossed plants showed greater vigour and weight. A chief difference was in the number of capsules produced, although the seeds per capsule differed but slightly, so that the actual fertility of the intercrossed as compared with that of the self-fertilised was as (from 100) 35 to 100 : 64.

Mr. Darwin next fertilised flowers of the ninth intercrossed generation with pollen from a new stock, while other flowers were again intercrossed. The results were greatly in favour of the new cross in height, as 100 : 78, *i.e.*, almost the same ratio as that of the mean of the intercrossed for ten years to the self-fertilised, or as 100 : 77. In weight the ratio was 100 : 51. An exceptional plant appeared in the sixth generation, which Mr. Darwin called Hero, as being remarkable for its strong self-fertilising powers, and for showing no benefit when its children and grandchildren were not merely intercrossed, but crossed even by a new stock.

Mimulus luteus afforded quite analogous results. For three years the intercrossed exceeded the self-fertilised in height as 100 : 65. In the fourth generation a new variety appeared, which grew taller, had whiter and larger flowers, and transmitted these characters with great fidelity, so that all the plants in the later self-fertilised generations belonged to it. These frequently exceeded the intercrossed in height, even in the ratio of 137 : 100, and in fertility as 147 : 100. As with Hero so with this pale variety of *Mimulus*, intercrossing did no good. But it differed from Hero when crossed by a new stock, for the heights of the eighth self-fertilised generation thus crossed were to that of the ninth self-fertilised generation as 100 : 52, and in fertility as 100 : 3.

"Better evidence," says Mr. Darwin, "could hardly be desired of the potent influence of a cross with a fresh stock on plants which had been self-fertilised for eight generations, and had been cultivated all the time under nearly uniform conditions."

Here, then, is a most important fact for horticulturists, and it is associated with another of equal value, that greater variety of colours are produced in proportion to the crossing; while on the other hand perpetual self-fertilisation seems invariably to reduce them to a uniform tint. Mr. Darwin first noticed this in the seventh generation of *Ipomoea*, of which all the flowers were of a uniform remarkably rich dark purple tint, which remained constant up to the tenth and last generation raised. Likewise had he repeatedly intercrossed flowers a much more uniform colour than those originally raised from purchased seed. Similarly with *Mimulus*, the original plants varied greatly in the colour of their flowers, so that hardly two individuals were quite alike, the corolla being of all shades of yellow, with the most diversified blotches of purple, crimson, orange and coppery brown, probably the result of much intercrossing. On the other hand, the form which appeared having great self-fertility was not only tall, but its flowers were large, nearly white, and blotched with crimson, and retained a surprising uniformity throughout later generations.

Brassica alpestris.—This, like other cruciferous plants, is adapted for crossing with its two shorter stamens, and self-fertilisation by its four longer ones ;

and, if varieties are grown together, it is consequently very difficult, as Mr. Darwin proved, to raise pure kinds. Height in this case proved quite fallacious, but weight showed the vast superiority of intercrossing by the ratio 100 : 37, while the fertility was as 20 : 25. Finally, crossing with a new stock increased the weight of the cross to the ratio of 100 : 22. Mr. Darwin tested the statement that a cat-leaved curled and variegated white-green Cabbage would not cross with a similar crimson-green Cabbage. This was an error, but the former was partially sterile, which may possibly account for the statement. The latter crossed by the former afforded curious results. A few reverted to a pure green, and became very vigorous, but many more of the self-fertilised seedlings of crimson-green thus reverted, and grew taller by 2.5 inches than the crossed plants. Hence reversion to a more natural condition acted more powerfully on their growth than the influence of crossing with a semisterile variety.

It would have been interesting for gardeners had Mr. Darwin experimented on the effects of crossing upon "root" plants. He only remarks that the effects of Kohl Rabi were particularly plain in the enlarged stems of the mongrel seedlings of varieties of Cabbages grown together.

Pisum sativum is fully self-fertile in England, and is rarely intercrossed, as no British insects are usually strong enough to effect it. Hero varieties grown under the same main plan, Knight's, produced by artificial crossing, lasted over sixty years, and were always self-fertilised. Owing to the varieties being self-fertilised for many years, a cross brought no benefit at all, or rather had a deteriorating effect; for the heights were as 100 : 115; but Mr. Knight proved that a short variety crossed by a tall one gave rise to offspring twice its height. Mr. Laxton also proved that crossed varieties gave rise to prolific offspring. From this species we learn that when a plant has after many generations become, as it were, habituated to self-fertilisation, then intercrossing does no good.

This we have seen is paralleled by Hero in *Ipomoea*, and probably by *Lathyrus odoratus*, though Mr. Darwin did not test this species; though he crossed different varieties varying in colour, and obtained a new sub-variety, and in the next generation the offspring varied still more—proving the good effect of crossing varieties if colour-variations are required. On the other hand a spontaneous variety may appear, and then this may prove true to its kind.

Phaseolus multiflorus, or Scarlet Runner, is very sterile in the absence of fertilising insects, but self-fertile if the petals be only mechanically moved. The cause of the great variability in the colouring of the seed-skins is disputed, but seems most likely to be due to intercrossing. The crossed and self-fertilised plants differed but little, if anything, in height and fertility. *P. vulgaris*, though closely allied to the preceding, differs from it in being highly self-fertile, yet varieties cross freely if planted together.

Plataginum zonale.—This genus is strongly proterandrous and almost self-sterile, but in pale-coloured varieties the pistil matures early and the plants then become "great seeders." The physiological importance of this fact will be alluded to hereafter. In Mr. Darwin's first experiments he crossed plants raised by having for the same stock, and no benefit accrued—a result similar to one obtained by crossing plants of *Origanum* propagated by stolons. A cross with the pollen from a different plant gave offspring, compared in height with one from a flower fertilised by pollen from another flower on the same plant, in proportion of 100 : 74. It possessed also greater vigour. It would have been a desideratum to know what, if any, effect was produced by crossing on the "zones." For Mr. Grieve found the pollen of *Zonal Plataginum* to affect *Geranium pratense*, both in the colour of the flowers as well as in the variegation of the leaves. *Chromola*, July 8, 1876, but nothing is said about it.

Dianthus Caryophyllus.—This plant is also strongly proterandrous, and great care must be taken to prevent varieties crossing if pure strains are required. The number of seeds from crossed and self-fertilised parent plants (as was not unfrequently the case at first) differed but little, the ratio being as 100 : 92. That of the heights of the second generation were about as 100 : 86 when both were grown in the open ground, but when crowded in pots, the result of struggling for existence, which self-fertilised plants usually manifest, was very apparent, the relative heights being as 100 : 58. In the third generation,

however, the heights, though grown in pots, were as 100 : 99. They were, however, "drawn," being "light and weak," but, as ascertained by weight the latter showed the ratio of 100 : 49—a fact which well illustrated the danger of estimating solely by heights. Another curious fact happened in the third generation. The self-fertilised became much more fertile than the intercrossed, the number of seeds being as 125 : 100. This was probably due to the sexual organs maturing more nearly together, and so being less dichogamous. This is similar to *Pelargonium* and *Primula*, which may also become self-fertilising from a like cause. A fresh cross from a new stock was now introduced. The first effect appeared to indicate a decrease of fertility, but the offspring, compared with the self-fertilised, were in weight as 100 : 33, and their relative heights as 100 : 81. Lastly, the pale pink or rose colour of the fourth self-fertilised generation were "as uniform in tint as those of a wild species." The flowers of the fourth intercrossed generation were likewise nearly uniform; but the newly-crossed plants varied extremely in colour. *George Henslow.*

(To be continued.)

New Garden Plants.

DENDROBIUM (PELIDIONUM) MOHLIANUM, Rehb. f.*

When the late Dr. B. Seemann came home from the Fiji Islands he spoke in rather high praise of a *Dendrobium* he had found on Buku Leva and Voma peaks, at an altitude of 4000 feet. It is a *Pelidionum*, somewhat comparable to *Dendrobium thyrsoides* from the Fiji Islands, as it was in weight as 100 : 33, and their relative heights as 100 : 81. It has, however, a quite new and most striking character. The lip is inflexed at its end into a shoe, in the way of that of a *Cypripedium*, and it was these nice cilia which were later observed in *D. trichostema* of New Guinea. *Rehb. f., Bot. Bez. 1847, tab. 47, not Bl.* It has, however, a quite new and most striking character. The lip is inflexed at its end into a shoe, in the way of that of a *Cypripedium*, and it was these nice cilia which were later observed in *D. trichostema* of New Guinea. *Rehb. f., Bot. Bez. 1847, tab. 47, not Bl.* It has, however, a quite new and most striking character. 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Anthurium Patini I received through the kindness of Dr. Maxwell Masters, and I can decidedly affirm that the plant is allied to the genus *Spathiphyllum*. It agrees with *Spathiphyllum* in the trinervous flowers (petals 6, stamens 6, 3 locular ovarium), but differs in the ovarium having uniovulate cells. *Anthurium floribundum*, Linden et André (*Ill. Hort.* 1877, p. 22, t. 159), the flowers of which I received by the kindness of Mr. Veitch, belongs also to the genus *Amomophyllum*; but the cells of the ovary are very often 2-ovulate, therefore this species, *Amomophyllum floribundum* (Linden et André), Engler, resembles the genus *Spathiphyllum* in the structure of ovary, in which the cells of the ovary are 8-2-ovulate, but the form of the ovary is quite different. Possibly species will hereafter be found with characters forming a transition between *Spathiphyllum* and *Amomophyllum*. A. Engler, *Botanic Garden, Munich*.

STAPELIA PAENTISTROIS, N. E. Br. (Fig. 21.)

Stems erect, branching at base, 3-5 inches high, $\frac{3}{4}$ inch thick, puberulous, four-angled, sides very concave, angles obtuse, toothed, teeth erect. Flowers 1-3, erect from the base of the young stems, not very forked. Pedicels $1\frac{1}{2}$ inch long, puberulous. Calyx lobes narrow linear-lanceolate acute, 5 lines long, 1 line broad, puberulous. Corolla 2-3 inches in diameter, the back minutely puberulous, pale green tinged with reddish brown towards the tips, the face rugose, the centre densely villose, with long, soft, rich purple-red hairs, which extend a short way up the base of the lobes; the latter are 1-1 $\frac{1}{2}$ inch long, 7-8 lines broad, lanceolate-acuminate, spreading or reflexed, glabrous except just at the base, and fringed with long, simple, purplish hairs, dark red or purple-brown, the basal part marked with numerous slender, transverse, undulated yellow lines; ligulae erectly spreading, linear, concave, apex recurved, truncate, with a central projecting tooth, or truncate-emarginate with the tooth from the base of the notch, or very rarely entire and acute (as in the figure), the base and the margins of the apex dull greenish; rostra very suddenly recurved at the base, and horizontally spreading almost to the sinuses of the corolla, subulate-triquetrous, blackish purple; also the flat, wing-like dorsal appendages of the rostra free to the base, horizontally spreading, shorter than the rostra, straight or curved, linear, obtuse, entire, blackish purple.

This very pretty species may at once be distinguished from all yet described by the horizontally spreading processes of the inner corona. The above description and figure was made from the same plant that was figured in the *Botanical Magazine*, t. 5963, as *S. sororia* of Masson, from which species it differs in its much more slender stems, (only half as thick), smaller flowers, and different corona; it is also alluded under the name of *S. Conreilli*. The ligulae are usually truncate-emarginate with a projecting middle tooth, the side lobes being very short and rounded, as figured in the *Botanical Magazine*, but in one flower examined by me some of them were quite entire and simply acute, as here represented. N. E. Brown, *Aca.*

BOTTOM-HEAT WITHOUT COST.

On reading the above heading in the *Gardeners' Chronicle*, p. 107, many gardeners must have been on the tenterhooks of expectation that some great discovery in bottom-heating was about to be divulged. Mr. Fish is, however, such a master in surprises in horticultural matters that we must rather regret that this, his last essay on heating, has nothing sensational about it. There cannot be the least doubt but that placing the roots of all plants in the same temperature as their tops are grown in is the natural way to success in their cultivation, especially in the winter months. In growing early Grapes—that is, where they are expected to ripen from April till June—if the roots of the Vines are all confined inside the house the gardener can then attend to their wants in every detail of cultivation, and, therefore, no one can gainsay but that the system is sound in practice. I have, however, grown good crops of early Grapes in vineries where the Vines were planted inside and the roots could get to the outside borders, which were protected by Oak leaves mixed with litter, and the surface covered with wooden shutters. The varieties of Vines grown were principally of the Frontignan section, which are well known to delight in heat, and they produced more vigorous wood and bunches than those in the vineries where the roots of the Vines were confined inside. Where, however, labour and materials are scarce, and readiness is desirable on the outside borders, I am of Mr. Fish's opinion that the growing of very early Grapes in structures where the borders are inside is the safest and best system.

In growing the main crops of summer, autumn,

and late-keeping Grapes, I have found, after a long experience, that the best results have been from vineries where the Vines were planted inside but the roots were left to ramble in properly prepared outside borders at their "own sweet will." There is something more in solar attraction, and its atmospheric effects in making Vine roots always try to reach the outside border when they can, than Mr. Fish gives credit for. The late Mr. John Wilson, when gardener at Worktop Manor, once told me that the original Black Danascus Vine planted there, and which grew in the corner of a vinery where its roots were confined inside, had managed to get through the rotten brick-work into an ashheap and luxuriated there. On making some alterations here this year near the outside borders in the main range of vineries, the Vine roots were found running into the burnt clay that had been filled into a drain, and this was 4 or 5 feet from the made borders. I believe, therefore, that for Vines, where they are expected to grow to a good old age and permanently

warm, dry summers. This vinery has now been planted fourteen years, and never misses bearing good crops of Grapes, with bunches and berries of good size, and their colour that of rich golden hue which the Muscat shows when in perfection. There is no extra expense in heating the air-drains in this house, for the same boilers heating the atmosphere of it heats the piping in the outside where the drains are placed.

I have now given as above my experience in Grape growing, but with fear and trembling, for hath not Mr. Fish recorded his "anathemas"—that if no one can convince him that outside borders are better than inside ones then they are for ever after "to hold their peace"? I hope, therefore, that other extensive Grape growers will support me, and advance the cause of practical horticulture by giving their opinions on the subject, so that it may be impartially ventilated in the columns of the *Gardeners' Chronicle*, William Tillery.

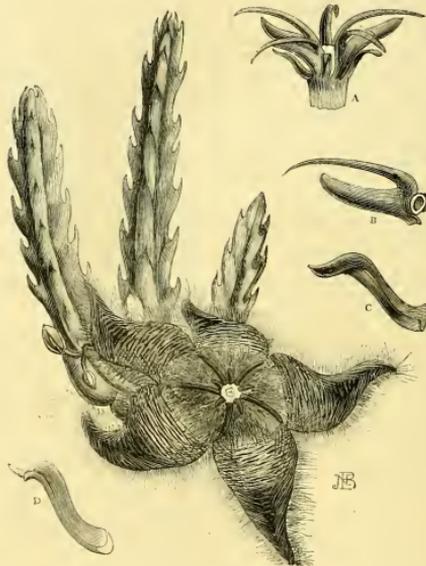


FIG. 21.—*STAPELIA PAENTISTROIS*.

A, The entire corona removed. B, Rostrum. C, Ligula. D, Malformed ligula. (A, B, C, D, magnified.)

to bear good crops, that the system of planting them inside the house, allowing the roots to get to the outside border, is better than wholly confining the roots inside, unless it is in the case of very early Grapes.

As to the artificial heating of Vine borders, if Mr. Fish saw how the system is pursued here I am sure he would be quite delighted with it, and praise it above limekiln heating. A large vinery, 106 feet in length and 18 feet in breadth, is planted principally with Muscats, and its borders inside and outside have heated air drains every 4 feet. This is effected by having two rows of 4-inch piping placed at the level of the drains, and the heated air in the drains communicates with the large channel inside the house where the flow and return pipes are placed. The cutting where the two rows of piping is placed on the outside of the border is flagged over the brickwork, with ventilators on the top to regulate the supply of air from the outside to the drains. Plenty of drainage is laid on the surface of the drains, and the roots of the Vines are quite safe from any undue heat or too much drying if plenty of water is given to the borders in

SCHLIMIA TRIFIDA.

This interesting plant, described by Professor Reichenbach at p. 708 of our last volume, was exhibited at the meeting of the Royal Horticultural Society on January 17, by Sir Trevor Lawrence, Bart., and attracted a good deal of notice from the visitors on account of its remarkable appearance, so unusual in texture as to have been apparently modelled out of thick wax, and so peculiar in form that the individual blossoms were compared to ancient Grecian helmets. To this remarkable appearance of the flowers, so unlike any other familiar flower, is to be added the fragrance which it would seem is characteristic of the genus, inasmuch as the original species is called *jasminodora*, and the fragrance of the present is described by Sir Trevor Lawrence as being between that of *Jasmine* and bergamot.

The general aspect of the plant is very much that of a small *Stanhopea*, the foliage and pseudobulbs being very similar in character. The drooping racemes are one-sided and few-flowered, the blunt sac of the two connate sepals (not cuneate as planted by

oversight (at p. 708) giving the individual blossoms when reversed the helmet-shaped figure above referred to, while the third sepal is ligulate and projected forward. The general colour of the flower is a waxy white.

The plant is, it appears, New Grenadan, and was sold as *S. jasminodora* at one of Stevens' sales in May, 1874. The Floral Committee gave it a Botanical Certificate.

area in 1876 was 47,393,000 acres, exclusive of heath and mountain pasture land and of woods and plantations. This total exceeds that of 1875 by 80,000 acres, and between the years 1869 and 1876, 1,293,000 additional acres were returned as under cultivation in the United Kingdom. This increase is mainly in Great Britain, and the respective proportions in each division are 824,000 acres for England, 181,000 for Wales, and 200,000 for Scotland.

of 1875, but Oats were grown in Great Britain on 125,000 acres more than in the previous year, a larger acreage than in any year since the agricultural returns were collected. This may be accounted for by the relatively high price of Oats during the past year, and also by their being sown on a large area of land intended for Wheat for which the seed time was unfavourable.

The fifth table gives the acreage under orchards, market gardens, nursery grounds, and woods, in each county in England, Wales, and Scotland, from which we extract the following:—



FIG. 22.—SCHLIIMIA TRIFIDA (FLOWERS WHITE, FRAGRANT).

AGRICULTURAL STATISTICS.

We quote the following from the Agricultural Returns for Great Britain just issued by the Statistical and Commercial Department of the Board of Trade:—

The total quantity of land returned in 1876 as under all kinds of crops, bare fallow, and grass, amounted for Great Britain to 31,544,000 acres. For Ireland the returns obtained by the Registrar-General show a total of 15,725,000 acres, and for the Isle of Man and Channel Islands the totals are respectively 93,000 acres and 31,000 acres. Thus for the whole of the United Kingdom the cultivated

area under Wheat in the United Kingdom in 1876 was 3,124,000, being 11 per cent. less than in 1875, and 22 per cent. less than in 1869, when the area under that crop was greater than in any other year from 1868 to 1876. In Great Britain alone the decrease from 1875 was 10 per cent., and from 1869 19 per cent. An unfavourable seed time is stated to be the principal reason for so large a falling off this year, but the cause alluded to as accounting for decreased arable land may be held to apply more particularly to Wheat.

The acreage under Barley in 1876 both in Great Britain and Ireland corresponds pretty closely to that

COUNTIES.	Orchards, &c.		
	Average of Apples or Grass Lands, but not of any kind of Fruit or Market Gardens.	Land used by Nurseries and other Gardens and other Producers.	Nursery Grounds.
	Acres.	Acres.	Acres.
ENGLAND.			
Bedford	373	458	19
Berks	1,345	223	162
Buckingham ..	1,575	249	59
Cambridge	1,180	600	126
Chester	1,019	991	497
Conwall	4,378	97	80
Cumberland ..	852	166	300
Derby	689	418	443
Devon	24,007	808	295
Dorset	3,656	138	102
Durham	174	350	48
Essex	10,977	4,753	365
Gloucester	11,602	1,040	217
Hants	1,164	1,044	460
Hereford	24,616	38	131
Hertford	1,033	333	230
Huntingdon ..	252	126	43
Kent	17,666	4,101	618
Leicester	1,781	1,077	355
Leicestershire ..	603	336	148
Lincoln	1,157	491	145
Middlesex	2,777	5,000	448
Monmouth	2,871	154	27
Norfolk	1,440	980	120
Northampton ..	499	263	214
Northumberland ..	453	381	136
Northampton ..	1,350	468	133
Oxford	758	305	31
Rutland	53	27	10
Salop	2,752	74	100
Somerset	21,009	762	225
Stafford	822	303	231
Suffolk	985	317	79
Surrey	2,057	1,723	1,374
Sussex	1,056	897	500
Warwick	809	397	140
Westmoreland ..	181	14	14
Wiltshire	2,235	214	35
Worcester	14,178	1,264	351
East Riding ..	205	425	205
West Riding ..	734	183	183
York	1,385	1,694	826
Total for England ..	153,477	34,989	9,559
WALES.			
Anglesey	13	1	21
Brecon	864	48	30
Cardigan	42	48	30
Cardarben	85	5	79
Caerwynn	84	66	53
Denbigh	451	435	34
Flint	164	39	15
Glamorgan	259	821	36
Merioneth	42	4	8
Montgomery ..	364	4	43
Pembroke	51	13	8
Radnor	499	..	..
Total for Wales ..	2,600	573	365
SCOTLAND.			
Aberdeen	32	432	207
Argyle	18	13	100
Ayr	42	109	110
Banff	10	5	9
Birmingham ..	20	39	23
Bute .. ..	..	13	19
Caithness	8	0	..
Clackmannan ..	9	10	..
Dumfriesshire ..	..	14	..
Dumfries	40	16	234
Edinburgh	86	811	500
Elgin or Moray ..	99	8	83
Fife	33	67	36
Forfar	39	164	301
Haddington	58	389	6
Inverness .. ..	..	1	22
Kincardine	1	19	8
Kincraig .. ..	..	2	..
Kirkcubright ..	16	3	28
Lincoln	474	213	25
Lindislaw	16	17	82
Nairn	6	..	9
Orkney .. ..	..	..	..
Perth .. ..	..	..	19
Perth	865	353	114
Renfrew	63	157	58
Ross and Cromarty ..	4	3	19
South Ayrshire ..	37	42	74
Selkirk	1	3	..
Stirling	41	24	53
Southdown	2	..	..
Wigtown	10	2	64
Total for Scotland ..	1,410	9,041	1,761
Great Britain ..	153,887	38,593	11,695

Note.—The greater part of the acreage of orchards and some part of the acreage of market gardens are included in the general returns under separate crops of grass.

The decrease under green crops, as compared with 1875, is considerable in Great Britain, amounting to 90,000 acres, or 2½ per cent., while in Ireland there is little change, the larger extent of Turnips and Mangel almost making up for the diminished acreage of Potatoes. It is noticeable that the acreage under the latter crop in the United Kingdom is now considerably less than at any time in the past decade. The fear of disease is alleged by some of the collectors as a reason for so steady a falling off. Of the other green crops in Great Britain, Turnips show a small increase, Mangel a decrease of about 4 per cent., Cabbage, &c., about 5 per cent., and Vetches, Lucerne, &c., about 12 per cent.

The land under Flax increased largely in Ireland in the present year, but is still little more than half what it was in 1867, when more than a quarter of a million acres were sown with that crop. In Great Britain its acreage is still insignificant, being confined to only a few counties.

The acreage under Hops shows a further increase in Great Britain, and may now be reckoned at 70,000 acres, being an increase of 4000 acres since 1874.

Bare fallow was much larger in 1876 than in the previous year, much land being left uncropped owing to the wet and unfavourable seed time.

There was an increase of more than 4 per cent. in the acreage under artificial grasses in Great Britain, and the total of 4,540,000 acres is the largest yet recorded.

Permanent grass for hay shows little variation from 1875, but the figures for that year were exceptionally large. In permanent grass, not for hay, there is an addition of 193,000 since the previous year.

The following is a summary of total acreage under each principal crop in Great Britain in 1876:—

Principal Crops.	Acres.
England	9,809,342
Wales	38,443
Scotland	78,198
Great Britain	9,905,983
England	9,100,965
Wales	153,617
Scotland	270,107
Great Britain	9,524,689
England	1,855,349
Wales	248,417
Scotland	1,205,794
Great Britain	3,309,560
England	307,798
Wales	40,481
Scotland	154,759
Great Britain	503,038
England	1,561,416
Wales	78,049
Scotland	519,428
Great Britain	2,418,893
England	9,777,103
Wales	360,159
Scotland	1,323,014
Great Britain	11,460,276

Natural History.

THE SPORTS OF WILD BIRDS.—Anything relating to the garden is always acceptable to those who admire the works of Nature, and what subject more innocent and enjoyable than noticing the unaccountable sports of wild birds. A blackbird in a pretty country parterre is now hopping among pigeons, doves, ducks, chickens, dogs, and cats, feeding at stated hours of the day, and answering to the name of Dick. Until a few weeks ago, and all through the last summer, he would come to a cage at sunset, which was placed on a garden-seat for him to roost in, nor was the cage-door fastened after he had settled on his perch; but now, and thus far in winter, he prefers open air, and sleeps on an old tree near. Early in the morning he takes strolls along the paths, and goes regularly at the hour for feeding the poultry, after which he finds his way among the shrubs searching for worms. Occasionally a wild blackbird visits him, until the approach of some one of the family, when the wild bird flies away, leaving Dick to himself.

Sparrows and other small birds are fed daily from the dining-room window, when our tame blackbird, which is sure to be there too, will display his dexterity and authority by driving the smaller birds away, and usurping more than his share of the crimals. His movements altogether are most interesting, especially when titbits are scattered for a scramble.

Many years since a robin became most familiar with the ladies of the same place. Bobby would come at their call all across the garden, hop about them, perch upon the dress of either, sing his plaintive melody upon the finger of one, take a bit from her mouth, displaying signs of joy at seeing his two favourite friends, and, after all, quietly retire, as recorded at the time in your journal; but the sender of this account never before heard of a blackbird becoming so tame as the one now described to be seen at the Laurels, Clever Hill, Windsor.

WASPS.—This is a bad time of year to write upon wasps, when there are none; but seeing how many of your correspondents were tormented with these twohose pests last year, I send my experience of the last two years. I cannot explain the facts; I only state what I saw and afterwards tried. The same remedies may not suit other places, and are probably well known to many.

In 1875 I saw a large house of ripe Grapes in great perfection at Beechwood, in Cheshire, with all its windows open, the fruit fully exposed. I saw four large plants of Tomatoes in pots standing on a border, looking very much out of place amidst such fine Grapes. This made me ask the gardener why he kept them there, when he told me "it was to keep out the wasps." I then observed that not a single wasp was in the house, while at a small vineyard within a quarter of a mile they swarmed. This year I grew a good many Tomatoes in a viney, for the double purpose of use and to keep off wasps from the Grapes, and I never saw one in the house; there were plenty about the garden.

Last year I had a good crop of Peaches, which were sadly tormented by wasps and flies. Seeing Mr. Scott's advertisement, I wrote for a bottle of his wasp destroyer, and, following his directions, put a few drops on branches, which at that time were alive with wasps and flies in the full sunshine. I felt very incredulous as to what Mr. Scott says on the subject, but on going to the trees an hour or two after not one wasp was there, and the fruit was saved from them for some days.

Now Dr. Slade's spiritualistic performances seem nothing to what these few drops per tree effected. I could not see that a wasp touched the poison, nor did I find a dead wasp, but all disappeared. I often seem as if bluebottle flies send scouts to look out for dead and dying, as if you notice in any sick chamber, whether of man or beast, there is always one very knowing-looking bluebottle, who sits quiet taking observations, and as soon as death comes off goes the fly and brings all his relatives. Now whether the wasps keep an ambassador to notify to headquarters how wasp politics go on I know not, but I am certain of the fact I mention, that every wasp departed and I ate my Peaches in peace. As I before stated I only mention facts, and I find Tomatoes and Scott's wasp destroyer both effective.

I may perhaps trouble you with a little more upon the natural history of wasps and hornets, I hope some gardeners will try these two simple remedies next year. *W. D. F.*

THE GOATSUCKER.—I quite agree with your correspondent, Mr. Wilson, that "the hurring" sound proceeds from the bird at rest. In all opportunities I have had of watching them, their flight in hawking after food has been as noiseless as that of the owl, but when resting after a flight they have commenced "hurring" almost immediately.

Barrett White in his *Natural History of Solborne* says: "There is no bird, I believe, whose manners I have studied more than the Caprimulgus (goatsucker) . . . but I have always found that though sometimes it may chatter as it flies, as I know it does, yet in general it utters its jarring note sitting on a bough." Again I agree with Mr. Wilson, the goatsucker is by no means a shy bird; so long as the observer remains stationary they continue their flight after food, frequently passing within a few yards. A relative of mine has in his possession a specimen that was shot in consequence of its persistently settling on the roof of a cottage and "jarring" to the annoyance of the inmates, who regarded it as a bird of ill-omen. With us the favourite resorts of the goatsucker are Fir plantations adjoining heath or open ground. *Fisher, Ainstill, Esfordshire.*

I am glad to see that a correspondent has noticed "R.'s" communication about the nightjar or

Fern owl. "R." was wrong in nearly everything he wrote on the subject, radically so with regard to the "hurring" sound the bird makes, which, so far as my experience goes, is invariably made when it is settled on a bough. Directly it takes wing it ceases the "hurring," although in its owl-like flight it occasionally utters a short cry or screech. I have never seen it, except in woods or plantations, and have certainly thought it was far from a timid bird. *John W. Downing.*

Having been very busy and much away from home, I have been prevented replying to Mr. Wilson's note upon this bird (*vide p. 14*). My short observations were made last season in the North of England; I noticed the birds were more plentiful than I ever remembered, this perhaps caused me to observe them more closely. I have no doubt Mr. Wilson is quite correct, for White seems to be of the same opinion. In this locality they are only to be met with on a wide heath, skirted on one part by a young plantation, where the birds were flitting from the roadway to the branches; they appeared then to produce the hurring sound, as well as when going from branch to branch. Probably Mr. Wilson, from closely watching their habits, has come to a different conclusion. Again, I generally look upon it as a shy, timid bird; but what may arise from the fact that it is hunted by the boys when they have opportunity, as it is to be seen in a park, where it feels safe, and is never allowed to be molested, it may then become trustful; but it should have every protection extended to it, if it is only as a garden or farm friend. Very few of the denizens of our woods and heaths do more good. *R.*

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Any one who ever intends to succeed in plant-growing, either large or small specimens, will find it imperative to be continually on the look-out for the insects that wage an unceasing war upon the subjects they cultivate. Hard-wooded greenhouse plants, taking them collectively, are much less liable to the attacks of aphids than softer, more succulent things, the juices of which afford more suitable food for these parasites; yet experience with these plants, on Aphelicia in particular, often happens that a few aphides during the autumn and winter months infest the hard-wooded plants, and go on slowly increasing through the winter on *Pleromas*, *Boronia*s of different species, but more especially *B. pinnata* and *Drummondii*, *Adenandra*s, *Compholobium*s, and *Aphelicia*s. In the case of almost all these plants the insects are so different in appearance, and have such a puny, ill-fated character as to be scarcely recognisable, and in some not very easily seen, and they rarely increase to an extent so as to be readily detected by their numbers, yet they frequently do an immense deal of harm before they are noticed by those who have not had much experience with these plants. On *Aphelicia* in particular they attain such a diminutive size, and are so nearly the colour of the leaves, that it requires a quick eye to detect them; but if the points of the flowering shoots for the season, on which they principally congregate, are closely examined, the excrement will be seen, which is changed by their feeding on *Aphelicia* so as to have the appearance of minute white crystals. Where they exist on these plants, unless speedily destroyed, they will have the effect of killing every flowering shoot, and generally succeed as turning them blind. I have seen many fine specimens so affected, the owners of which have not been able to detect the cause. On *Gompholobium*s the insects find a little more genial feeding-ground, but on them are small, congregating on the underside of the leaves, and if not noticed will be very soon seen on the foliage. On *Boronia*s, the dirty deposit they make soon becomes mouldy, to the destruction of the leaves, which will fall off in quantity with little perceptible cause. Contrary to what might be supposed, having apparently so little vitality when living on these plants, they are immeasurably more difficult to kill than when in the plump, fat condition they are found in on many soft-wooded subjects; so much so, that tobacco-smoke can scarcely be applied strong enough to kill them, for which reason washing with tobacco-water is the best remedy, and it should be used tolerably strong. One or two washings with the syringe, the applications being such as to reach every part of the plants, leaving it to dry on, will generally be found effectual. *Salosonates* at this time of the year are frequently affected in like manner, the insects getting into the points of the shoots, and to be seen need to be looked for; on these plants they do not absolutely destroy the flowers

but they cause all the leaves that surround the heads of bloom to turn quite yellow, which gives the plants when they ought to be at their best a very unsightly appearance. Here again washing with tobacco-water is the best remedy. As the tying is completed, every plant should be washed with a fine spray of glass and kept clear of its neighbours; yet so elevated, especially in good light houses, they will bear being much nearer together than when placed where there is comparatively less light. Such an arrangement is especially desirable for the glass, or flower-beds, that from this time forward will bear a little shade, being stood underneath them; which is not only an advantage in economising space, but gives to the hard-wooded plants an improved appearance, going away with the objectionably flowered look that these structures too often have at this season. Those useful winter forcing plants, *Genistas* and *Acacias Drummondii* and *armata*, especially where brought into flower so early as the commencement of the year, *Taxus* and, after a few seasons, allowed to get into an unsightly straggling condition, by letting them after blooming go on growing without a sufficient use of the knife; they are much the most serviceable when freely cut in the summer after the flowering is over, and to keep them in a close compact form and limited size. After being cut in they should be kept in a genial atmosphere and care taken to see that they are completely free from red-spider, to which the *Genistas* especially are very subject.

SOFT-WOODED GREENHOUSE PLANTS.—In *Floribacous* *Calceolarias*, where required early in flower, should now be kept a little warmer than ordinary plants, and get the plants in the pots, so that they have a light situation, and if possible a little moister atmosphere than most things require. *Fuchsias* struck last summer must have careful attention, to see that they do not want for pot-room, for if they are not got in the pots, they will not grow so freely afterwards. Keep the main shoot trained to a single stick, stopping it and the side branches proportionately with the habit of growth of each individual variety, so as to lay the foundation for dense bushy specimens; 15° to the night will be a good temperature, syringe overhead daily to keep down red-spider. So treated they will bloom early, and make much handsomer plants than the old stools. Where the latter are to be again used they should now be started in the same manner, and should be kept in the pots as they have made an inch of growth. Give more air to the general stock on calm sunny days, but be careful of cold draughts, for the weather at this early season is so changeable that in one hour we may have a frost as April, and the next cold and cutting. *T. Baiusa*.

ORCHIDS.—The vesica section of the *Calanthes* which we have done mention of, and that the bulbs may have a period of rest before starting them in March, as well as also for utilising the year they have taken up, it is preferable that they be shaken out of their pots, the greater part of the old dead roots cut away, and the plants set on some airy compost, in a warm pot, pan, and a stool on a warm shelf or stage; here they will keep plump and hard, and in the course of a few weeks will push out the breaks from the base of the bulbs. As *C. Veitchii* goes out of flower, it may be treated in a similar manner; the bulbs of this, however, are generally enclosed, and since it is one of the most useful of winter-blooming Orchids, and it is desirable that a number of it should be obtained, it may be easily increased by breaking or cutting the bulb through the middle, so that the top and bottom halves may be kept in separate pots. The broken ends, however, should have a little sulphur rubbed on them to dry up the sap that exudes, and thus prevent them from being lost by damp or rot. *C. Turneri* and *nivalis*, that always bloom later, may be started in the first week in March, in the same manner to perfection. The compact form of the first-flowered, with the pure white colour of the sepals and petals and rosy purple eye, makes this a very desirable addition to this section, and that the two varieties are both desirable for culture. *Mascua* and *Dominians* will now be growing fast, and must be well attended to as regards water; *C. veratrifolia* will also be growing freely, and with the advanced growth the flower-spikes will be pushing up, and both may be growing at the same time; if there is any yellow-fly, it should be got rid of by sponging or smoking. This is a regular time in flower, and if it is wanted for exhibition purposes, unless it is very forward, it had better remain in the warm division and come gradually on, otherwise the stock in a cool house the flowers will apt to damp and open very badly and irregularly. Such of the *Deudrobiums* as are still in a dormant state, and among these may be named *litiflorum*, *Bensoniæ*, *crystallinum*, *Parishii*, *replicatum*, *Devoniensis*, &c., may be fully revived, and as soon as any of the first symptoms of returning activity and growth such a course of treatment must be adopted as they will require for their full development. One of the first will be *C. Devoniensis*, and unless looked well to, the

young breaks as soon as they push up are liable to be eaten through by the small shell-ani, which is likely to be hidden among the moss. Trap these with pieces of Potato hollowed out in the middle, and placed about on the plants. Look to *D. Falconeri* in the cool division, and see that it does not suffer with its cool treatment above what may consistently be considered sufficient for the forming and setting of the flower-buds, which latter will be looked for some two months hence. *D. Cambridgeanum* and *chrysanthum* will now be growing fast, and must be attended to with care. Carefully regulate the temperatures of the divisions, avoid and guard against a hot and dry state of the atmosphere, at the same time be careful that an excess of moisture is not permitted to remain in any of the pots, and do not suffer the plants to get close to the lower ventilators of the *Orchidoglossum*-house, and occasionally on the other divisions also, but be careful that they are closed in good time, otherwise the houses may fall much lower than is desirable. *W. Swan, Fallowfield.*

FRUIT HOUSES.

PINES.—At about the commencement of March we make it a practice to go through that section of the plants which has been wintered in pots of from 5 to 8 inches, and shift into fruiting pots a number equal to the requirements for next winter and spring. Only such plants as are in a highly selected condition should be selected, and those of the *Queen* and similar tender-rooting kinds are placed in 10-inch pots, and such as the *Smooth Cayenne* and other strong rooters have 12-inch ones afforded them. After these plants are potted, the growing pots should be kept at a temperature of 50°, but not much surface growth should be permitted until more propitious circumstances exist outside; a mean of 55° at night and 65° in the daytime will therefore be ample for some time afterwards. At the same time the plants are to be supplied with suckers, which form an immediate assistance to the preceding. The requirements to carry these operations into effect should have attention, and the loam, which is the chief component, should be seen to at once, as it should be in a moderately dry state when used, or otherwise in embedding it firmly round the balls of the plants it may be rendered impervious—a condition which would speedily indicate its results, and effect the same. The temperature of the water used in watering, also be necessary for the suckers, in order to have the bed in a proper state at the time. If space will admit, all those suckers which are on fruiting plants, or stools from which fruit has recently been cut, should be kept in the same way until they are ready to be started. Carry out former directions with respect to all young stock, see that these do not suffer from the lack of water, and especially those which are shortly to be shifted. The temperature of the soil should be kept at this year about 55°, of reducing the amount of fire-heat to its minimum state and of materially assisting the maintenance of a higher standard inside, which is very beneficial to fruiting plants, and which are coming up, which will now be the case with the most standard kinds of plants, so that the fruit may be fit for summer use. *George Thomas Males, Wycombe Abbey.*

ORCHARD HOUSE.—Many sanguine pomologists admit that the pot culture of fruit trees has not made the progress they anticipated, simply because the system, comparatively new, has not been properly understood, and many failures may be traced to the practice of keeping excitable trees in pots, and to the use of the Chamberlain glass all the year round, instead of removing them to an airy place out-of-doors as soon as the wood is ripe, where, with the pots well protected from frost by means of leaves or Fern, the trees can have the benefit of autumn rains, and the danger of the winter of frost dropping in the spring through being kept too dry at the roots when at rest or premature excitement is done away with. Assuming that the general stock of trees is now in position under glass, and the soil in a medium growing state, all the ventilators and doors must be kept open to retard the opening of the blossoms, as we may yet experience severe frost, and even then during bright sunshine, which we frequently have in frosty weather, the ventilators should be kept open to retard the temperature. For the mid-season house I would recommend *Royal George*, *Royal Kensington*, *Bellegarde*, *Nobilisæ*, and *Dymond Peaches*; *Elrage*, *Pimston Orange*, *Pine-apple*, *Albert Victor* and *Napier Nectarines*; *Moopack* and large early *Apricots*; *Bigreague Nappels*, *Governor Wood*, and *Black Crispstraw Cherries*. *W. Coleman.*

CUCUMBERS.—With increased light and an improved state of the weather, winter Cucumbers are now making good growth, and assuming better colour and texture of foliage. Plants that have been some time in bearing, and are now showing signs of exhaustion, will make a fresh start and produce a quantity of useful fruit at a time when fruit is most in

demand if a portion of the old soil which has become sour is removed from the roots and replaced with good turfy loam and lime rubble, previously warmed to the temperature of the house. The turf should be broken up with the hands, and firmly packed over the surface of the bed, so that the roots may be at the same time removed to make room for the young growths, which may be trained over all vacant spaces, and stopped at the first joint beyond the fruit, when the roots have taken to the top-surface, care being taken that the trellis does not become crowded with useless spray, which is always detrimental to successful cultivation. The night temperature may now be raised to 70°, with a rise of 10° to 15° by day from sun-heat; close at 80°, and springing a little, care being taken that the trellis and trellises are used they may now be lowered a little to prevent the leaves from touching the glass, which must be kept clean. Keep the first set of young seedlings near the glass until they are about 12 inches high, and then they have filled the pots with roots they may be transferred to the hills, fruiting-pots or boxes, in hot-water pits. If the latter are used, they should be filled to within 6 inches of the rim, to leave room for earthing-up as the roots appear on the surface. Care should be taken that the trellis and trellis, but do not stop them until they have filled two-thirds of the allotted space. *W. Coleman.*

KITCHEN GARDEN.

The recent changes from long-continued drenching rains to weather which is more favourable to garden operations will cause this to be a very busy department, and it would be as well if a little extra labour could be bestowed on the necessary operations connected with the preparation of the soil, and the trellis. Very much of the success which will attend the produce of the kitchen garden through the whole year depends upon the amount of labour which is expended upon it during the next three months. In most seasons we may safely calculate on being able to trench up roughly vacant plots at ground level during the two preceding months, and, by seizing the opportunity afforded by dry frosty mornings of forcing the ground over, to bring the soil into a condition favourable for the reception of the crops, but in a season like the present all these operations are in arrears, and hence the necessity for extra strength being put on, and likewise for taking every opportunity, when weather and conditions of soil will serve, to commit to the earth such crops as are required early, amongst which a good sowing of *Early Peas*, such as *Advancer*, should not be forgotten. Another sowing of some of the varieties of *Early Long Beans* should be got in for succession; the supply required should always regulate the quantity sown, but as a rule succession is shorter in seasons sowing a lesser quantity at shorter intervals. It is quite safe now to make the principal sowing of *Celery* for the market, and to plant a few plants in the brick heat of a dung-bed in a frame, so as to give them more room, which is preferable to sowing in pans or boxes, which, from their confined space, and the necessity for sowing thickly, is apt to draw them up weakly, and they receive a check when pricked out. The same dung-bed and frame may be made available for the first sowing of *Snow's Superb Winter Broccoli*, also *Veitch's Autumn Giant Cauliflower*, *Veitch's Self-protecting Autumn Broccoli*, which will be ready to set out for the first time, and *Walcheren Cauliflower* will also be useful, as will also some *Lettuces* for succession. A good-sized frame of early *Potatoes* should be planted at once, and some *Radish* seed scattered over the surface; and if the early sowing of *Potatoes* is not done, it should be no time should be lost. When started air should be constantly supplied, to prevent drawing up weak. A good bed of *Cabbages* from the late sown plants last year should now be planted, to succeed those planted in the autumn, and to be used as seed. It also be sown in a warm corner for successions. It is now time to plant out *Garlic* and *Shallots*. These flourish best in a stiff soil and plenty of manure; plant in rows about 6 inches apart. *Large Onions* may be sown in rows 12 inches apart, and very small ones from the stores (if no larger *Peas* so much the better), if planted out now, will be highly appreciated for kitchen purposes by-and-by, when the winter stores are exhausted. Give to *Cauliflowers* in frames and under handlights plenty of air in suitable weather; remove all decayed foliage, air the soil, and dust over with dry soil and ashes now and then. When there is no *Cucumber*-house the supply will mainly depend upon the produce from dung-beds in frames, and these should be sown in rows 12 inches in the briskest heat at command, so as to have the plants ready to ridge out by the end of this month. A good supply of fermenting materials should be kept in a course of preparation by frequent turnings, to sweeten and render it suitable as soon as it is used as soon as thrown into a bed. *John Cox, Rolford.*

THE
Gardeners' Chronicle.

SATURDAY, FEBRUARY 3, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, Feb. 7.—Sale of Orchids at Stevens' Rooms.
THURSDAY, Feb. 8.—Sale of Orchids at Stevens' Rooms.
FRIDAY, Feb. 9.—(Sale of Hardy Plants and Bulbs, at Stevens' Rooms.)

THE Bill affecting the future management of our great arterial HIGHWAYS, brought into the House of Commons last year only to be scotched almost before it had seen the light, is promised as a pressing measure for the ensuing session, and in the interests of thousands of hardly pressed ratepayers it is to be hoped that it will, if carried, be found effectual in giving the desired relief. Although not technically a horticultural topic, our highways and roads are intimately associated with it in relation to their construction and maintenance, but in the neighbourhood of large towns, and especially around the metropolis, the condition of our highways is a matter that very largely affects the market gardener, as his draught both ways is exceedingly heavy, and the stern necessities involved in the housing of an immense population have driven him farther and farther out into the country, so that now teams of heavily laden garden produce have to travel distances varying from 10 miles to 20 miles ere they can reach that great central depot which has such a world-wide reputation as the garden-market of London.

Whilst the tollbars stood the highways were fairly well maintained, but just as these tolls offered a decided bar to locomotion and internal communion between localities, so also did they violate those principles of progress and free trade upon which our political economy is now based. Under the laws that established highway trusts and tollbars, all kinds of agricultural or garden produce, and manures for the improvement of the land, received a degree of immunity from tolls that spoke well for the sagacity of the landowning legislators of those days in looking after their own interests. With the abolition of tollbars go these special privileges, and as the cost of maintenance is now thrown on the parishes through which the respective highways pass, farmers and market gardeners alike have to bear the burden of cost, and this has proved in numerous cases to be so heavy as to be a veritable millstone round the necks of the unfortunate ratepayers. Ordinary parish roads are chiefly intersecting means of communication between one great highway and another, and, therefore, the maintenance of these has never proved to be a heavy burden to any parish, but the traffic on the arterial highways is immense, and is gradually growing; further, it would appear to become of a heavier and consequently more grinding nature as years go on, and thus the wear and tear on any important highway is so great as to thrust upon poor parishes a burden they are unable to bear.

The provisions of the Government Highway Bill are not widely known, and, as far as the coming one is concerned, are simply conjectured, but it is understood that the Bill proposes to establish County Boards having power to take charge of all arterial highways within the county, and to make rates for their maintenance over the entire area. It is difficult to believe that this will prove to be the most satisfactory method of solving a somewhat pressing difficulty. In populous urban parishes, such as those which immediately surround London and other large towns, the evil does not forcibly present itself. A wider area of municipal government thus absorbing into some dozen or more of parochial vestry executives would be an undoubted boon, and

where Government is hardly called upon to intervene, but in more rural districts the burthen is singularly heavy, and if relieved, as thus proposed by the Bill, no doubt the ratepayers would be satisfied so far without taking much thought as to the statesmanlike character of the proposal, or whether it was likely to prove in the end at once the cheapest and most efficient that could be devised. Unfortunately in relation to our highway management a much more drastic measure is required to put it on a sound and sensible basis, and make highways and public footpaths everywhere more adapted for the wants of modern civilisation than they now are. To touch the urban vestry system of government will require a strong hand, and any measure proposing to alter and amend parochial administration in rural parishes can only be made effective by grave determination.

The present system of managing the parish roads by local and untrained surveyors is as rotten as are the roads they profess to keep in repair. In nine cases out of ten the appointments are almost permanent, and open the door to much rank jobbery; and, worst of all, whilst the parochial surveyor is endowed with large powers to make rates and expend them, he has no professional auditing of his accounts to submit to, the members of the vestry only going over the accounts; and nothing is easier than to throw dust in the eyes of the few assembled ratepayers, who have to take all submitted to them for granted. It is one of not the least of the evils incidental to this form of parochial highway administration that the men selected as surveyors rarely have any practical knowledge of road making or road repairing; and farther, having their own business matters to attend to, naturally give those a preference over the highway management. They are also, from a fellow feeling, naturally very lax in insisting upon the trimming of roadside hedges and the cleansing of watercourses, and permit the cutting of turf and various other trespasses and nuisances in the shape of huge heaps of manure on the roadsides, such as would not be allowed if a professional man held the position of surveyor. The real remedy for these defects in our highway management will be found in making the Union, and not the parish, the limit for highway administration.

The Board of Guardians is gradually becoming enlarged from a body merely having powers in Poor Law Administration to a board having the management of all public matters within their Union area. It is now the sanitary authority; it has recently had large powers given it under the Education Act of last year, and it can hardly be out of character to make it the Highway Board for the whole Union. Ere these enlarged powers be granted, however, it will be necessary to reconstitute it on a more popular basis, as probably the Board of Guardians at present presents one of the most unrepresentative of public elective bodies in the kingdom. It will be but necessary to abolish voting-papers, and make the present ratepayer parish constituency the electoral body for, say, the triennial election of the members of the Board, and its popularity becomes at once assured. With its new duties it may be necessary to increase its members, and then it can divide itself into poor-law, sanitary, educational, and highway committees, performing, through efficient officers, its work thoroughly and well within the radius of its operations. Here, then, is offered a solution of both the arterial and parochial highway difficulties. The County Board and its widespread costly administration over, after all, only a few highways, becomes needless,—the Union becomes the equal area for rating and maintenance of all highways within its bounds. The highway committee appoint a professional surveyor, whose time is entirely occupied in looking after

the highways within his charge; he has his own gangs of men throughout the district under his daily supervision, his own horses and carts and all necessary repairing implements. The committee buy and sell, keep a rigid supervision of accounts, all roads and footways are kept in an even state of repair, and the end of parochial highway jobbery is brought about. These ideas are commended to the attention of Mr. SLATER BOOTH.

— AT one of the recent meetings of the Royal Horticultural Society, Mr. MOSELEY, one of the naturalists attached to the late Challenger Expedition, showed a series of Japanese illustrated works on horticulure and agriculture, which were of great interest and no slight artistic merit. One of the volumes, beautifully printed on Daphne paper, was devoted to illustrations of the process of CULTIVATING RICE, from the sowing of the seed to the harvest thanksgiving at the ingathering of the crop. One of these illustrations has, by permission of Mr. MOSELEY, been engraved by Mr. WORTHINGTON SMITH, who has very accurately copied a scene representing the thinning out and transplantation of the Rice plants in the flooded fields wherein it is cultivated (fig. 23). The whole work gave a vivid idea of the industry and skill of the Japanese.

— The *Bulletin de la Société d'Acclimatation* for November, which we have lately seen, contains a catalogue of all the plants at present growing in the Society's garden at Hyères. This catalogue consists mainly of plants hardy in the open air at Hyères, and includes the collections of Grape Vines, Oranges, subtropical fruit trees, &c., and will be found very useful by those interested in forming collections in the South of Europe.

In a recent number of *Der Gartenfreund*, an Austrian contemporary, and the organ of the Horticultural Society of Vienna, there is an admirable article, by LOFTHAR ABEL, landscape and architectural gardener, on the SOCIAL STANDING OF GARDENERS IN AUSTRIA. It is headed by LINDLEY's gardener's watchword, and the whole argument resolves itself into this, that as soon as gardeners generally have attained that degree of culture and refinement which will qualify them for intercourse with the members of other professions, then they will certainly rise in the social scale. The leading gardeners of this country are highly complimented, as are also the possessors of large gardens, who extend some consideration to their gardeners. Otherwise the article in the main might be addressed to the young gardeners of this country, who, collectively, are responsible for the social standing of the profession in the immediate future. The majority of our best practical gardeners will agree with us, we believe, that very much remains to be done before the general run of English gardeners will be raised to the level of their occupation. Of course there will always be a large number of people who mistake their calling, just as in every other walk of life; but these may be left out of consideration.

— In a report on the condition and progress of the gardens of the Society of Acclimatization at Hyères, the *Bulletin* for November gives the RATE OF GROWTH OF VARIOUS SPECIES OF EUCALYPTUS and other Australian trees. The Eucalypti rapidly form very straight, slender trunks of very durable wood. *E. globulus*, sown in March, 1873, and planted in a row, are now from 20 to 35 feet high, the greater part being over 25 feet. Seedlings of the same species planted out in 1870 are now from 48 to 65 feet high, and some of them are 40 inches in girth. Another species, probably *E. maculata*, planted at the same time, is now about 32 feet high, the trunk being about 10 inches in diameter a yard from the ground. Some experiments with seedlings gave a rate of growth exceeding an inch in the twenty-four hours.

— As an illustration of the IMPORTANCE OF THE CAROB TREE (*Ceratonia Siliqua*) IN PORTUGAL, we may point to a recent report on the trade and commerce of Lisbon, where we are told that the Ceratonia is one of the principal resources of the province of Algarve, and that a severe drought that visited

the province in the year 1875 had begun to cause the death of the trees. The general failure of these trees is described as being equivalent to the utter ruin of the largest and best part of the inhabitants of the province.

— At the annual meeting of the HIGHLAND AND AGRICULTURAL SOCIETY, held on Jan. 17, Professor BALFOUR reported that the following premiums had

mannana, and its suitability for the climate of Britain. 4. The medium gold medal, or £5, to Mr. THOMAS WILKIE, forester, Invergarry, N.B., for a report on the management of plantations.

— We have received from the agent of the Canadian Government in London a pamphlet containing some interesting facts connected with STOCK RAISING and the BREEDING OF PEDIGREE CATTLE

G. F. WILSON, F.R.S., was unanimously elected President, and Mr. E. S. DODWELL Secretary. About £25 was subscribed at the meeting in aid of the funds for the necessary prizes. It was thought that, if possible, the show should be held at South Kensington, provided satisfactory arrangements could be made.

— The rashness exhibited on the part of those who declare certain varieties of POTATOSTO to be "disease



挿秧
 晨雨秋潤午風輕
 夏涼溪雨與溪北
 歌挿新秧拋擲不
 手左右無亂行我
 挿秧馬代勞民莫忘

FIG. 23.—TRANSPLANTING RICE. (FROM A JAPANESE DRAWING).

been awarded in the Forestry Department:—1. The gold medal, or £10, to Mr. WILLIAM GORRIE, consulting landscape gardener, Rait Lodge, Trinity, Edinburgh, for a report on the Tree Mallow (*Lavatera arborea*) as a new agricultural plant for cattle-feeding, paper-making, and other purposes. 2. The medium gold medal, or £5, to Mr. ROBERT HUTCHISON, of Carlowie, for a report on the *Taxodium sempervirens*, or Red-wood, for timber purposes. 3. The medium gold medal, or £5, to Mr. ROBERT HUTCHISON, of Carlowie, for a report on the *Picea Nord-*

in the Dominion of Canada. Those of our readers who may be interested in this subject should apply for a copy at the Canada Government Office, 31, Queen Victoria Street, E.C.

— At a meeting held as announced on the 31st ult., in reference to the organisation of an EXHIBITION OF CAPRATIONS and PICOTEES during the approaching summer, the projected show was approved, and a committee, with power to add to their number, was appointed to make the necessary arrangements. Mr.

resisting" is constantly being illustrated in various ways, and the experience of those who make a speciality of the Potato goes to prove that, if an average of three years be taken, no variety is altogether exempt from the ravages of the disease. An amateur cultivator of our acquaintance grew the American variety Eureka in 1874 and 1875, and finding it, notwithstanding statements to the contrary, of good cooking quality, and entirely free from disease during the time he had grown it, strongly recommended it to his neighbours and friends. But mark the result of the season 1876.

He writes:—"This season Eureka all rotted down, other varieties stored round them remaining very good." But while making this statement, the writer reiterates the favourable opinion he had already expressed as to the culinary value of Eureka:—"I find it cooks extremely well, very white and mealy, from my sandy red land, in fact most of the American varieties are of good quality from this soil, whilst in the clay lands herabouts they are simply worthless." This is an invariable experience with the American Potato. The writer makes another statement in regard to American Potatoes worthy of being recorded:—"On some light sandy land a short distance from here" (he is writing from the southern part of the county of Warwick) "all the red American Potatoes turn white after being grown in it about three years, at the same time yielding enormously." The land is chiefly let out as allotment gardens to labourers, and this season the Early American Rose was quite white in the skin. Did what is known as the White American Rose originate in this manner?

—In wintering stock plants of the useful *MESSEMBRYANTHEM CORDIIFOLIUM VARIEGATUM* it is expedient to keep the plants so dry at the roots as generally done? The condition of some plants in 48-pots seen a few days ago in a cold greenhouse, which has no apparatus for heating by artificial means, seemed to raise the question as to whether it is conducive to its well-being to keep the plants dry at the roots. They were occupying a sunny shelf, and on all occasions when dry the plants were freely watered. The growth was almost as luxuriant as at mid-summer. The plants were cuttings struck last spring, and were well established in their pots, and a good supply of cuttings could be obtained from them. True, the season has been an exceptionally mild one, but then it has been very damp and cold. It may be that drought at the roots during winter is more injurious than moisture, supposing the plants be well established in pots and there be sufficient drainage. This hint is thrown out for the consideration of those who have to winter in quantity the choicer bedding plants.

—Major HALLETT has been lecturing before the Tunbridge Wells Farmers' Club on SEED SELECTION, and his lecture is so interesting that it is a matter of regret to us that the crowded state of our columns forbids us from extracting the greater part of his observations. For the present we must confine ourselves to the following extract, in the hope of subsequently returning to the subject. The full text of the lecture is given in the *Brighton and Sussex Daily Post* of the 27th inst.

"Very close observation during many years has led me to the discovery that the variation in the cereals which Nature presents to us are not only hereditary, but that they proceed upon a fixed principle, and from them I have deduced the following law of development of cereals:—1. Every fully-developed plant, whether of Wheat, Oats, or Barley, presents an ear superior in productive power to any of the rest on that plant. 2. Every such plant contains one grain, which, upon trial, grows more productive than any other. 3. The best grain in a given plant is found in its best ear. 4. The superior vigour of this grain is transmissible in different degrees to its progeny. 5. By repeated careful selection, the superiority is accumulated. 6. The improvement, which is at first rapid, gradually, after a long series of years, is diminished in amount, and eventually so far arrested that, practically speaking, a limit to improvement in the desired quality is reached. 7. By still continuing to select, the improvement is maintained, and practically a fixed type is the result."

—The large ORCHID-HOUSE at GUNNESBURY PARK, Acton, the residence of Baron LIGNÉ DE ROTHSCHILD, is just now remarkable for the fine display of Phalænopsis in flower. Altogether there are about fifty plants growing in baskets suspended from the roof at the front of the house, a considerable majority being of *P. Schilleriana*. About forty plants are now in bloom; and, while the spikes are of good size, regard being had to the dimensions of the plants, the flowers are large and finely coloured. *P. amabilis* is very beautiful, and *P. grandiflora*, being a little later, is not yet in bloom. Mr. RICHARDS grows all his Phalænopsis in these suspended baskets, with but little soil in them, and the leaves they put forth are large and finely marked. The floral spectacle presented by the line of so many plants in bloom is of an

imposing character. Other Orchids in bloom are *Laelia anceps* Dawson, with three very fine flowers of most delicate beauty, the interior of the crest being richly striped with rosy crimson; *Masdevalla Veitchii*, with twelve large and brilliantly coloured blossoms; several fine varieties of *Odontoglossum Alexandrine*, one pure white being remarkable for its chaste beauty. This beautiful Orchid is largely grown at Gunnesbury, and Mr. RICHARDS states he is scarcely without flowers all the year round. A plant of *O. Andersonianum* has thrown a five-branched spike having quite sixty buds on it, and this will be in bloom a week or ten days hence. *Odontoglossum bichonense* has six large spikes of blossoms; and *Sophranites grandiflora* is particularly effective. The whole collection of Orchids, which are grown mainly for cutting from, are in fine condition, the result of high-class culture.

—Mr. VAN TIEGHEM has been elected a member of the Academy of Sciences, Paris, Botanical Section, in the place of the late Professor DEJONGHIAERT.

—At the meeting of naturalists in Hamburg last year, Professor J. BOHM read a paper on the RELATIONSHIP BETWEEN ROOT DEVELOPMENT AND THE SIZE OF THE LEAVES. In some experiments on the influence of various saline solutions on germinating plants of the Scarlet Runner Bean, growing in a sandy soil impregnated with salt, he found that the effect usually showed itself in the very slow development of the stem, and the extraordinarily small size of the leaves. Analyses of the ashes proved that these conditions were not brought about by an undue absorption of salts. No other explanation could be found but that the solutions acted injuriously upon the roots of the plants under experiment, and this view was confirmed by direct experiment. It was also proved that the solutions acted injuriously upon the development of the stem and leaves independently of the root. The main result of the experiments was simply a confirmation of the generally accepted theory that there is an intimate relationship between root development and growth above ground.

—At the same meeting, Dr. REICHENBACH, the President, described a very REMARKABLE CAMPANULACEOUS PLANT, which he believed to be a hybrid between *Campanula barbata* and *Phyteuma hibernicum*. Only a solitary plant of it was found, and of this only a dried specimen now remains. It was discovered by Baron VON HAGENMANN, in the Scier Alps. Dr. REICHENBACH calls it *Campanula Hausmanni*, and says that it may most aptly be designated as a *Campanula* with the flowers of a *Michauxia*. Respecting the transformation of Ferns, Dr. REICHENBACH mentioned a case of reversion of an abnormal form to the normal state, and another case in which the normal form had begun to vary. The first was the well-known variety of *Asplenium Filix femina*, called *Fritzelle*. This, planted out in a shady place in the Hamburg Botanic Garden, suddenly changed into the common typical form, not only in the cutting of the fronds but also in their size. The other was the ordinary *Scopolandium* with narrow acute fronds, which were succeeded by others forked at the tip.

—Dr. REILEY has published, under the title of "POTATO PESTS," an illustrated account of the Colorado Potato beetle and other insect foes of the Potato, with suggestions for their repression, and methods for their destruction. It will be our duty to notice this publication more at length on another occasion, but the matter is so important that we lose no time in saying that the pamphlet can be obtained of Messrs. TROBNER & Co.

—We understand that Mr. E. BENNETT, of the Rabley Nurseries, Shenley, Herts, formerly gardener to the Marquis of SALISBURY, has been appointed Floral Director of the Royal Aquarium, Westminster.

—Our contemporary, *Nature*, has published Mr. J. S. GARDNER'S lecture on the TROPICAL FORESTS of HAMBURGH, given at South Kensington in connection with the Loan Collection of Scientific Apparatus. The lecture was illustrated by a rich collection of fossils, chiefly from the valley of the Bourne,

and by an imaginary landscape representing the vegetation of the Bourne valley during the eocene period. This lecture was an extremely interesting one, not alone to geologists, but also to botanists, great care having been exercised in the determination of the fossil remains of the plants. We have some experience of the difficulties attending the determination even of fresh leaves of not uncommon plants, for many of our correspondents seem to think we ought to be able to recognise the smallest scrap of any plant they may send to be named. If it is so difficult to recognise living plants, what must it be with the imperfect, petrified remains the geologist has to deal with? Nevertheless, the fossils from the Bourne valley (and other parts, of course) represent plants so different from the existing vegetation that every one must realise the fact that our flora has undergone an entire change since the comparatively recent eocene period. Mr. GARDNER exhibited many fossils undoubtedly belonging to families not represented in the present flora. Respecting the genera, and still more the species, there can be little certainty in the majority of instances. Among Mr. GARDNER'S numerous specimens were several Proteaceæ, referred to *Dryandra* and *Stenocarpus*, fan-leaved and feather-leaved Palms, large Aroids, and, what was more interesting than all the others, remains of a gigantic member of the Cactus family. Associated with these were Oaks, Elms, Beeches, Maples, and other equally familiar types, with a crowd of others now strangers to our soil. Still we cannot accept Mr. GARDNER'S inference that the climate of that period may be spoken of as actually tropical. At the present time there are temperate representatives of the Palms, Aroids, Cactæ, and other families, and it is quite possible that the temperate types were formerly more numerous.

—Professor BOHM, of Vienna, has been repeating some of SAUSSURE'S experiments relating to the ABSORPTION OF CARBONIC ACID BY PLANTS. If green leafy twigs of *Ligustrum vulgare*, or any other plant, are placed in an absorbing tube, containing atmospheric air, and excluded from the light, the volume of gas is considerably reduced whilst there is at the same time a generation of carbonic acid. Taken into broad daylight the original volume of gas is reinstated, but this phenomenon is wholly due to the absorption of carbonic acid by the cell contents, but more especially to the storing up this gas in the cell-wall. At a temperature of 212° dry branches appear to absorb even more carbonic acid than fresh ones; but whereas, in the latter, it is comparatively quickly expelled by the hydrogen, oxygen, and nitrogen, in the former it is given off only very slowly, probably as in coal.

—How much the aspect of the VEGETATION OF THE SOUTH OF FRANCE AND ALGERIA will eventually be modified may be gathered from the large scale on which the Acclimatization Society is raising various subtropical plants hardy in that region. Although many of them are likely to possess nothing beyond their ornamental value, others have been selected for their economic products. Among plants raised for sale they have in the gardens at Hyères about 50,000 plants of the following species:—*Chamærops humilis*, *C. exelca*, *Corypha australis*, *C. Gébanga*, *Phoenix dactylifera*, *P. ionensis*, *P. pumila*, *Sabal*, various species; *Jubæa spectabilis*, *Dracæna indivisa*, *Phormium tenax*, *Dasylium*, various species; *Hakea Victorice*, *Araïa Sieboldii*, &c. This does not include a large stock of *Eucalyptus*, *Casuarina* and *Acacia*. The Society also possesses a large collection of Bamboos, and it is one of the special features of their labours to try the hardiness of the various kinds and get a stock of those likely to prove commercially useful in the Mediterranean region. *B. aurea*, *nigra*, *mitis*, *flexuosa*, *violascens*, and *Quiloi* are the hardest. A species, most likely Himalayan, received under the name of *Bambusa Thonarsii*, exhibited a most remarkable luxuriance. In October last a single plant had produced during the summer fourteen stems upwards of 16 feet high. In size this exceeds all others in the climate of Hyères.

—Dr. SOBERER, the author of a handbook on plant diseases, read a paper at the meeting of naturalists in Hamburg last year on the NATURE AND CAUSES OF CANKER IN APPLE-TREES, illustrated by

an estate not far from here, where Holly trees abound, one in the vicinity of a beehive was covered with berries, while others not far off had scarcely a berry upon them. I think this fully supports Mr. Darwin's suggestion that the scarcity of bees during the early part of the season may account for the small allowance of berries at Christmas. *William Elliott, Crofton House, Stroud, January 14.*

In Mr. Darwin's recent letter to your journal on Holly berries he states that the Holly is a

thesis, "the ovary is often abortive and four-lobed without stigmas." He thus not only classes it with perfect plants, but also notices an exceptional difference. Will you therefore allow me to ask whether all our long-venerated botanical authorities were mistaken, or whether the marvellous transformation of trees with perfect flowers into dioecious trees has really taken place, and that, too, in the short space of about sixteen years? If the trees observed by Lindley were becoming monoecious, it would be a wonderful

of Old England for more than twenty years. I believe they originated with John Percival and John Lewis, and were made under the latter's superintendance at Aston, near Northwich, Cheshire, in the year 1847. They are very much used in this neighbourhood, as Potatoes are extensively grown for market, and hardly a farmer or cottager but has them in quantities. The boxes are also very useful for storing the finer sorts of Apples and Pears, as they can be taken to the trees and the fruit placed in them as gathered, so preventing any moving or bruising in transit to the seed, and they are easily looked over when there. *Wm. Cruickshank, The Gardens, Arley, Northwich, Jan. 30.*

Vegetable Shows.—I am not in a position to say whether or not the Royal Horticultural Society intends this year to give the Cabbage growers an opportunity to show the most useful occupants of the garden; but as it cannot be expected that the large seed firms will be so liberal every year, if the Society will do nothing we must take the field to ourselves. I am perfectly willing to subscribe my mite, and I should like the opinion of others on the subject. *R. Gilbert.*

The Royal Horticultural Society.—It has been eloquently said of a certain place that in the lowest depth a lower deep still opens in a deep descending series of woes. Substitute the word degradation for woes, and the sentence correctly describes the present state of the Society. How art thou fallen, beautiful Flora and luscious Pomona! was the thought that brought a blush to my cheeks as I read the Secretary's begging appeal to the rich Kensingtonians in the *Daily News*. That such a letter should ever have been written is degradation enough, but that it should have been penned by a distinguished horticulturist who has taken sweet counsel with his brethren at the Horticultural Club and other places, concerning the best means of reconstituting the Society on a horticultural basis, makes degradation wear the semblance of insult. You suggest the probability of some explanation being forthcoming: I hope it may; but it is difficult to see how any explanation can alter the fact that any horticultural secretary, of his own option—for his letters to all the daily papers are extra-official, and are not sent by order of the Council—has thrown the horticulturists wholly overboard, and has appealed, hat in hand as it were, to the South Kensingtonians to subscribe the funds to uphold the gardens, engage the bands, start the promenades, restore an entrance, &c., on the ground that the said gardens are a great advantage to the residents and owners of property in the neighbourhood. What, in the name of common sense, has a Royal Horticultural Society to do with such paltry pettifoggish objects as these? What has South Kensington or its resident owners or occupiers done for horticulture that the secretary of a Royal Society should become a beggar, as it were from door to door, on their behalf? Are such narrow policies and mean practices in accordance with the cheer, of which we hear at times so much? And if they are, perish a thousand charters rather than that they should be continued. A good deal is also heard at times of the *prestige* of the Society; ut upon such *prestige* as can be acquired by begging for such unworthy objects, with a threat—for the threat is, if the money be not forthcoming the property may probably be built over. Well, as far as horticultural *prestige* goes, probably the sooner the better; but it ought to have been added that the property belongs to the nation, and cannot be built over unless for national advantage. The time has surely come for action among horticulturists. I am glad to see Mr. Wilson has arrived at that point, and now that he has I will gladly give my name to his guinea scheme as the basis of an entirely new policy, or new Society—I care not which. I would also remind him that the horticultural public cannot live long on the mere promise of guinea Fellowships, equal in elective and executive functions to any other. It seems to many of us full time that the promises were consolidated into facts. I do not believe in the turning of any wheel to horticultural advantage unless the willing, skilful hands of horticulturists put their own shoulders to it in earnest. The mere waiters upon Providence seldom find many prizes turn up for trees. To idly wait when stirring work lies before us to do is proof positive either of incompetence, indifference, or indolence. Horticulturists have counted the many kicks the Society has given them. The worse the usage any of their number have received the more they have rallied round the Society, and the more they have been praised for doing so. Let the fat go forth—no more plants, flowers, fruit, vegetables to the society—no more notices from the horticultural press—until your policy is the only one for which you exist as a Society—the advancement of horticulture; and then, before another month, we should either have a new policy or a useless encumbrance swept out of the way. Perhaps the last would be best. What should we lose by the de-



FIG. 25.—ADVENTITIOUS BUDS ON THE ROOT OF BRASSICA RAPA.

"dioecious plant," and that during forty years he has looked at many flowers in different districts, but has never found an hermaphrodite. In subsequent letters to the *Times* (January 17 and 19), the names of Withering, Sowerby, Smith, and Hooker, are quoted as authorities for regarding the Holly as a plant bearing perfect flowers. To these names those of other celebrated botanists might easily be added. I will, however, only refer to Professor Lindley. So late as 1860, in his *Descriptive Botany*, a manual for students, specially urging the importance of "correct, scientific descriptions," he, after particularising each part of the Holly in the usual way, remarks in paren-

proof of "development," but for Holly trees in general to have become dioecious would be so marvellous that students cannot help being anxious for authoritative opinion on the matter. *E. A. Malminger, 281, High Street, Chatham.* [We believe the common Holly to be polygamous. In the nurseries the best of the cultivated varieties are strictly dioecious. Eds.]

Potato Spritting Boxes.—I can fully endorse your remarks regarding Potato spritting (p. 114), and can strongly recommend the "spritting boxes," but think Mr. Spinks need not have gone to France for the idea, as they have been in general use in this part

struction of the Royal Horticultural Society's South Kensington Gardens? Perhaps, and perhaps not, the property is bound to be used for the advancement of science, the culture of the taste and the promotion of the happiness of the people. The Lindley Library? This by no means follows. It would probably be gladly handed over to a new society, and if not, Her Majesty's Commissioners would doubtless gladly afford facilities equal to those enjoyed at present to all comers. There would be little risk of losing the use of the Lindley Library; that secured, its ownership is a matter of little moment. But we should not lose sight of the gain much by the loss of a little less or more than a mere deed of partnership between two bodies that have shown their inability to act together for the good of horticulture. It has been broken and set aside again and again, and its main purpose, the elevation and advancement of the science and practice of horticulture as a cultural and enabling power on national life, has been sacrificed for the most paltry objects. But we might lose the Chiswick Gardens, and we might not; and if we did, they could be replaced. A general month's offer offered to be one of twenty to subscribe £1000 each for the establishment of new gardens in a new locality. What should we gain by the establishment of a new Horticultural Society? First, freedom of action; secondly, freedom from interferences; thirdly, freedom to initiate a purely horticultural policy, untrammelled by red-tape and vicious traditions; and, finally, freedom to select the best men for all offices, unbiased by personal considerations. It is only needful to grasp the bearings of the subject, to have the liberty, and to set it on fire with the enthusiasm for horticulture that abounds throughout the country, and much of which is now running to waste for lack of an outlet to give it proper expression—to see that a true national Society might easily be formed, and that we need never move aside prospects and power. *D. T. Fish.* [Without by any means endorsing all our correspondents' views, we may yet express our unqualified regret and dismay at the recent action of the Secretary to the Society. Probably an explanation will be forthcoming at the annual meeting. Ed.]

The Golden Champion Grape.—I have forwarded for your inspection a cut from a Golden Champion Vine of one year's growth. I do not grow it on its own roots, as I find the wood is much firmer when worked on the Muscat, and its propensity to rot in the berries is less in instances; it yields a colour, when ripe, much improved. The specimen I have sent you is from a bud worked on Black Hamburgh, which is the first I have tried on that variety, and I should like to know if a similar growth at the Hamburgh is also to be expected. I shall be glad to see any notices. You will see the cane is perfectly ripe, and the pith quite in proportion. I am a little sanguine as to its further results in the approaching season, as it is a variety especially esteemed at Raby. *Richard White.* [A sample of extraordinary vigour, exactly one inch in diameter, well ripened, and with a very moderate development of pith. Ed.]

Poinsettias in a Low Temperature.—At p. 52 "Inquirer" asks the lowest degree of temperature that Poinsettias can be grown in to a tolerable state of perfection. Having myself rather limited in the way of heated structures I adopted the following mode of treatment, which I found answered well. Cuttings were put in singly in thumb pots in the second week in June, and plunged in bottom-heat in a Melon frame. In about three weeks they were rooted, and I then removed to a cucumber frame near at hand, where they remained standing on the surface of the bed for about three weeks, when they received the final and only shift into 48-pots, and were gradually hardened off to a cold frame, where they remained until the end of August, when they were removed to a cold house under an east wall with no heating apparatus to it at all, in a temperature ranging between 50° and 55° till the end of October. From here they were removed to their flowering quarters, in a house of extraordinary vigour, where they were frequently under 90°. The plants in question were from 2 to 24 feet in height, and the head of bracted leaves 12 to 16 inches across, and of a brilliant colour. The soil I used was good yellow loam, with a little rotted cow-dung. The plants should never be allowed to grow dry, as they will be sure to lose their leaves, and plants of that description look miserable. I do not mean to say that Poinsettias may not be grown finer in places where they have every convenience in the way of glass, but that they need not be so, or any other way to grow them to a tolerable state of perfection if they grow Cucumbers in a common garden frame, and have a house of 60° of heat to flower them in in autumn. *W. The Gardens, High Green House, Sheffield.*

Premature Growth of Vine Roots, &c.—Farson me for again troubling you in this matter just to pay

how deeply I am interested in the discussion, and also to offer a word of reply. First, to the veteran Mr. Henderson (p. 151), who I am sorry does not approve of inside borders—well, we'll agree to differ. I have not the honour of his personal acquaintance, but I know him sufficiently by repute to believe that he practices what he preaches, and this matters little to me, for the lateinery here, which is a span-roofed house, 52 feet by 25 feet, has the border entirely inside; and though there are several hundred bunches of fruit still hanging, I can conscientiously affirm that not one berry per bunch has cracked or fogged off, notwithstanding the excessive wet period we have had, which certainly would not have been the case had the borders been unprotected. The border is concreted and walled round, and the roots cannot get out, but (this is one to Mr. Henderson) as soon as the Grapes are cut, and the little light taken off from the border it is as it were, turned out to the atmosphere. We have another viney with borders entirely inside, but the lights being fixtures the border cannot be exposed to the atmosphere, yet I can perceive no ill effects on that account, and the Vines flourish equally well as the others. I also wish to offer a word of explanation to "S. W." (p. 76). I am quite ready to admit what he advocates, viz., that no plant is ever entirely at rest; and when I wrote of the Vines being at rest, I meant that they should till the buds were expanded or were in full leaf. I did not for a moment think that my meaning would be so construed, though perhaps it would have been better had I written (which was really my meaning) that they remain in a comparatively inactive state up to the end of the season, and the period of the growth of roots—was made till then. At p. 118, Mr. Goodacre, after virtually endorsing my views as to inside borders, tenders me some advice, and, though it has nothing whatever to do with the subject, yet being entitled to reply, I will do so. I have to thank him for his kind writing about, and leisure to write it, I shall do it, and court honest criticism, but despise personalities. I am proof against any discouragement he or any one else has to offer, so he need not be alarmed on that score; and, according to Mr. Goodacre, I live in the land of Gothen, you may shortly expect to have some celestial effusion from *W. Wilmshurst*.

Brussels Sprouts.—This vegetable, on which much dependence is placed, has with many signally failed to afford the usual supply. This has been caused by their growth having been checked during the dry summer and autumn. Here they have been in the greatest abundance, as the plants were raised under glass, and got out early in May. Those who do not make a practice of sowing their Brussels Sprouts in the open air, but who have a hot bed, or a cold frame, will find it will pay well to do so now if a few old lights can be spared for the purpose, and a trifling bottom-heat afforded, to get them to germinate freely. The raising of Brussels Sprouts in this way may appear a useless expenditure of labour and means, but adverse seasons have so baffled with, and gardeners are expected to meet all difficulties of that kind, and not to fail in producing everything in the vegetable line when wanted. To grow Brussels Sprouts in the style they should be they must be got established before hot, dry weather sets in, when they will continue to push on daily increasing in size and strength till they are capable of bearing at least double the ordinary, and of much superior quality to any that can be raised in the open air, and those sown and treated in the ordinary way. *F. S.*

Gros Colman Grape.—Mr. Goodacre asks (p. 51) "What has become of Gros Colman, so highly spoken of last season?" I have not had much experience with this fine Grape, but favouring it last season I have formed a very favourable opinion of it, and sowed 274 plants in a cold frame. Last year one of them bore five and the other six bunches, which coloured and ripened off well. Had I known at the time they were thinned that the berries would have got to the size, and the bunches to the weight they did, I should probably have lessened the number of bunches. Not only is it a fine-looking Grape, but the flavour of those grown here was also good. In this regard I consider it one of the best late Grapes. I exhibited it at two of our local shows, and on each occasion it was highly praised for its beauty and flavour was awarded to it. The bunches were left on one of the Vines until about the middle of December; the berries were then in excellent condition, as fresh-looking and plump as in August, and appeared likely to bear a heavy crop. Should you have any more to bear I have no doubt it will be extensively cultivated, particularly for late use. *M. Sant, Stourton.*

Hardenbergia bimaculata and Chorozema cordatum splendens.—I was much struck the other day when visiting Lockinge Park, Colonel Loyd Lindsay's seat, illustrated in your columns at p. 81, with the beauty of the above as winter flowering

plants for the decoration of the greenhouse and conservatory. They are most valuable plants, and the specimens were about 24 feet, grown and trained upon trellises, and were one mass of flowers, the beautiful orange and scarlet of the *Chorozema* forming a grand contrast with the deep blue of the *Hardenbergia*, and certainly they are worthy of a place in every collection. Mr. Atkins, the gardener, informed me they had been in flower fully a month. *A. Outram, Victoria and Paradise Nurseries, Upper Holloway, London, N.*

Why are Inside Borders Rootless?—Will you allow me to inform Mr. Henderson that the reason why Vines root "struggle to get out" (see p. 51) is because inside borders are kept too dry. About five years ago I planted a range of vineeries with inside borders, taking care at the time to place all the roots pointing in an inward direction, thinking that by so doing they would feel from the inside before going out. The Vines made rapid progress, and it was thought such excellent top-growth must have a corresponding root-growth, which undoubtedly they had, but not inside, for it was found, on examining the border, that the roots had all been trained to the drainage, and then outdoors to the outside borders. As the inside borders were prepared at great expense, the thought of their being useless was anything but pleasant. I was told by those qualified to give an opinion, that the soil was so dry, and the outside border were evidently more suited for them." On one occasion, being caught in a sharp shower, I ran for the nearest shelter—the vineery; and the question suggested to my mind while listening to the rain beating on the roof was—Do we give water to these inside borders in sufficient quantity to compensate for the amount kept off by the roof? If not, why not? Surely, from their position, if they don't get more, they certainly ought not to have less. Fortunately at this time we had a water supply laid on, and I was enabled to give the inside borders a soaking. The result of such soakings being that the roots are now to be found turning their attention inside. Another mode of utilising rootless inside borders will, I think, recommend itself; that is, to plant young Vines, or, what I prefer better, insert an eye at the back wall of the vineery immediately under each Vine on the roof, train the young Vines up the wall and inarch them with the Vines on the roof. Suppose, for instance, that variety you mention, say, of *Muscat Alexandria*, I would plant the wall with such a cane, not only because it is a strong roofer, but if inarched on the Vines sufficiently low on the roof, say from 9 inches to 1 foot, the result will be that two or three bunches at the top of each Vine will be Muscat, while the Vines on the wall will not fail to set; this not only gives an extra variety, but greatly assists from the hanging properties of the latter in connecting the link between early and later varieties, besides supplying each Vine with a double portion of root. *T. W. Bond, Webridge.*

Cedars of Lebanon.—Your correspondent "O." corrects an error in my article on the Cedar of Lebanon. In fixing the date of its introduction I intended to say, "In Evelyn's *Silva* of 1664 he does not mention the Cedar of Lebanon" as having been at that time introduced into this country. I have always understood that he planted the tree at his residence at Wotton. It would be interesting to know if any of his specimens remain. Mr. Crowhurst describes a large tree—10 feet 9 inches at the feet. The picture would have been better with the addition of the height to the crown. *H. Evershad.*

Vine Borders.—Some time ago it was said that the son of Hardwick had set, and really it appears to have left Mr. Fish in darkness, and prevented him from seeing clearly what direction Vine roots take. If they did, as he says, take a southerly direction, they might answer the purpose of the compass to travellers; but these notions are wrong, as every practical gardener must know that a Vine in a healthy state pushes out roots in every direction. Mr. Fish must have enjoyed a happy state of things if he has not had some such a little manure without well turning and sowing it is every vintage he has seen. If the soil's sweetening it is every vintage he has seen. The soil's sweetening, this bitten, would do well to spend a time in some of the London market gardens, where he could learn the use of stable manure for bottom-heat, early forcing, &c. *F. H. Goodacre, Ebbwton.*

Fish asks to be shown why Vines will not do as well with their roots confined in inside borders alone. This needs no showing; I never yet saw an instance where the Vines did not show it themselves, and that unmistakably when they have been planted seven or eight

years, by evincing weakness in the canes not thickening more than half so fast as if the roots had access to a good outside border as well, and by the time they were a dozen years old they generally increase in girth almost imperceptibly, and are seldom more than half the strength that those are which have more room, and the same is well made harder all the way round attention in the shape of plenty of water, sufficient solid and liquid manure, and the surface renewing with new soil, so far as the non-interference with the roots will permit. The fact is, if Vines are intended to bear so costly double or triple the space which an inside border alone affords, *T. Baines*.

Guinea Fellowship.—The proposal of the Royal Horticultural Society to admit guinea Fellows without a vote is by no means satisfactory. Those who have given their names to me as guinea Fellows have done so only on condition of incurring no further liability, and on condition that the Society is relieved from its present incumbrances. The Society is not free; therefore, had the Council offered a full guinea Fellowship instead of proposing it in the circumscribed form in which the guinea Fellows would probably not have come in. Now, as to the future, I trust in the proverb "who waits wins;" and I believe that those who have given their names as would-be guinea Fellows in the Society when free, will be content to wait till the Society is relieved from its liability, and be asked for their subscriptions till the time of freedom has come. I should very much prefer to see the old Society take its proper position as representative of the horticulture of the country, but if it does not see its way to do so, and prefers to continue as an appendage to South Kensington, I think it certain that some qualified man will see the strength of the position, and will raise up a Society which will become the strongest and most prosperous of societies, with here-quoted in London, including the most divided and least prosperous, as the Royal Horticultural Society has been for at least the twelve years I have known it, and for long before. The great body of horticulturists of this country has always held aloof from the Royal Horticultural Society, and I believe will continue to do so, long as it continues under the shade of South Kensington. *George F. Wilson*.

Breeding Lobelias.—Will any of your readers kindly give a short account of their experience with the dwarf Lobelias in various localities, and in particular best in their respective localities? I have used *L. Lastrous* very extensively during the two past summers, and find it a regular gem, being very dwarf and dense flowering of a very deep blue, with a rather large white eye, and the eye is my only objection to it as in my opinion there is rather too much white. *Bluestone* I find very useful, but not quite so dwarf as *Lastrous*, neither is it so compact in its habit. *W. Shivers, Royal Pavilion, Brighton*.

Platycodon grande.—In the gardens of S. Stearn, near a fine plant of *Platycodon grande*, and was informed by Mr. Ireland, the head gardener, that it was purchased a little over two years ago, quite a small plant in a 32-pot. It now measures 5 feet 6 inches in diameter. I think so grand and perfect a specimen, grown to the above dimensions in so short a time, highly worthy of notice. *S. Johnson, Royal Nurseries, Ascot*.

Hubbets on Vine Borders, &c.—I hope the subject of the premature rooting of Vines will not be allowed to drop until it has been fully discussed, as it is rather best to be profitable to a large number of your readers. I think it well put by Mr. Baines, when he says we "have much to unlearn as well as to learn," notwithstanding all that has been written on Vine culture. This reminds me, too, in the same paper on winter raising as applied to stove plants are to my mind well worth thinking over. In your last issue, p. 84, Mr. Goodacre says he fails to see—the roots being outside—how ripe Grapes are to be had in May for one an fully persuaded that this is possible—and that for a number of years in succession—by simply adopting a similar method of early protection that mentioned by Mr. Wildsmith (see p. 20), especially if means are provided for throwing out the water, and rain, as I have done for the early Vines here for the last six or seven years, and have often regretted not having the means of warming the border, which has a north-west aspect, and only gets a thin covering to keep out frost, but experience teaches me that a hotbed is not absolutely necessary. I must here admit that I have a 4-feet border inside, which I think helps us a little, the front wall of the house being arched in the usual manner. We start steadily with the new year, and commence in June, and I have the pleasure of the editorial query at the end of the communication by Mr. Wildsmith above alluded to. This I also

hope to see satisfactorily answered. I am under the impression that where the outside border is but slightly protected, as the one just described, and having an inside border as well, the roots inside are the first to move, being in a higher temperature. I have never had ocular demonstration that it is so, but it seems reasonable to me to think that such has been the case. I remember once seeing a rod from an old Vine in a late house that had been taken through the partition into an early house adjoining, and whose shoots must have been well-nigh half-matured before any growth was visible on the other parts of the Vine. Now, supposing it had been possible to have increased the temperature of a portion of the border (which was an outside one), would it be unreasonable to expect to find the roots in the warmest part the most active? I should like to say whether or not having two sets of roots has any injurious effect upon the constitution of the Vine. *Thomas J. Crane, Gr., Logkirk, Chichester, Kent, Jan. 22*.

Orobanchae minor.—We have had quite a curiosity in our nursery here, namely, the flowering of a quantity of *Orobanchae minor*, a specimen of which I send you in this post; you will have seen it upon your Bourbadia pots, the seeds no doubt having been brought in with the loam. *William Rollison & Sons*.

Notices of Books.

M. ROTHSCHILD has lately issued a fourth edition of M. Cordier's work entitled *Les Champignons*. Those who read French will find a popular account of the organisation, physiology, reproduction and other generalities of hymenomyces fungi, together with detailed descriptions and synonyms of all those species native to France and which are of interest by reason of their useful or noxious properties. A most complete list of all the species of the genera mentioned is also given, together with excellent indices, for which the reader will be thankful. The system followed is that of Persoon. But the point of most importance to our readers in the volume before us consists in the coloured plates, chromatolithographs, sixty in number, and representing a considerable number of species, and which will be found very serviceable to amateurs. The whole forms a handsome volume, attractive and useful to beginners, for whom it is principally intended, but not complete enough in its indications and literary references for more advanced students.

— Under the title of *Forage Plants*, Mr. Thomas Christy (155, Fenchurch Street) gives an account of *Symphitum asperillum*, a well-known herbaceous plant closely allied to our wild *S. officinale*, and which is highly recommended as a forage plant by Professor Duckman and other agricultural authorities. We have no personal acquaintance with the plant as a forage plant, but if hardiness, rapid growth, abundant foliage, and facility of propagation are requisites, then this plant is likely to be very useful. We suppose the plant would do best on heavy wet soils and temperate climates. Whether it will be so suitable for hot beds, in this matter, is open to doubt, though its fleshy root-stocks will enable it to withstand the ill effects of drought. The same pamphlet contains a number of miscellaneous trade notices, amongst others of a plant-case lined with felt, and intended for the transmission of fruit and other trees to India and the colonies; and an illustration of a Chilean plant, *Cesalpinia brevifolia*, the pods of which furnish a gum used in tanning operations under the name of *Balsamocarpon*, and known also as *Algorbaba* and *Algoravilla*—names of vague and uncertain application. The gum is said to yield 80 per cent. of tannic acid, if the pods are picked before the rainy season; if allowed to remain till the rainy season the value of the gum is much impaired.

— M. Rothschild has lately published a second edition of M. Dupuis's *Les Papillons*, or Natural History of the Butterflies of Europe, a quarto volume richly illustrated with excellent woodcuts, and with fifty hand-coloured plates representing a very large quantity of species. The book is well adapted for young entomologists, and forms a handsome volume for the drawing-room table.

Reports of Societies.

Meteorological.—The annual general meeting of this Society was held on Wednesday, the 17th ult., at the Institution of Civil Engineers, Mr. H. S. Eaton, M.A., President, in the chair. The Council in their report to the Fellows expressed their satisfaction at the progress that had been made by the Society during the year. The first point on which they thought there was reason for congratulation was the publication in their *Journal* of the daily observations taken at Hawes and Stairfield Turgis, and of the monthly abstracts of the observations at thirteen other stations. The increase in the number of Fellows was considered worthy of special reference, as it is an indication not only of the vitality of the Society, but also of the advance which meteorology is now making amongst the professional and general public. They also referred with much satisfaction to the enlargement of the quarterly *Journal*, as well as to the printing of the catalogue of the library and of the list of Fellows, which have both been issued during the year. They drew special attention to the report of Mr. Symonds on the new stations which had been inspected and brought into relation with the Society. The financial position, notwithstanding the large outlays during the year, was very good. The report also contained the very interesting discussion by the Rev. T. A. Preston, M.A., of the observations on natural periodical phenomena.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON FOR THE WEEK ENDING WEDNESDAY, JAN. 31, 1877.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.				WIND.	HYGROMETRIC DEGREES FROM FRENCH TABLES 6th Edition.	RAINFALL.
	Mean Reading.	Depositure from 12 to 12.	12 to 12.	12 to 12.	12 to 12.	12 to 12.			
Jan. 16.	30.00	0.00	31.7	27.0	22.0	51.0	60	W	0.00
17	29.94	+0.10	31.1	27.8	21.8	51.7	83	WNW	0.00
18	29.99	+0.18	30.8	26.0	20.8	50.7	94	S. S.	0.04
19	29.87	+0.01	31.7	26.5	21.3	51.7	78	W	0.06
20	29.85	+0.09	31.3	26.4	21.1	51.4	77	WSW	0.02
21	29.80	+0.27	30.6	24.4	20.3	50.4	77	W	0.21
22	29.84	+0.08	31.8	24.3	21.3	51.4	80	WNW	0.01
23	29.84	+0.05	31.8	24.3	21.3	51.4	80	WSW	0.14
Mean	29.77	0.00	31.0	26.3	21.5	50.7	84	S. W.	sum 0.46

Jan. 25.—Overcast, fall, with occasional rain till 7 P.M.
 26.—A fine bright day. Cold. Slight fog and hoar-frost in morning.
 27.—A dull day, cool, with frequent thin rain.
 28.—Fine and cloudy, occasionally dull, with showers of rain.
 29.—Fine and clear till 2 P.M., cloudy after. A little rain fell between 2 and 4 P.M.
 30.—Overcast, with frequent heavy rain till 12 A.M. at 11 P.M. at 11 P.M. A fine and bright after. Strong gale.
 31.—Fine, but cloudy till 6 P.M. Overcast and wet after. Cool. Solar halo in morning.

LONDON: Barometer.—During the week ending Saturday, January 27, in the suburbs of London, the reading of the barometer at the Jersey sea gauge increased from 30.22 inches at the beginning of the week to 30.66 inches by the morning of the 21st, decreased to 30.13 inches by the morning of the 24th, increased to 30.19 inches by the afternoon of the same day, decreased to 30.61 inches, by the afternoon of the 25th, increased to 30.22 inches by the evening of the 26th, decreased to 30.13 inches by the afternoon of the 27th, and was 30.24 inches at the end of the week. The mean reading for the week at sea level was 30.26 inches, being 0.28 inch above that of the preceding week, and 0.21 inch above the average.
Temperature.—The highest temperatures of the air varied from 53° on the 25th to 43° on the 26th; the mean value for the week was 48°. The lowest temperatures of the air ranged from 28½° on the 27th, to 34½° on the 24th, the mean for the week was 34½°. The mean daily temperature of the water of the week was 16½°, the greatest range in the day being 20° on the 23d, 25th, and 27th, and the least 11½° on the 26th. The mean daily temperatures of the air, and the departures from their respective averages are as follows:—21st, 49°-3; 22d, 47°-1; 23d, 41°-7; 24th, 35°-8; 25th, 43°-2; 26th, 41°-4; 27th, 42°-9; 28th, 42°-9; 29th, 38°-8; 30th, 38°-8; 31st, 38°-8; 0.7° The mean temperature of the air for the week was

39°.4, being 1.7 above the average of sixty years' observations.

The highest readings of a thermometer, with blackened bulb in vacuo, placed in sun's rays, were 105° on the 23rd, and 91½° on the 21st and 24th; on the 21st was the highest reading. The lowest readings of a thermometer on the grass, with its bulb exposed to the sky, were 23° on the 27th and 23½° on the 23d; the mean value for the week was 26°.

Wind.—The direction of the wind was mostly S.W. and S., and its strength moderate. The weather during the week was somewhat fine, and frequently foggy. Lunar halos were seen on the 21st and 24th.

Rain fell on three days; the amount collected was 0.39 inch.

ENGLAND: *Temperature.*—The highest temperatures of the air observed by day were 54° at Truro and 53½° at Blackheath; at Hall 47° was the highest temperature. The mean value from all stations was 50½°. The lowest temperatures of the air observed at Liverpool were 28° at Hull and 28½° at Blackheath; at Liverpool 36½° was the lowest temperature. The general mean from all stations was 31½°. The range of temperature in the week was the greatest at Blackheath, 25½°; and the least at Liverpool, 13½°. The mean range of temperature from all stations was 17°. The mean of the seven highest day temperatures was the highest at Truro, 51½°, and the lowest at Leicester, Norwich, and Hull, all about 44½°. The mean from all stations was 47°. The mean of the seven low night temperatures was the lowest at Blackheath and Wolverhampton, both 31½°, and the highest at Truro, 41°. The mean value from all stations was 35°. The mean daily range of temperature in the week was the greatest at Blackheath, 16½°, and the least at Bradford, 7½°. The mean daily range from all stations was 11½°.

The mean temperature of the air for the week from all stations was 40½°, being the same as the value for the corresponding week in 1876. The highest was 46°, at Truro, and the lowest 38°, at both Wolverhampton and Hull.

Rains.—The fall of rain varied from three-quarters of an inch at Truro, Bristol, and Sheffield, to a quarter of an inch at both Nottingham and Sunderland. The average fall over the country was half an inch nearly.

The weather during the week was somewhat fine, but not at some places. Lunar halos were seen on four days in the week at Bristol.

SCOTLAND: *Temperature.*—The highest temperatures of the air varied from 51° at Paisley to 47½° at Edinburgh; the mean value from all stations was 48½°. The lowest temperatures of the air ranged from 31° at both Dundee and Paisley to 33° at Greenock; the general mean from all stations was 32°. The mean range of temperature from all stations was 16½°.

The mean temperature of the air for the week from all stations was 40½°, being 4° lower than the value for the corresponding week in 1876. The highest happened at Paisley, 41½°, and the lowest at Dundee, 28½°.

Rains.—The fall of rain varied from 3 inches at both Greenock and Paisley to half an inch at Leith. The average fall over the country was 1½ inch.

DUBLIN.—The highest temperature of the air was 53°, the lowest 30½°, the range 22½°, the mean 43½°, and the fall of rain 0.36 inch.

JAMES GLAISHER.

Law Notes.

IMPORTANT TO SEED MERCHANTS.—*Cross & Donaldson v. Fleming & Co.*—This case, which was heard at the Ballymena Quarter Sessions, stood over for judgment, and a few days since the Chairman (J. H. Orway, Esq., & C.), before whom the case was heard at Ballymena, delivered his judgment in the Sessions Court. The facts transpire in the Chairman's remarks below. The Chairman said this was an action for not delivering goods according to contract. The contract was by parole only. The defendant seemed cautious not to have the terms of the agreement reduced to writing. Some telegrams passed, but the Statute of Frauds was not satisfied so far as a note or memorandum was concerned. The facts were shortly these: The plaintiffs agreed to buy from the defendant 15 tons of Italian Rye-grass, upon a sample shown to them, for £150, 10s. per ton. The plaintiffs then received a bulk sample—namely, a sample taken from the bulk that they were to get. This was sent. The defendant, in his evidence before me, used the following words:—"They (the plaintiffs) bought all I had, 15 tons more or less; out of what they were to take I sent the

bulk sample." That bulk sample, which weighed 4 lb., the plaintiffs received and kept, and sent to the defendant a letter, in which they said, "The bulk sample compared, and we regret to find it hardly up to sale sample. You must see and keep up the quality in your first transaction." I consider, then, that they took and accepted the bulk sample, hoping that the large quantity, when delivered, would be perfectly equal to it. The defendant then delivered to the plaintiffs 6 tons of the article sold, which, as they swore, and by independent witnesses was proved to be inferior (for the benefit of £1 5s. a ton) to the bulk sample. After forwarding the 6 tons the defendant went to Belfast and saw the plaintiffs, who complained of the quality of the 6 tons they had received, but said they would keep them if the remaining 9 tons were, in the judgment of men most experienced and respectable in the trade, equal to the sample. The defendant said he would not accede to this, and would not leave those 6 tons he had delivered, and insisted on taking them back, which he did, notwithstanding the remonstrances of the plaintiffs, paying them £2 11s. 9d. for the carriage, which, had the contract been carried out, they would not have declined. On the same day the defendant sold the selfsame seed to a Mr. Lytle, of Belfast, at £18 a ton, there having been a very considerable rise in the market since the sale to plaintiffs, of which rise the defendant, as it seems to me, was anxious to have the benefit. The action was for the non-delivery of the goods according to the original contract. The defendant, through his counsel, relied on the Statute of Frauds—the goods being over the value of £10—and contended that, as there was no note or memorandum in writing, the action should fail. But a note or memorandum in writing is not the only mode of taking a contract out of the operation of the statute—the acceptance and receipt of part of the goods will have the same effect. By the common law, a parole sale of goods might have been in every instance effected by an agreement, coupled with a tender of payment or a delivery of part of the goods by way of earnest. And if A had agreed to pay to B, the owner, a certain sum for goods, and B had agreed to take it; if B had tendered the goods, or A the price, or B had received any part of the price, though but a penny, or A any portion, even the smallest, of the goods, both would have been bound by the bargain. Such was the law before the Statute of Frauds, and so it is still where the value of the goods is under £10, but where the value is over £10, then if there be no part payment by the vendor, or no receipt or acceptance by him of a part of the subject-matter of the sale, or no memorandum or note in writing of the terms of the sale signed by the parties or their agents, the contract is invalid. Thus the old law as to part payment by the buyer, or receipt of part of the goods by him, is retained; and if neither of those elements exist, there must be a note in writing; but if either do exist, a writing is unnecessary. Here there was no writing, no part payment, and the question is, was there a delivery and acceptance of a part? In *Hinde v. Whitehouse*, 7 East, 558, it was held, and it has never, as far as I know, been questioned, that acceptance of a sample which is to be accounted as part of the commodity sold, is sufficient to bind the parties. And on this matter I refer again to the testimony of the defendant, according to which he said, "out of what they were to take I sent the bulk sample." Now, generally speaking, the cases in which a question arises as to the effect of a delivery of goods or part of them, is where the vendor sues. If he contends that goods were received and accepted by the buyer, actually or constructively, he sues for goods sold and delivered; if he cannot sustain a case upon actual receipt and acceptance of all the goods, he sues for goods bargained and sold, and the question is, whether, upon the facts, the Statute of Frauds is satisfied. But I take it that if there was an acceptance of part of the goods sold, the statute would be satisfied. And as I think the sample in this case was part of the goods sold and, according to *Hinde v. Whitehouse*, bound the bargain, I am of opinion that if the parties were reversed, and if Messrs. Cross & Donaldson found the market had fallen, and wished to have escaped from their contract, Mr. Fleming could not have successfully set them. If that be so, there should be reciprocity, and what would bind Messrs. Cross & Donaldson to a bargain should also give them the advantage of it, and what would justify their being sued as defendants would justify their suing as plaintiffs. I confess, however, I am not aware

of an action under a similar state of facts being brought by a purchaser for the fulfilment of a contract, but my ignorance does not show that many such cases may not have existed. It is plain that if there had been a contract in writing the plaintiffs here could have sued, and the Statute of Frauds makes the delivery and acceptance of part equivalent to a writing. Upon principle, then, I think the action can be maintained. It was once thought, and many cases seem to support the opinion, that there can be no acceptance within the Statute of Frauds unless the buyer is proved from objecting that the vendor has not fully performed the contract on his part. But the very well considered case of *Morton v. Turbit*, 152 B. & 423 and 14 J. 669, has dissipated that doctrine and established that there may be an acceptance of goods sufficient to make a contract valid within the meaning of the Statute of Frauds without the buyer having precluded himself from contending that they did not correspond with the sample, and the same doctrine it recognised and adopted, especially in the very recent case of *Mr. Justice Brett* in the judgment case of *Grinoldy v. Wells*, 9th Rep. law report of Common Pleas. In the case of *Morton v. Turbit*, before Lord Campbell in the Common Pleas, after mentioning the sufficiency of part payment to bind the vendee, his Lordship said—"The same effect is given to the corresponding act by the vendor if he shall deliver part of the goods sold to the buyer, and if the buyer shall accept such part and actually receive the same. As part payment," he continued, "however minute the sum may be, is sufficient, so part delivery, however minute the portion may be, is sufficient." I am (for the reason I have given) therefore of opinion that the plaintiffs are entitled to recover, and I shall give a decree in their favour, as it is accorded with the truth and honour of the case. As I said before, the very same seed was sold at the rate of £18 per ton (making a difference of £2 10s. a ton) on the day the plaintiffs objected to the 6 tons delivered to them. The plaintiffs would then have to pay for seed inferior to the sample they purchased by £37 10s., and the difference in value between the sample and seed delivered by the defendant was proved to be £1 5s. a ton, which, if added to the £37 10s., would greatly exceed my jurisdiction. I decree for £40. *Northern Whig.*

Enquiries.

Has that questionist much shall learn much.—BACON.

166. ORCHARD GRAPE GRASS.—Will any of your readers say if they know the "Orchard Grape Grass" of America? We generally understand, when our correspondents mention "Orchard Grass," they mean "Cocksfoot," or *Dactylis glomerata*. K. O. F.

Answers to Correspondents.

BOX HEDGE: C. D. Your Box hedge, 3 feet high, should transpire readily enough, if done with proper care. The Box is a free-rooting species, preferring a calcareous soil. If done in dry weather the plants should be well watered.

DENDROBATHY SIMPSONIUM: T. C. Your plant is *Dendrobathrum Simpsonii*, but not so fine a variety as that figured last week.

FICUS COOPERI: *Constant Reader*. The plant was introduced by Mr. W. Swinney, and was understood to be from the South Sea Islands. It fruits occasionally when grown under glass. It was named after Sir Daniel Cooper, who brought it home.

GOOYEYER DISCOLORE: J. H. Pot in chopped sphagnum and broken lumps of light peat earth, with good drainage below.

GRAPEF FOR INARCHING: A. B. P. Black Hamburg and Royal Muscadine.

MANETTI ROSES: H. E. We presume you mean to inquire how low these should be worked. Certainly close to the ground.

NAMES OF BURLAP: E. Hall. Your Grape is the same as a variety grown in the Royal Horticultural Gardens, Chiswick, under the name of Large Black Fernal. It seldom becomes black, however, in this country, and is not of much value.

NAMES OF PLANTS: *John Illman*. The spotted variety of *Trifolium repens*, or some closely allied species.—*L. E. C.* *Cenothus nuceus*, is *Garrya elliptica*.—*Mrs. C. M.* We do not recognise the Acorn, nor do we believe you will succeed in getting them to grow, as Acorns do not long retain their vitality.—*Mrs. W. C.* *Thysanotus rutillaris*; *s.* *Asplenium obtusatum*.—*A. B.* *Aster carneus* var.—*Hoyer*. *Statice fruticosa* probably, but the specimen was too poor to determine it exactly.—*W. B.* *Griselinia littoralis*.

POPLAR SCREEN; *Subscriber*. As a screen 12 feet high, quickly formed, to hide some cottages, you can

Roshers Garden Edging Tiles.



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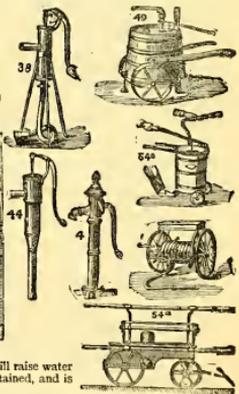
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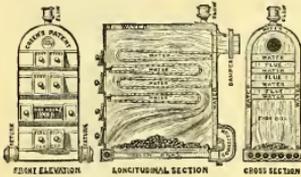
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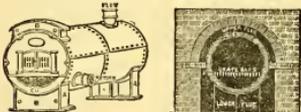
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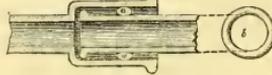
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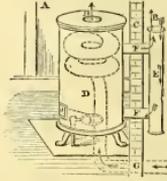
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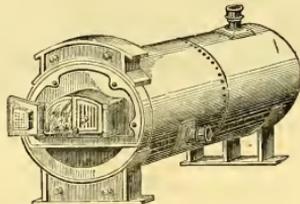


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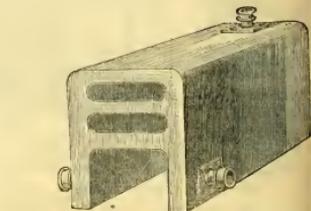
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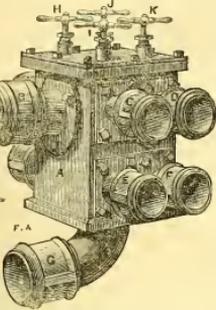
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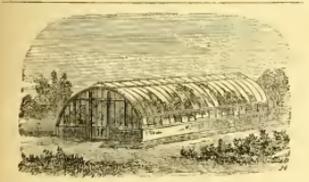
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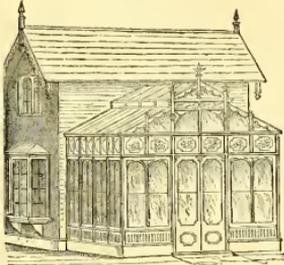
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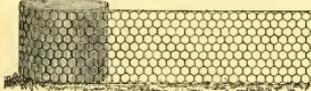
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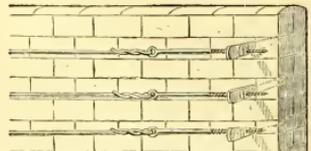
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LONDON and COUNTY BANKING COMPANY.

Established in 1836, and incorporated in 1874 under "The Companies' Act, 1862."

Subscribed Capital—£5,750,000, in 75,000 Shares of £50 each.

REPORT ADOPTED at the ANNUAL GENERAL MEETING, February 4, 1877.

ABRAHAM HUGHES PHILLIPOTS, Esq., in the Chair.

The Directors, in submitting to the Proprietors the Balance Sheet of the Bank for the Half-year ended December 31 last, have to report that after paying interest to Customers and all charges, allowing for rebate and making provision for Bad and Doubtful Debts, the Net Profits amount to £105,447 6s.

This sum, added to £25,770 2s. 3d., brought forward from the last account, produces a total of £131,217 8s. 3d.

The recommended dividend of a Dividend of 8 Per cent. on the half-year, which will absorb £15,000, leaving a balance of £116,217 8s. 3d. to be carried forward to Profit and Loss New Account.

The present Dividend added that paid to June 30 makes 16 per cent. for the year 1876.

The Directors retiring by rotation are James Carter, Esq., Edward Leachford Lambington, Esq., and William Henry Smea, Esq., who, being eligible, offer themselves for re-election.

By the retirement of Stephen Symonds, Esq., on account of ill-health, there is a vacancy in the Auditorship, which it is in the power of the meeting to fill up.

The Dividend, £1 12s. per Share, free of Income Tax, will be payable at the Head Office, or at any of the Branches, on or after Monday, 17th instant.

BALANCE SHEET OF THE LONDON AND COUNTY BANKING COMPANY, DECEMBER 31, 1876.

Table with 5 columns: Description, £, s., d., £, s., d. Includes Capital paid up, Reserve Fund, Customers' Balances, Profit and Loss Balance, Cash on hand, Investments, Government and Municipal Stocks, Colonial Government and other Stocks, Discounted Bills, Liabilities to Customers, and Profit and Loss Account.

CA. PROFIT AND LOSS ACCOUNT.

Table with 5 columns: Description, £, s., d., £, s., d. Includes Interest paid to Customers, Dividend of 8 per cent, Balance carried forward.

Dr. Balance brought forward from Last Account, Gross Profit for the Half-year, after making provision for Bad and Doubtful Debts.

Table with 5 columns: Description, £, s., d., £, s., d. Includes Gross Profit, Balance carried forward.

We, the undersigned, have examined the foregoing Balance Sheet, and have found the same to be correct.

(Signed) WILLIAM NORMAN, RICHARD H. SWAINE, Auditors.

By Order, GEO. GOUGH, Secretary, London and County Bank, January 25, 1877.

London and County Banking Company.

NOTICE IS HEREBY GIVEN that a DIVIDEND on the CAPITAL of the COMPANY, at the rate of 8 per cent. on the Half-year ended December 31, 1876, will be PAYABLE to the Proprietors, either at the Head Office, 21, Lombard Street, or at any of the Company's Branches, on or after Monday, 17th instant.

By order of the Board, W. McKEWEN, General Manager, 21, Lombard Street, February 3, 1877.

THE GARDENERS' CHRONICLE

VOLUME FOR JULY to DECEMBER, 1876.

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MESSRS. PROTHEROE AND MORRIS will sell the above by AUCTION on the Premises, the Whitechurch Rectory, Edgware, N.W., on SATURDAY, February 17, at 12 o'clock precisely.

May be viewed prior to the Sale and Catalogues had on the Premises, and of the Auctioneers as above.

Tooting, S.W.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. R. Barker, to sell by AUCTION on THURSDAY, February 22, at 12 o'clock precisely; a splendid assortment of choice young NURSERY STOCK, comprising several thousands of choice Evergreen and Coniferous trees in specimen borders, admirably adapted for effective planting; 1 specimen of the valuable LARCH, and 3 specimens of the choice young NURSERY STOCK, viz. Fruit Trees, Box Edging, Bambusa, Ives, Roses, Clematis, Virginian Creepers, Lily of the Valley, &c.

May be viewed prior to the Sale and Catalogues may be had on the Premises, and of the Auctioneers, 95, Gracechurch Street, E.C., and Leytonstone, E.

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MESSRS. PROTHEROE AND MORRIS are instructed by Mr. B. Mallett to sell by AUCTION on the Premises, The Burnt Ash Lane Nurseries, Lee, Kent, S.E., adjoining the station, on WEDNESDAY, February 22, at 12 o'clock precisely, the valuable NURSERY STOCK, and about 2000 choice Ericas of sorts, Azaleas, Camas, &c.

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On view the morning of Sale, and Catalogues had at the Mart, London, E.C., and of the Auctioneers, 95, Gracechurch Street, E.C., and Leytonstone, E.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 35, King Street, Covent Garden, W.C., on TUESDAY, February 23, at half-past 12 o'clock precisely, Spanish, Silver-spangled Hamburg, and other Exotic Poultry, and a quantity of Brouse; Buff COCHINS from Mrs. W. Stevens; Mr. South's well-known stock of TURKITS, BEARDS, BALDHEADS, JACOBINS, and DRABINS, for Unreserved Sale; Prize JACOBINS from Mr. W. Woodhouse; the Surplus Stock of young CARRIERS, from Mr. T. Crisp, of Southall; WIRE FOLLYE HURDLES, &c.

On view the morning of Sale, and Catalogues had at the Mart, London, E.C., and of the Auctioneers, 95, Gracechurch Street, E.C., and Leytonstone, E.

Hardy Plants and Bulbs.

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 35, King Street, Covent Garden, W.C., on WEDNESDAY, February 24, at half-past 12 o'clock precisely, specimen CONIFERS, SHRUBS, &c., trained and ready for planting; also a quantity of choice GLADIOLI, LILIUMS, &c., for present planting in the flower beds.

On view the morning of Sale, and Catalogues had at the Mart, London, E.C., and of the Auctioneers, 95, Gracechurch Street, E.C., and Leytonstone, E.

Established Orchids.

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 35, King Street, Covent Garden, W.C., on THURSDAY, February 25, at half-past 12 o'clock precisely, a quantity of choice ESTABLISHED ORCHIDS, the property of E. W. Walker, Esq., and sold in consequence of removing. Amongst them will be found many rare and choice varieties.

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13, 14, and 15. PRIZES, including several Special ones for Roses, SIX HUNDRED POUNDS. Schedules now ready. JOHN WILSON, Secretary. 33, New Street, York.

INTERNATIONAL HORTICULTURAL EXHIBITION, 1877.

A GREAT INTERNATIONAL HORTICULTURAL EXHIBITION will be held at Carlisle on THURSDAY, FRIDAY, and SATURDAY, September 6, 7, and 8, when medals will be OFFERED for the best specimens in FRUITS, FLOWERS, EXOTIC and NATIVE PLANTS, &c. SPECIAL PRIZES have also already been promised; and as the SCHEMATA of PRIZES are issued in a few weeks, it is hoped that Gentlemen interested in the Advancement of Horticulture, and inclined to give SPECIAL PRIZES, will communicate to the Secretary, in time to insure their appearance in the Schedule. A select number of Advertisements may be inserted in the Catalogue at the Half-price. Copies for Advertisements must be sent not later than February 10, to Mr. JOHN MOUNSEY, Acting Secretary, Victoria Buildings, Lower Street, Carlisle.—Jan. 25.

THE BOTANICAL and HORTICULTURAL SOCIETY OF DURHAM, NORTHUMBERLAND, and NEWCASTLE-UON-TYNE. The oldest in England. Established in 1824.

LEADING PRIZES at 1877-EXHIBITION. Stove, Greenhouse, and Ornamental Plants, &c. £125 0 0 Table Decorations, Vases, and Table-covers, &c. 50 0 0 Ferns, Mosses; Pelargoniums, &c. 65 0 0 Anemons, Camellias, Fuchsias, and Ericas, &c. 50 0 0 Roses, &c. 25 0 0 Hollyhocks, &c. 50 0 0 Liliums and Gladioli, &c. 15 Fruit, &c. 50 0 0 Hyacinths, Spring Plants, &c. 50 0 0

Two thousand new Members enrolled. Apply for Medals to WM. J. TAYLOR or J. H. FRENCH, Hort. Soc. Secs., Newcastle.

Corporation of Preston.

DESIGNS and TENDERS are requested for the LARCH ROADS, to be situated on the Strippey Lake at the Moor Park, Preston. Span, 60 feet; width of deck, and to be of sufficient strength to carry half a Ton on each square yard of roadway. The Road to be Railing on the sides out to be less than 5 feet high above the Roadway. Any further particulars may be obtained on application to Mr. J. CARLISLE, Town Hall, Preston.

Tenders, with Designs, to be forwarded to the Town Clerk before March 12 next. CHARLES FRYER, Town Clerk. Town Hall, Preston, February 6, 1877.

HARRIET SCOTT, WOOD-BROKER.

WOOD-BROKER and DEALER in all kinds of Garden Materials, begs to notify that Mr. W. W. W. is a private Manager, is now NO LONGER in HER EMPLOY, and requests that all ORDERS may be given and ACCOUNTS PAID TO HER, at her Office, 11, Woodside, S.E.—February 1, 1877.

PROTHEROE AND MORRIS, HORTICULTURAL MARKET GARDEN and ESTATE AUCTIONEERS.

ROSEBURY, GROVE, and the valuable NURSERY, Stone, E. Monthly Horticultural Report had on application.

Roses.

CHARLES TURNER has still fine plants to offer. In addition to his own varied stock C. Turner has purchased Mr. Lambert's Royal Nurseries, Slough.

GERANIUMS, strong from Store Pots.

Bijou, Vesuvius, Beauty of Calderdale, Princes, Master Charles, &c. in full flower. Seedling, Aurant, Crystal Palace Gem, Indian Veil, &c. per 100.

LARCH, 1-yr. 2-yr. firm, Scotch, 2-yr. 2-yr.

native, fine; GOOSEBERRIES, 3-yr. and 4-yr., Warrington and all the useful sorts. Price of application to THOS. SMITH, Nurseryman, Stranraer.

Special Offer—Extra fine Larch.

W. AND D. STEWART have to offer a quantity of very fine, extra transplanted LARCH, about 4 to 6 ft. high, and 2 to 4 inches in height.

To the Trade.

J. C. DUNCAN has to offer 50,000 extra fine seedling LARCHES, from 9 to 24 inches in height. Price and sample on application.

GARRYA ELLIPTICA.—Healthy, well-grown plants of the above, from open ground, 1½ to 2 feet, 6s. 6d. per dozen, 30s. per 100; 8 to 9 feet, 9s. per dozen, 60s. per 100.

Apply to J. J. MARRIOTT, Millish Road, Walsall.

For Cover.

PONTICUM RHODODENDRONS, 1-yr. 2-yr. firm, 2s. per dozen, 20s. per 100.

Water-flowing Orchids.

OCULATA. Price, 9s. per dozen, or 50s. per 100. S. WOOLLEY, Nurseryman, Chesham, Herts.

SPANISH CHESTNUT, 50,000, 2 feet, 35s.; 30,000, 1½ foot, 30s.; LARCH, 50,000, 1½ to 2 feet, 35s.; ASH, 30,000, 2 feet, 41s.; ALDER, 30,000, 3 feet, 30s. per 100; well rooted, transplanted. A large quantity of seedling SPANISH CHESTNUT, 2s. per 100.

GEORGE CHORLEY, Millhurst, Sussex.

To the Trade.

WILLIAM FLETCHER has the following to offer, good clean-grown trees:—CAMPAULIDS, 4s. per 100. PEAR STOCKS, 4s. per 100. CHERRY STOCKS, 4s. per 100. APRICOTS, 4s. per 100. CATALOGUE of General Nursery Stock on application. Otterburn Nursery, Chertsey, Surrey.

To Purchasers of Large Quantities, Market

GARDENERS and OTHERS. SUTTON AND SONS

offer true stocks of the following Peas at very moderate prices:—SUTTON'S IMPROVED EARLY CHAMPION, the best and most productive cultivator. SUTTON'S EARLY BLOSSOM, the best. SUTTON'S Ringleader. SUTTON'S Racheuse. SUTTON'S Champion of England. SUTTON'S Yellow Perfection. SUTTON'S and other leading kinds.

SUTTON AND SONS, Seed Growers, Reading.

October Plants, clean, strong, and healthy.

F. W. COOPER can supply the above:—R. Kollinson's Telegraph, Murong's Duke of Edinburgh, Blue Dawn, and Tender and True; also seed of all the varieties grown under his own supervision and guaranteed true. The Trade supplied. Florist, Huntingdon.

ARECA BAURI (Seafartha robusta).

A. Of this rare species, one of the finest of Greenhouse Palm, a fine stock of young plants is to hand, and offered at 1/6 per specimen, in store pots, 1/2 per 100. Nice young plants, in single pots, 3s. per dozen. 1/2 seedlings, in store pots, 2/6 per 100. Early orders solicited by LEAN YOUNGS YERKSCHAF FELL, Ledeburg, Gbent Belgium.

To the Trade.

H. AND F. SHARPE'S Special Priced LIST of HOME-GROWN GARDEN and AGRICULTURAL SEEDS of 1876 growth, is now ready, and may be had on application. Seed Growing Establishment, Wisbech.

Fox and Game Cover.

ENGLISH FURZE, 1-yr. old, fine, 5s.; 2-yr. 10s.; 3-yr. 15s. per 100. MAHONIA AQUIFOLIA, extra bushy, 2s. per 100.

WILLIAM MAULE and SONS, The Nurseries, Bristol.

Spring Seed Guide.

I. LITTLE and BALLANTYNE, the Queen's Seedsmen, Carlisle, respectfully intimate that their Illustrated Catalogue of SEEDS is now ready, and may be had post-free. It contains every requisite for the Gardener and the Farm, and much valuable information to Amateurs.

To the Trade.

WM. WOOD AND SON, The Nurseries, Warefield, Uckfield, Sussex. JAPANESE, fine bushy plants, 9 to 12, 12 to 18 CEDRUS, 20 to 24 inches, each plant a specimen 1 to 1½, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet. Price on application.

NEW CALCAREA.—Twelve of the finest

in cultivation. These are the finest growing Fines. If posted on now will do for exhibiting in Autumn.—D. Baptistin, D. Young, D. Imperialis, &c., included. Packages for each month.

JOHN H. LEVY, Royal Nursery, Croydon.

CALCEOLARIA, Golden Gem, strong

healthy plants, 5s. per 100, 40s. per 1000. CALCEOLARIA, yellow, strong, autumn-struck, 7s. per 100. Cash with order, package free.

WILLIAM FIELD (late Field Brothers), Tavrin Road Nursery, Chertsey.

EUONYMUS EUROPEUS.—Strong

2-yr. seedling plants, 6s. per 100, 60s. per 1000. Offers for Cash. A. RATHIE and SON, The Nurseries, Prusau, near Danzig, Germany.

To the Trade.

HENRY BENNETT has a few hundred dwarf ROSE LA FRANCE, strong bushy plants, to offer, at 1/6 per specimen, on application.

Minor Farm Nursery, Stapleford, Salisbury.

FOR SALE, CHEAP.—Box Edging, 10,000

yards; Orchid Spaghnum, Spitzia japonica, Sempervivum californicum, Sedum glaucum, Polenonium corleum var. rubrum, &c.

J. B. YOUNG, Landscape Gardener, Bridge of Allan.

To the Trade.

STANDARD and DWARF ROSES of the best quality, in splendid condition, no better in the Trade, well-ripened wood—about 1800 Standards and 3000 Dwarf, guaranteed true to name. For lowest prices apply to GRANT and SONS, Royal Nursery, Ireland.

Genuine Garden Seeds

WM. CUTBUSH and SON have for many years held some of the finest Stocks of SEEDS in the Trade, and they believe that no house can possibly supply better quality. Catalogue post-free on application. HIGHGATE, LONDON, N.; and BARNET, HERTS.

Begonia Froebelii.

BEGONIA FRUEBELII.—Extra fine Roots, 1/2 per dozen, 10s. per 100. Price of each. Illustrated CATALOGUE of New and Choice Seeds, Begonias, and Novelties, post-free. GRANT and SONS, Seedsmen, Bulb Growers and Importers, Stirlingborough.

New Ready.

CHARLES TURNER'S Descriptive CATALOGUE of SEEDS. Post-free on application. The Royal Nursery, Chertsey, Surrey.

TO BE LET, a NURSERY, with Immediate Possession, seven miles from London, containing a seven-roomed Dwelling-house, in good repair, with 1000 plants; four newly-erected Greenhouses, Heated with Hot-water, with Range of Pits, stocked with a choice collection of Plants (can be sold with or without the Nursery); and 10 years more or less, all at the low rental of £25 per annum. The above to be disposed of, on account of ill health, on moderate and liberal terms.

Apply personally, on the Premises, to W. HOWITT, Ilford, Essex.

VERBENAS, VERBENAS, VERBENAS.

—Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6s. per 100, 2s. per 1000. 120 rooted cuttings, 12 distinct and 1000 varieties, first prize flowers, for £s. Terms Cash. H. BLANDFORD, The Dorset Nurseries, Blandford.

ALDERS.—Fine stout stuff, 3 to 4 and 4 to 10 feet, can be supplied at a very reasonable rate.

JOHN HILL, Spot Acta Nurseries, near Stone, Staffordshire.

AUSTIN AND MCASLAN, GLASGOW.

Established 1777. GARDEN AND IMPLEMENT (PATENT) CATALOGUE. Free on application.

To the Trade. OSBORN AND SONS can still supply dwarf maiden PEACHES, NECTARINES, and APRICOTS of the leading kinds, and a few Standard. Also several Standard APPLS, PEARS, PLUMS, and CHERRIES. Fulham Nurseries, London, S.W.

TWELVE BEAUTIFUL ORCHIDS, 42s., established plants of five sorts, as Cattleya citrina, Laelia autumnalis, Laelia albida, Odontoglossum, Dendrobium, and upwards of fifty other sorts. They have all made fine growth this season. JOHN H. LEV, Royal Nursery, Croydon.

To the Trade. MESSRS. LEV, LAVERASSEUR AND SON, Nurseries, Ley, Colindale, France, have in immense stock of Seedling FOREST TREES, Hardy Conifers, and other SHRUBS, for transplanting and transplanting in pots. CATALOGUES may be had from Messrs. R. SILBERKNEHT AND SON, 5, Harp Lane, Great Tower Street, London, E.C.

HANDSOME STRAIGHT TREES, for Avenues or Park Planting. LIMEs, Chichester, 12 to 18 feet, 15s. 6d. to 14s. PLUMs, 10 to 14 feet, 12s. to 10s. SYCAMORE, 15 to 16 feet, 12s. Price on application to ROBERT F. DAKIN, Halfway Nurseries.

RHUBARB (Hawkes' Champagne), the best in the London Markets, large stout, early, or in sets ready for planting, to be sold for cash. Price according to quantity required. Apply to Mr. BYATT, Manor Farm, Harefield Road, Brockley, S.E. **Grano Vines.**—Strong Fruiting and Planting Cane. W.M. CUTBUSH AND SON have a large Stock of the leading sorts, price on application. Highgate Nurseries, London, N., and Barnet, Herts.

STEPHANOPSIS FLORIBUNDA.—Strong O specimen floriferous variety, 100, 6d. each smaller, but fine half specimens, which will produce abundance of flower early, the buds just appearing on some, 2s. 6d. per dozen; in 4s. pots (invented last summer), 3s. per dozen. This offer is for six weeks only, to make room, the plant being very double the money. JOHN H. LEV, Royal Nursery, Croydon.

LARGE ESPALIER APPLES.—Very fine large Trees, full of fruit-buds, measuring 6 to 10 feet wide and 2 to 6 feet high. Names and price on application to FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

EWING AND COMPANY'S LIST OF NEW ROSES for 1877 is now ready, and may be had gratis. Additional Notice: have this season been built (especially to extend the Propagation and Growth of NEW and TEA ROSES. The plants are making vigorous, strong growth, and will be unusually large and fine. Their GENERAL LISTS of Roses, Fruit Trees, Ornamental Trees for Avenues, Conifers, Evergreens, Clematis, &c. (two pages), with full descriptions, gratis. The Royal Norfolk Nurseries, Eaton, near Norwich.

Centaurea candidissima (Wholesale Price). **WOOD AND INGRAM** offer fine summer-plant, of the above, thoroughly established in thumb-pots, at 20s. per 100. Package 5s. per 100, or 1s. 6d. for 50, not less than which will be sold at the price. The Nurseries, Hamington.

The Best Late Broccoli. **BROCCOLI**, Christie's Self-protecting Late White.—Pronounced by all who have seen it as the finest self-protecting Broccoli in cultivation. Price per packet, 2s. 6d. A limited quantity to offer to the Trade, price on application. EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

Large Evergreen Trees for Screens. **WILLIAM MAULE AND SONS** offer Norway SPRUCE and CEDRUS DEODARA, to 15 feet high, well-rooted—the former at 5s. each, the latter 10s. 6d. The Nurseries, Bristol.

Notice. EDMUND PHILIP DIXON'S CATALOGUE OF NEW and CHOICE SEEDS is now ready, and will be forwarded gratis and post-free on application. EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

Pearlgrains, Pearlgrains. **JAMES HOLDER AND SON** have a fine healthy Stock of the above to offer, at the following low prices for Cash, viz., 35s. per 100, distinct sorts, hampers and packages included; also extra strong plants, in 3s. pots, 16s. per dozen, in 4s. pots, 20s. per dozen, 6s. per 100, basket and packing extra. Crown Nursery, Reading.

Green Ivies of Sorte in Six Kinds. **ROBERT PARKER**, having a Surplus of fine plants in pots of the above named, will be pleased to Dispose of them in quantities, at very low prices. Names, sizes, and prices per dozen, 100, or 1000, will be given on application. Exotic Nursery, Tonbridge, Surrey, S.W.



WE ALSO SUPPLY COLLECTIONS AT 10s. 6d., 15s., 20s., 42s., 63s., and 105s.

The above contain liberal assortments of the best varieties in cultivation.

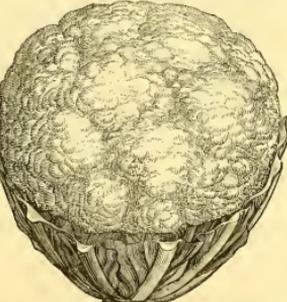
WEBB'S SPRING CATALOGUE FOR 1877

Contains full instructions for the successful cultivation of **THE BEST VEGETABLES AND THE CHOICEST FLOWERS.**

Post-free, 1s. Gratis to Customers.

"A publication of remarkable beauty and interest. The book is one of the best works on Gardening that has yet appeared."—The Magnet, February 8, 1877.

THE BEST CAULIFLOWER,



Webb's Early Mammoth Cauliflower. An excellent compact variety of exceptional merit: stands the drought remarkably well; heads large, firm, and beautifully white; the best for main crop.

Price 1s. 6d. per packet.

All Goods of 2s. value and upwards Carriage-free to any Railway Station in England or Wales. Five per Cent. Discount for Cash.

Robert Parker
The Queen's Seedsmen,

WORDSLEY, STOURBRIDGE.

SPECIAL OFFER.

20,000 CHESTNUT, Spanish, transplanted, 4 to 7 feet. 50,000 Ash, 1 to 10 feet. 100,000 Pear, 1 to 10 feet. The above are one of the finest lots of plants ever offered. E. TANNER, Plant Merchant, Greening, Sussex.

Vines in Pots. **MESSRS. PHILLIPS AND CO.** have a quantity of first-class Planting Cane, true to name, all leading kinds, to offer for Sale, or EXCHANGE for Nursery Stock. The Barbary Nurseries, Tonbridge.

POTATOES.—For Sale, 25 Sacks of improved selected King of the Mountains, warranted true, 21s. per sack of 168 lbs, sacks included. Single sacks supplied. Post-office Order. G. BALLS, Thetford, Norfolk.

SEEDS—SEEDS—ALL KINDS.—Before ordering your Seeds, send for Illustrated CATALOGUE, which contains full Directions. How, When and What to Sow.

PENICILLY AND POOL (successors to the) Heatheridge Nurseries Company, 55, Queen Victoria Street, London, E.C.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcutta, Reading.

WEBB'S NEW GIANT POLYANTHUS, the Florist's Flower, and GIANT GOSWELL SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of early Spring Flower. LISTS on application. Mr. WEBB, Calcutta, Reading.

CHOICE TUBERS and ROOTS.—Twelve tubers BEGONIAS, including Froebelii, rosulata, intermedia, Sedani, viviana, &c., for 21s. very fine bulbs. Twelve CALADIUMS, splendid tubers, 6s. for cultivation, ready to start, 2s. A few collections of these later at 60s. per dozen, consisting of double varieties 10 to 12 inches circumference. JOHN H. LEV, Royal Nursery, Croydon.

Special Offer of Surplus Stock.

FRUIT TREES.—CHERRIES, Standard and Trained Morello; PLUMS, extra strong Standard and Half-Standard; APPLES, Standard and Trained. All the leading varieties of the above can be supplied in large quantities. Also Red and Black CURRANTS and Warrington GOOSEBERRIES. T. EVES, Graveland Nurseries. Established 1820.

EAST LOTHIAN INTERMEDIATE STOCK (True)—New Seed of the above splendid Stock, for present sowing, in packets of White, Purple, Scarlet, and Blue, well-leaved at 1s. 2s. 6d., and 3s. each colour. Price per packet to the Trade on application. THOMAS METHVEN AND SONS, 15, Princes Street, Edinburgh.

LARGE TREE BOX and EVERGREEN HOLLY.—Handsomely bushy, and well-rooted, will transplant with good balls of earth, 5, 6, 7, and 8 feet high. Tree Box Ivies, under glass, than any other in quantity, appearance, and productiveness. His Lordship, who previously had a prejudice against scarlet-fleshed Melons, pronounces this variety superb. From Mr. Thomas Lockie, Gro to the Right Hon. Lord Orcho Fitzgerald, Aug. 25.—"I consider your Hereford Bath Melon the best I have ever grown of the scarlet-fleshed class. It is very handsome, of good constitution, and excellent in flavour."

SUTTON'S HERB OF BATH.—From Mr. W. Wildsmith, Gro. to the Right Hon. Melton Everley.—"I consider your Herb of Bath the best scarlet-fleshed Melon yet in cultivation, being A in quality, appearance, and productiveness. His Lordship, who previously had a prejudice against scarlet-fleshed Melons, pronounces this variety superb." From Mr. Thomas Lockie, Gro. to the Right Hon. Lord Orcho Fitzgerald, Aug. 25.—"I consider your Hereford Bath Melon the best I have ever grown of the scarlet-fleshed class. It is very handsome, of good constitution, and excellent in flavour."

SUTTON AND SONS, The Queen's Seedsmen, Reading.

WILLIAM HOLMES has to offer the following:—JASMINE NUDIFLORUM, in pots, strong, 50s. per 100. common White, in pots, strong, 50s. per 100.

IVIES, Irish, in 2 1/2, extra fine, 100s. per 100. from ground, fine, 25s. per 100. CLOVES, old English, 100s. per 100 pairs.

And in the spring:—ALTERNANTRA MARIANA, 2s. per 100. PARONYCHOIDES, 3s. per 100. MAGNIFICA, 8s. per 100.

From Francis Parkers, Hackney, London, E.

Half a Ton, Guaranteed True Native, SCOTCH FIR SEED.

WISEMAN AND SON have to offer the above, prepared by themselves, my very moderate terms. Also—300,000 SCOTCH FIR, 2-pr. seedlings, very fine stuff. 200,000 " " " " 1-pr., 1-pr. 150,000 LARCH, 2-pr. seedlings, 4s. per 1000. 100,000 " " " " 1-pr., 1-pr.

As the ground is so well watered it will be disposed of cheap. Samples and prices on application. Grove Terrace and Friars' Haugh Nurseries, Elgin, N.B.

Special Offer. **GEORGE FARNSWORTH** has to offer large quantities of the following:—ASH, Mountain, 2 1/2 to 3 1/2 feet, 10s. per 100; 1 to 4 1/2 feet, 100; BERBERIS AQUIFOLIA, bushy, 1 to 2 feet, 40s. per 1000; 2 to 3 feet, 8s. per 1000.

CHESTNUT, Horse, 7 to 9 feet, 20s. per 100. LIMEs, 2-pr. layers, 20s. transplanted, 3 to 5 feet, 9s. per 100; 6 to 8 feet, 25s. per 100.

LAUREL, Common, 2 to 3 1/2 feet, 9s. per 1000. POPLARS, Balsam, 10 to 7 feet, 8s. per 1000.

Black Italian, 2 1/2 to 3 1/2 feet, 17s. 6d. per 1000; 4 to 5 feet, 20s. per 1000.

RHODODENDRONs, Hybrid and Pontica, mixed, 2-pr. seedling, fine, 5s. per 1000; do. and 2-pr. bedded, 16s. per 1000; extra transplanted, 4 to 1 1/2 feet, 10s. per 1000; 1 1/2 to 3 feet, 20s. per 1000; 2-pr. 1 1/2 to 3 feet, 20s. per 1000.

SYCAMORE, 2 to 3 feet, 20s. per 1000; 3 1/2 to 4 feet, 20s. per 1000. Also other Nursery Stock as per LIST.

Messrs. W. TAIT & Co., Seed and Nursery Establishment, 45, Chapel Street, Dublin.

Roses, Fruit Trees, Evergreens, &c. WILLIAM FLETCHER'S CATALOGUE is now ready, and may be had post-free on application. The Nursery Stock generally is very fine, healthy, and well-rooted. Early orders are respectfully solicited. Ottershaw Nurseries, Chertsey, Surrey.

Special Culture of Fruit Trees and Roses. THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of FRUITS (by THOMAS RIVERS) is now ready; also CATALOGUE of SELECT ROSES. Post-free on application. THOMAS RIVERS and SON, Sawbridgeworth, Herts.

Beautiful Lilies. MR. WILLIAM BULL has received an importation of the following choice Indian Lilies:— LILIU M NEILGHERRENSE.—The white flowers of this magnificent Lily are deliciously fragrant, and of great substance. It bears several flowers on a stem, each flower nearly a foot long. 7s. 6d. and 10s. 6d. each. LILIU M NEILGHERRENSE ROSA.—The exterior of the flower-tubes of this variety is pink, the interior white. 2s. and 3s. 6d. each. LILIU M NEILGHERRENSE FLAVUM.—A handsome light yellow-coloured form of this charming Lily. 10s. 6d. and 15s. each. LILIU M NEILGHERRENSE TUBIFLORUM.—A magnificent pure white Lily, with very long flowers, figured in Wight's Icones Plantarum India Orientalis. 10s. 6d. and 15s. each. LILIU M NEILGHERRENSE TUBIFLORUM LUTEUM.—A very handsome yellow-flowered variety of tubiflorum. 10s. 6d. and 15s. each. And from California splendid flowering bulbs of various choice LILIES, including Glorionium, ocellatum, parviflorum, Humboldtii, pardalium, parvum, and californicum. Also a quantity of CHOICE BULBS of the BECKERS of Calochortis, Lycobotrys, Arabidopsis, Tricorys, Calliparas, Erythronium, Bloomeria, &c.; and some fine flowering Bulbs of the handsome Chinese Iris, including C. australis, L. pretense, caucasicum, tuberosum-rooted Begonias, Fancitium, Amyallus, North American Cyperidium, with a variety of other Bulbs and Tubers. Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

VEITCH'S SELF-PROTECTING AUTUMN BROCCOLI.

JAMES VEITCH & SONS HAVE MUCH PLEASURE IN DIRECTING ATTENTION TO THIS VERY VALUABLE BROCCOLI FOR AUTUMN AND EARLY WINTER USE. This Plant is of robust but upright growth, and the heads, which are beautifully white, firm, and compact, are thoroughly protected by the foliage, and remain a long time fit for use. It will be found extremely valuable as a succession to our Autumn Giant Cauliflower, which has met with so much approval, and is now an established favourite in all gardens.

The Plant is of robust but upright growth, and the heads, which are beautifully white, firm, and compact, are thoroughly protected by the foliage, and remain a long time fit for use. It will be found extremely valuable as a succession to our Autumn Giant Cauliflower, which has met with so much approval, and is now an established favourite in all gardens.

Mr. WESTCOTT, Gr., Raby Castle, writing Nov. 21, says:—"I am now commencing to cut some splendid heads of the new Broccoli you sent me for trial. It is evidently a variety distinct from any one I am acquainted with, and from its splendid protecting habit, short and immensely hard woody stem, I am under the impression it will stand unharmed many degrees warmer water. The plants are of immense strength, and the heads, both in size, texture, and odour, all that can be desired."

Mr. PERKINS, Gr. to Lord Heniker, Thorsham Hall, says:—"It comes in just as the Autumn Giant, and other Cauliflowers are going out, and is, therefore, most invaluable. It is quite distinct, and also wonderfully self-protecting; some rows of it at this place withstood 13° of frost last night, November 21, 1876. Wherever a long succession of Cauliflower is required this must be the one for late use."

Mr. JAMES ADAMSON, Brynkinnell, writing in the "Journal of Horticulture" of January 4, says:—"This variety of Broccoli seems to me to be quite distinct from any other I know, and, like the Autumn Giant Cauliflower, is a grand acquisition to our list of autumn and early winter vegetables. The stem is short and stout, the head well protected, close, and compact, and of excellent size for table use. I cut the first early in November, and am still cutting."

(December 22). We had no frost in November, and while numbers of Autumn Giant Cauliflowers were destroyed, this Broccoli was unharmed. To those who have not grown it this past season I would say—do so next, and you will not be disappointed."

Mr. MCINDOR, The Gardens, Hexton Hall, Gainsborough, December 29, 1876.—"I beg to take this opportunity of congratulating you upon sending out such a splendid acquisition as your Self-protecting Autumn Broccoli, which I am sure to be, for many years. In June last we planted-out 300, which began to be ready for cutting about the middle of November, and from that date until now we have been cutting from six to ten heads daily. Where vegetables are wanted in quantity during November and December, no grower will be safe without this choice Broccoli."

Mr. W. JOHNSON, Bayham Abbey, writing to the "Gardener's Chronicle" of December 20, 1876.—"At this season of the year Cauliflowers are in constant demand, and to find a reliable variety that will fall-in from the middle of November onwards is a great boon to gardeners. In this matter we have Veitch's Self-protecting Autumn Broccoli, a gem of the first water, and I think it requires nothing further from me than to say it is simply unique."

Price 1s. 6d. per Packet.

SEED CATALOGUE now ready, and will be forwarded post-free on application. ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, LONDON, S.W.



JEFFERIES' LITTLE QUEEN COS LETTUCE,

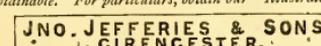
Per Packet, 1s. 6d., Is the Earliest, Best Flavouring and Best Coloured Lettuce in cultivation.

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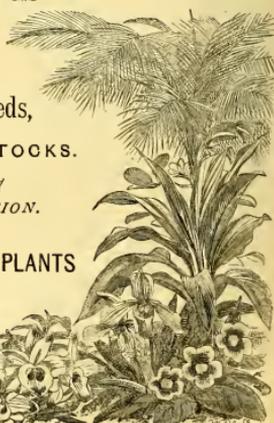
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benefit of the community those physiological principles which he had laboured through life to establish."

Mr. Knight's first paper to the Royal Society was that famous one in which he maintained *inter alia* that the life of a graft or of a cutting was limited like that of the stock from which it was taken, and in that way he accounted for the decay and degeneration of many old varieties. Though this opinion was stated with great ingenuity, and backed up by many facts, yet the balance of evidence has shown that in this particular Knight was in error. Of more practical importance were his researches on crossing fruit trees for the purpose of obtaining new and improved varieties. To Knight has sometimes been attributed the first practice of hybridisation, but this is an error. Camerarius a century and a half a century before Knight had suggested it not practised it, while Kölreuter, forty years before Knight, actually put it into practice. To Knight's labours in 1798 must, however, be attributed the practical realisation of the idea so far as fruit trees are concerned.

Among his other papers, to which we can only cursorily allude, are those curious ones, wherein by sowing seeds on wheels revolving vertically and horizontally, he was enabled to determine that the descent of the radicle into the ground was due to gravity, and to demonstrate the effect of centrifugal force upon seedlings. The rise of the sap, the channels through which it passes, its change in the leaves, the consequent formation of wood, bark, and buds; the growth of roots according to the nature of the soil, and the fact that fibrous roots are not always, as Mirbel and others thought, annual, but only in certain plants—these were among the points which occupied Knight's attention. Knight was no microscopist, indeed in his day the microscope was a rare instrument, and it had not attained to the perfection it now has. Hence it is that many of his notions are no longer tenable, being contradicted by the minute structure of plants, of which he knew comparatively little. Knight's papers on physiological horticulture are, for the most part, based on his scientific investigations, and are indeed the application to practical ends of those researches. His paper before the Horticultural Society in 1804, on the means of producing new and early fruits, is a case in point.

These practical papers are very numerous. They form the mine from which Lindley and other writers on scientific horticulture have borrowed largely, and furnish excellent examples of the kind of research which a horticultural society should promote. We do not cite more of these papers because they are probably well known to many of our readers, and much that Knight taught is now interwoven into the daily practice of horticulture. It may, however, be of interest to add a list of the varieties of the best fruits raised by him.

Apples.—Spring Grove Codling, Downton Lemon Pippin, Herefordshire Gillyflower, Grange Apple, &c.

Pears.—Elton Water, and Black Eggle.

Strawberries.—Elton and Downton.

A large and long-keeping red Currant.

Plants.—Ickworth Impatiens, a large purple Plum not named, and two improved Damsons.

Nectarines.—Impatiens, Ickworth, Downton, and Althrop.

Vegetables.—Monarch, Althrop Crassane, Rouse Level, Winter Crassane, Belmont, and many others.

Many excellent and productive varieties of Potatoes, of which the only one named is the Downton Yam.

The Knight Pea, and improved varieties of Cabbage.

MIMICRY IN FUNGI.

For many years past I have observed a phenomenon in connection with the higher fungi, which had it been observed in the case of animals, would, I have little doubt, been put down under the head of "Protective Resemblance." Quite recently a case was published in the columns of the *Gardeners' Chronicle*, wherein Agaricus fastidiosus, a poisonous fungus (greatly resembling the common Mushroom, but widely separ-

ated by anatomical characters), grew upon a Mushroom bed. During the past week a correspondence of the *Gardeners' Chronicle* has sent a dense mass of fungi from a Mushroom bed to be named. At first sight the plants of which the mass consisted had apparently all the characters of the subgenus Clitocybe, and I was inclined to refer them without doubt to Agaricus dealbatus, because this white-spored plant (which generally grows in Fir plantations) is in the habit of occasionally forsaking its normal place of growth and appearing on Mushroom beds. The Mushroom-bed variety of Agaricus dealbatus is well known, as (when in this position) it always grows in groups, and the caps of the fungi are much lobed and undulated. My surprise, therefore, was great, on examining the spores of the plants, to find them not white but pink; the fungus was not *A. dealbatus*, but *A. oreella*. Both species have exactly the same white, lobed and undulated tops, the same anatomical characters, and the same strong fungoid odour; moreover, both are edible.

In the *Gardeners' Chronicle* for November 16, 1872, p. 1258, I published several instances of a similar mimetic habit in fungi, as—1. Cantharellus carbonarius and Agaricus atratus, two totally different fungi, with strong external resemblances; these commonly grow in company on wood ashes. 2. Agaricus fascicularis, *A. albicola*, and *A. conissans*, diverse fungi, with almost exactly the same coloration and habit, which grow in company on stumps. 3. Agaricus carbonarius and *A. sponmosus*, found on wood ashes, &c.

Every fungologist is acquainted with Agaricus cucumis. It is known in an instant by its strong odour of stinking fish; it grows upon the ground and upon fragments of dead wood, and has red-brown spores. Now I have found a plant with every anatomical character of *A. cucumis*, in exactly the same habit, with the same abortive odour, but with white spores. According to Fries, this colour of the spores makes the plant another species belonging to a different section of Agaricus. Is it so, or is it possible for a brown-spored Agaricus to have a white-spored variety? There are white varieties of several of the larger fungi, and every mycologist will remember the case of *A. cretaceus* which has been placed at various times by different authors in the white, the pink, and the purple-brown spored sections.

Agaricus parilis, a white-spored Agaricus, and *A. popinalis*, a pink-spored species, are distinct, but they have strong external resemblances, and I have frequently found them growing together. I have seen the white-spored Agaricus ostreatus and the pink-spored *A. euosmus* so much alike in general aspect that it was simply impossible to distinguish one from the other without reference to the spore-colour, and the odour has been the same in both. With me they grow on the same trees, and at the same season of the year.

Had I time to refer to my drawings and notes, I could give many other instances of "mimicry" (or what might pass as "mimicry" in fungi, *W. G. Smith*).

NITROGEN AND VEGETATION.

In a lecture by Dr. J. H. Gilbert, delivered at South Kensington, which has recently appeared in these columns, the subject of the agricultural statistics of nitrogen has been very fully treated. The lecturer showed, from the Rothamsted experiments, what quantity of nitrogen is actually found in various agricultural crops grown for many years without any supply of nitrogen in the manure; he discussed the various natural sources of nitrogen which are available to plants; and, finally, he considered the losses of nitrogen which the soil suffers by drainage, and possibly in other ways. It is clear that if our knowledge of the subject were complete, we should be able to account for the increase of nitrogen in a soil and crop at harvest by merely summarising all the gains and losses of nitrogen which had taken place throughout the year. At present, however, so much information is still needed as to the supply and the loss of nitrogen, both in the case of soils and plants, that no such account can be attempted, even in the most favourable circumstances, and therefore especially welcome. We propose to give in the present paper a short account of some recent French investigations of peculiar interest: they were published for the most part after the delivery of the Kensington lecture.

It is a well-known fact that ammonia is one of the

substances which are capable of supplying nitrogen to plants; any farmer is indeed familiar with the potency of ammoniacal manures. It has also been long known that air contains an exceedingly small quantity of ammonia, and that this substance is also found in rain, dew, and all terrestrial waters, including the ocean. Soils also contain very small quantities of ammonia. This wide distribution of ammonia is due to the fact, that both free ammonia, and its carbonate, are gases which diffuse rapidly in the atmosphere, and are thus carried to every part of the globe.

With these general facts chemists have long been acquainted, but the laws which regulate on the one hand the volatilisation of ammonia from water or soil into the air, and on the other its absorption from the air by water and soil, have scarcely been made the subject of study. M. Th. Schönlöb has quite lately treated this subject in a masterly manner in a series of papers read before the French Academy of Sciences. By logical deductions from known facts, and by an extended series of new and ingenious experiments, he has indicated the laws under which the transference of ammonia takes place. The following is an outline of his general conclusions.

When air containing ammonia (or carbonate of ammonia) comes in contact with pure water, the ammonia is absorbed by the water till a point is reached at which the ammonia in the water and air are at the same tension. At this point the ammonia is probably no longer in contact with the water, but the two, both the air and water are then in equilibrium. Did the water contain more ammonia it would yield it to the air; did the air contain more ammonia it would yield it to the water. This equilibrium is at once disturbed by a rise or fall of temperature. If the temperature rises, the tension of the ammonia in the water is increased, and ammonia passes into the air until a new equilibrium is established. If the temperature falls, the contrary takes place, and ammonia is transferred from the air to the water.

M. Schönlöb has constructed an apparatus in which air containing a known proportion of ammonia can be passed through water, and the quantity of ammonia taken up by the water ascertained. He has experimented with pure water and with sea water, using air containing those proportions of ammonia which are actually present in the atmosphere. He has also varied the temperature from near the freezing-point to the highest heat attained by a tropical ocean. By such experiments he has succeeded in reducing to a mathematical expression the laws which regulate the interchange of ammonia between air and water.

These fundamental laws being known, it is now possible to calculate the percentage of ammonia in the rain formed by the cooling of any warm wind of known composition, and to solve by calculation all questions as to the distribution of ammonia between air and water of known temperature. One result of these calculations is to show the impossibility of rain ever completely washing out the gaseous ammonia from the air through which it falls. The whole of the nitrate of ammonium in the air may indeed be removed by rain, as this salt must be assumed to exist as floating particles of dust, but the gaseous ammonia can never be thus abstracted. Indeed rain falling from a colder to a warmer region of the atmosphere must frequently give up ammonia on entering the warmer stratum. Schönlöb has, in fact, observed that the rain is sometimes richer in ammonia after rain. Calculation also shows that the rain successively formed during the cooling of a warm wind will become richer in ammonia as the cooling progresses. This is again consistent with the fact that the rains of winter are sometimes richer in ammonia than those of summer, although in winter the air contains less ammonia than in summer time.

Some of the most important of Schönlöb's conclusions are those drawn from experiments on sea-water. The ammonia in sea-water exists in a diffusible form, and not in the state of fixed salts as supposed by some chemists; sea-water, therefore, readily parts with its ammonia to air when the tension of ammonia in the water is greater than that in the atmosphere. In the tropics, where the surface water is raised to a high temperature, the conditions are most favourable for a transference of ammonia from the ocean to the atmosphere. Schönlöb believes that the principal source of the ammonia of the atmosphere is to be found in tropical regions; here the tension of the ammonia held by water or soil is so much

increased by the high temperature that a far larger proportion of the ammonia must pass into the atmosphere than in colder regions. Once in the atmosphere the ammonia is immediately diffused in all directions, and is carried by winds to all quarters of the globe. In Schöning's determinations of the ammonia present in air, he found much more in southerly winds than in northerly, especially in winter time.

The ammonia of the atmosphere Schöling regards as of primary importance in the nutrition of natural vegetation. That plants are capable of assimilating gaseous ammonia Schöling himself has shown, in confirmation of the earlier results of Sachs and Meyer. The absorption of gaseous ammonia by the leaves of plants is, however, not the only mode in which the ammonia of the atmosphere becomes available for nutrition—ammonia is also absorbed from the atmosphere by soil. The action of the soil is probably more important than that of the living plant. *A. Warrington.*

(To be continued.)

THE GENUS AGAVE.

The illustrations which will accompany the present series of papers are selected from photographs which were made three or four years ago of the principal specimens in the collection of Mr. Wilson Saunders. In selecting these, as well as in planning the *Revisions*, the principal idea of Mr. Saunders was to place on record plates of those plants of which it was not possible to preserve satisfactory specimens in a herbarium. In Agave and its allies this seemed particularly desirable, because there are a very large number of closely-allied forms, of very few of which figures have been published. Accordingly, Mr. Saunders had photographed all the different forms in his collection which were in a sufficiently mature condition to make it worth while to do so. Altogether about sixty forms were thus recorded, and at the same time I made notes upon the specimens. Mr. Saunders has presented to the Kew Herbarium a complete set of the photographs, and it has been thought that many readers of the *Gardener's Chronicle* would feel an interest in having an illustrated account of the genus to refer to. My original idea was simply to print with the figures the descriptions of the plants to which they refer. But now that we have lost General Von Jacobi, who devoted himself to the group with so much enthusiasm and perseverance for a long course of years, it seemed desirable to attempt something more than this, little as I feel myself competent for the task. The naming of these plants has for so long rested in General Jacobi's hands that, as so often happens in similar cases, others have neglected them, and now that it is gone we are in great danger of drifting into a state of utter confusion.

Any one accustomed to determine plants knows how difficult it is to work from descriptions alone, and here we have a very large number of described species, of which there are neither figures nor herbarium specimens to fall back upon. It is greatly to be wished that some one who has the necessary time and opportunity would step forward and take up the matter. In the meantime, while waiting for the appearance of this coming monographer, having, after studying the collection of Mr. Saunders, gone through our own collection at Kew with Jacobi's book in hand, and having studied the very rich series belonging to Mr. T. Peacock at Hammersmith, I propose to take advantage of this opportunity to give a summary descriptive enumeration of all the species with which I am acquainted, treating the matter from the point of view of a general botanist.

For a non-specialist to have his say about them is, perhaps, in the present state of things, the best thing that could happen, for there cannot be any doubt that a large proportion of the so-called species to which names have been given cannot be considered as established on safe grounds. Many rest solely upon notes taken upon one or a very small number of flowerless individuals, and no doubt when they are fully studied in a more or less flowering condition a great many of the 155 named that stand in General Jacobi's list will have to be placed as varieties or mere synonyms. Besides the writings of Professor Karl Koch and General Jacobi—the latter contained in his well-known monograph that came out in the *Hamburg Gartenerziehung* from 1864 to 1867, and two supplements which appeared in the *Abhandlungen der Schlesischen Gesellschaft*—

there is an excellent recent paper on the Agaves found within the limits of the United States by Dr. G. Engelmann in the third volume of the *Transactions of the Academy of Science of St. Louis*. Jacobi's latest catalogue will be found in Regel's *Gartenflora* for the year 1868, at p. 346.

Key to the Genera.—Agave and its three American allies may be distinguished from one another by the following characters, the only other genus that approximates to them being the Australian *Doryanthes* :—

- Perianth forming a distinct tube above the
 - Segments of the perianth oblong-lanceolate, as long as or longer than the lobes or funnel-shaped tubes, becoming much exerted. } AGAVE.
 - Segments of the perianth minute, oblong-lanceolate, persistent, cylindrical. } BRAVIA.
 - Perianth given to the ovary, or very nearly so.
 - Segments of the perianth broad oblong, spreading horizontally. Filaments much swollen and trigonous at the base. } FOURCROIA.
 - Segments of the perianth linear-lanceolate, persistent, entire, or filaments fusiform in the lower half. } BESCHOMBERIA.

Subgenera of Agave, founded on Inflorescence.—The best primary subdivision of the genus Agave is furnished by the inflorescence, in which we have the three following well-marked types, which were defined long ago by Salisbury (*Genera of Plants*, edit. Dr. J. E. Gray, p. 78) as three distinct genera.

Subgenus I. EUAGAVE (Agave, Salisb.).—Flowers in clusters, crowded at the end of branches, which form a broad deltoid candelabrum-like panicle. Examples—*A. americana*, *A. Scolymus*.

Subgenus II. LITTEA.—Flowers in pairs (rarely in threes), arranged in a dense simple cylindrical sub-paniculate panicle. Examples—*A. geminiflora*, *A. filifera*.

Subgenus III. MANFREDA.—Flowers solitary, arranged in a lax simple spike. Examples—*A. virginica*, *A. maculata*.

These correspond to the three sections of Dr. Engelmann, who calls them *Paniculata*, *Geminiflora*, and *Singuliflora*, and as the structure of the perianth is quite uniform in general character in all the three, we certainly cannot properly regard them as divisions of a higher than sectional value. Although I would not rather see these as my primary subdivisions, if it were possible, yet the inflorescence of a large number of the species is not known I shall be obliged to follow Jacobi's plan of adopting a sequence founded upon leaf character. Where I give between the generic and specific name of the plant the word *Euagave*, *Littea*, or *Manfreda* in brackets, it implies, therefore, that the inflorescence is known, and that it conforms to the character of the type as just defined; and where no subgenus is mentioned, it implies that I am not aware that the inflorescence has been noted. The Manfreda inflorescence is restricted to one peculiar type of leaf, but *Littea* cannot be known from *Euagave* by any foliage characters, and both as regards the leaves run through a wide range of variation.

Groups of Agave founded on Leaf-character.—The best groups founded upon leaf-character, which I am able to construct, run as follows, viz. :—

Series I. CORIACEO-CARNOSE.—Texture of the leaf rigid, not fleshy nor yielding to the touch when mature. End spine large, hard and pungent. Teeth usually large and very horny, rarely small, or the edge minutely denticulate or filiferous.

I. Group Filifera.—Edge of the leaf splitting off into distinct threads. Examples—*A. filifera*, *A. schidgeri*.

II. Group Marginalis.—Edge of the leaf furnished all the way down from the top to the bottom with a distinct horny border, of the same texture as the teeth. Examples—*A. lophanta*, *A. univittata*.

III. Group Submarginata.—Edge of the leaf with a distinct horny border as in the last group, but beginning at the top and failing to reach the bottom. Examples—*A. applanata*, *A. Hookeri*.

IV. Group Americana.—Edge of the leaf without any distinct horny border; teeth large. Examples—*A. americana*, *A. potatorum*.

V. Group Rigida.—Edge of the leaf without any distinct horny border; teeth small, but distinct, deltoid. Examples—*A. rigida*, *A. xalapensis*.

VI. Group Striata.—Edge of the leaf without any distinct horny border, and only minutely serrulate. Examples—*A. striata*, *A. dasylirioides*.

Series 2.—CARNOSO-GORICEAE.—Texture of the leaf thick, fleshy, and yielding to the touch when mature. End spine small, scarcely at all pungent. Teeth never large, as is commonly the case in the first series, small but distinct, deltoid, horny at the tip, the edge sometimes filiferous, minutely serrulate or subentire.

VII. Group Geminiflora.—Edge of the leaf splitting off into distinct threads. Example—*A. geminiflora*.

VIII. Group Albidus.—Edge of the leaf furnished with distinct deltoid teeth 1-1/2 inch long. Examples—*A. Celsiana*, *A. Sartorii*.

IX. Group Gasteroides.—Edge of small ensiform leaf minutely serrulate. Examples—*A. virginica*, *A. variegata*. (This is the group with the Manfreda inflorescence.)

X. Group Subtrigifolia.—Edge of the large oblong-spathulate leaf minutely serrulate or subentire. Examples—*A. attenuata*, *A. Elaeagnina*.

Series III. FLEXILES, or YUCODDEAE.—Texture of the leaf thin, firm, flexible, like that of a Yucca. End spine small, slightly pungent. Teeth always distinct, small or moderately large. Only a single group, XI. Examples—*A. vivipara*, *A. yuccifolia*.

Most of these eleven groups contain only few species, the large ones being the second, fourth, and eighth. *J. G. Baker.*

PLEASANCE SMITH.

This lady, who died on the 3d inst., in her tenth year, has claims upon the special memory of our readers. Apart from her great age—which is in this case sufficiently authenticated—Lady Smith, for her own sake and that of her husband, deserves a tribute of respect from all interested in natural history. We call some particulars of her life from the *Times* of the 5th inst., and to them we are enabled, through the kindness of Mr. Kippist, to add some few details :—

"She was born in 1773, two years before the outbreak of the American War, sixteen years before the fall of the Bastille. At the age of twenty-three (1796) she was married to Sir James Edward Smith, who was then a young physician of limited means, but had the courage to purchase on his own responsibility the collections and library of Linnaeus, and thus became the founder and first President of the Linnaean Society. Sir James found in his young wife a helpmate who took the deepest interest in his pursuits, and their house at Norwich became the centre of the literary and scientific society which then distinguished that ancient city. He died in 1828, so that Lady Smith, after thirty-two years of wedlock, lived in widowhood for nearly half a century; for twenty-eight of those years she resided in the house built by her father in the High Street of Lowestoft. She had a constitution without a blemish; she hardly knew what illness was till within the last two or three years; she had preserved almost all her teeth, and her eyesight was good enough to enable her to read reports of speeches in the *Times*; her hearing remained almost unimpaired to the very end. To the time when her eyesight began to fail her handwriting was of that clear and beautiful kind which in these days is seldom seen. Even when her eyes grew dim she continued to write letters to those she loved, and though the lines disclosed the difficulty she had in carrying her pen evenly along the paper, the thoughts and language showed no decay of vigor in her mind. In youth she was extremely handsome, as may be seen from a picture of her as a girl, painted by Opie, soon after her marriage. She preserved many traces of this beauty, and at the age of 100 her animated eyes and fresh colour never failed to call forth the admiration of those who saw her. But what still more caused admiration was the unabated freshness and youthfulness of her sympathies and affections."

The history of Sir James Smith's purchase of the books and collections of Linnaeus, of the chase of the treasure by a Swedish vessel sent to recover it for the Swedish nation, which had allowed so great a prize to become the property of a foreigner—all this is well known to naturalists. What follows is not so well known outside the Linnaean Society, and therefore it is worthy of mention here. Sir James Smith was the founder (1788) and first President of the Society, and the latter at his death became the possessors by purchase of the library and collections of the great Swede. Lady Smith kept up to the last an unabated interest in the prosperity of the Society, and from

time to time corresponded with its officers, and contributed memorials and relics of Linnaeus, as well as of her husband.

Amongst other donations to the Society may be mentioned the correspondence of Sir James Edward Smith, beautifully mounted and arranged, and occupying nineteen quarto volumes, with occasional explanatory notes written in that neat roundhand writing which was characteristic of her even to the last. From these notes and letters in great measure were compiled the published memoirs of Sir James Smith. In order to make the gift the more complete, the officers of the Society requested Lady Smith to favour them with a portrait of herself, to be inserted among these letters; and in complying with this

its surface are representations of the flower and seed-vessels of the plant as well as of the Litchi, the Mangosteen, and other fruits. On another occasion she presented to the Society Toland's *Life of Milton*, which had formerly been the property of Linnaeus, accompanied by a letter which showed, as almost all her letters do, how she retained a cheerful even playfully happy tone of thought and expression into extreme old age. Alluding to the *Life of Milton*, just referred to, she says she gives the book to the Society without apprehension, inasmuch as it is "too small to be an incumbrance, and too valuable not to be welcome."

In May, 1873, Mr. Bentham being then President of the Society, a congratulatory address on the part

are indebted for the privilege of illustrating the species. Dr. Engelmann, the learned monographer of the Cactaceae of the Mexican boundary, has also kindly identified the plant for us so far as the materials before him would allow. The plants are usually simple, but when injured by fire "they branch from the base, and form a pile of prickly balls."² The flowers are greenish, the fruit nearly an inch long, blueish, and of the shape and taste of a Gooseberry. *E. viridescens* is described in the latest revision of the Californian flora (*Botany of California*, vol. i.; *Polypetalae*, by W. H. Brewer and Sereno Watson; *Gamopetalae*, by Asa Gray, 1876, p. 245) quoted below.

TELIPOGON CRESCUS, Robb. f.*

The Telipogons form a wonderfully ethereal genus. They have narrow thin stems with distichous



FIG. 26.—ECHINOCACTUS VIRIDESCENS.

request Lady Smith, in September, 1872, forwarded a photographic copy of the portrait by Opie above alluded to, and which does indeed represent a lady of singular beauty. On the back of this photograph is written by Lady Smith herself this inscription—which is the more interesting as she was then in her hundredth year—"PLEASANCE SMITH, Lowestoff, b. 11 May, 1773, copied from Opie's portrait 1798."

In May, 1869, she presented to the Society a curved rhinoceros horn, accompanied by a note, mentioning the fact that the horn had been sent to Linnaeus from China, and had been described by Sir James E. Smith in his *Exotic Botany*, and which is figured in Lady Smith's *Memoir* of her husband, vol. ii, p. 230. The hollow base of the horn is carved to represent a Lotus (*Nelumbium*) leaf, and on

of the Fellows was sent to Lady Smith on the completion of her hundredth year, and a characteristic letter was received in reply.

It is quite clear, from the statements of those who had the privilege of knowing her personally, as well as from her letters, that the grave has closed over one not more remarkable physically than for the virtues, the graces, and the charms of her mind.

New Garden Plants.

ECHINOCACTUS VIRIDESCENS.*

Some plants of this striking Cactus have lately been introduced by Mr. J. T. Peacock, to whose courtesy we

* *Echinocactus viridescens*, Nut.—Heads solitary (4–7 in diam., 2–3 feet high), globose or depressed, with about thirteen obtuse tuberculated ribs, and a woolly depressed summit; spines

leaves, now crowded together, now distant. The generally ancapitous racemes bear very conspicuous bracts with dorsal keels; and the flowers are

stout, reddish, straight, or recurved, all annulated, about twelve, radiating, and four to six stouter central ones; flowers greenish, 1½ inch long, with numerous (twenty-five or more) rounded, denticulate, imbricated sepals on the ovary, as many on the tube, and about the same number of oblong, obtuse, denticulate petals; stigmas twelve to fifteen, linear; berry pulpy, green, scaly, with numerous small pitted seeds.—For. and Gray, p. 351; Eng. Cact. Mex. Bound, 94, t. 20. The plant is said to be cultivated in Europe as *E. californicus*. Botany of California, p. 245.

Telipogon Crescus.—Ait. T. Hausmanniano, Robb. f.: sepalis triangulis acuminate aristatis intermixtis supra nervium medium extus carinatis; tepalibus cuneato rhomboidis obtusisunguibus dimidio antico basi brevioribus, latis quinque-nerviis; nervis emiliibus nerviulis ascendensibus rete effluensibus; nervis lateraliibus ramulosis; lobello valde transverso, fimbriato antice retusato vix apiculato; nervis tredecim rete nervulorum excepto imagine demumino hinc retusato, columna calva.—Nov. Grammat. det. C. Bruchschiller (deff. amic. Low). Corder and Shuttleworth.—*Telipogon Crescus*, Robb. f. in *Linnaea*, xli, p. 20.

usually very striking. The narrow triangular sepals are totally hidden by the thin, very broad, grand petals, and the lip. Originally two species were discovered by Humboldt and Bonpland; by-and-bye, after a long interval, a few more came. Lately, however, it became necessary to publish no less than twenty-seven species at once. My collection at the present time contains more than half a hundred species, many of them due to Messrs. Wallis, Roehl, Klaboch, Krause, Bruchmüller, and Patin.

These beautiful butterfly-like things—provided we had such creatures with three wings!—have yellow flowers and a short column, now full of violet hairs, now with a fabulous crown of striking forked hairs, now with white sentile hairs, seldom quite naked. The variation of the petals and lip, too, is very great; a considerable number have those organs equal, others unequal; some

from the revolutionary States of Colombia. Amidst these is, I am glad to say, *Telipogon Croesus*, the first flowers of which Mr. Low gave me many years ago. It is one of the best species of the genus, well covered with its flowers a modern German five-shilling piece, yellow, with a dark network. It would be a great success to secure the *Telipogons* in Europe, since they afford some new types. Their cousins, the *Trichoceras*, are rather pretty, and much easier to introduce for their more plump bulbous growth, but their flowers are too small; while the majority of *Telipogons* have much larger flowers. There is no doubt that they would prefer a very cool treatment. Director Linden, who was the first modern traveller who met with *Telipogon*, indicated them as growing in their native country at an elevation of 10,500 and 7840 feet (see Lindley, *Orchidæ Lindeniæ*, p. 23). *H. G. Rehb. f.*

of bright colour. There are scarcely any flowers in the garden, and yet nothing can be more pleasant to the eye than the arrangement, by judicious forethought, of scarcely half-a-dozen species of common trees.

The gardens bear a matured aspect of antiquity, and are of great age. They were planned in 1550, by II. Tribolo, under Cosimo I., and carried out, in the latter half of the sixteenth century, by Baccioanti. Many of the statues are restored antiques, and include four unfinished works by Michael Angelo, said to have been intended for the tomb of Pope Julius II.

Another magnificent garden, or rather park, is in course of completion on the heights of San Miniato, from which a fine view of the city and its surround-



FIG. 27.—VIEW IN THE MAIN ENTRANCE OF THE BOBOLI GARDENS, FLORENCE.

are as thin as the thinnest tracing paper, others have a stronger texture; some have few, others numerous nerves, and these are either quite simple or connected by transverse bars. There are some with many projecting small dots on the side of the nerves.

At present the writer of these lines only knows of a single case of a *Telipogon* having flowered in Europe. It was in 1847, when Messrs. Veitch flowered *Telipogon obovatum*, Lindl. The late A. Bruchmüller, who discovered several new species on the old hunting-grounds of collectors at Ocaña (*Croesus*, *hastatus*, *auratus*, *Alberti*, *Bruchmüller*), made it a point to try to bring the *Telipogons* alive. Sitting on muleback, he had his small cases with his pets before him, but they died when he came to the hot regions. I have now a reasonable hope of our at length seeing the plants alive, since Mr. W. Bull sends me specimens to name, of *Orchids* brought home by Messrs. Carder and Shuttleworth

FLORENTINE GARDENS.

At the back of the Pitti Palace, and immediately adjacent to the botanical garden, are situated the famous Boboli Gardens. From the higher part of them a fine panorama of the city is obtained, enriched by the pleasant foreground of the garden. Grand specimens of *Cupressus pyramidalis* break the beautiful distance and rise out of a charming labyrinth of terraces, pools, fountains, sculpture, and noble walks deeply sheltered by avenues of Oriental Plane, *Quercus Ilex*, and *Laurus nobilis*. The evergreen Oak is the *pivot de résistance* of the garden, here trimmed into wall-like masses enclosing long vistas, again trained overhead into a complete arched shelter from the summer sun, and occasionally rising up as separate individuals above the general level of the sea of leafy verdure. One notable feature is the absence

ings is obtained. It is on a much larger scale than the Cascine or Boboli, though it cannot, for many years, compare with either in their wellworn richness of the planting which age alone can give.

From the limited time at my disposal, I had but little opportunity of examining the indigenous flora of the neighbourhood, so rich in bulbous plants; but through the kindness of my friend, Mr. S. Sommier, I was enabled to obtain several species from their native habitats. Our first visit was to a meadow between the Cascine and railway station, in which on March 2 two forms of *Crocus biflorus*, nearly out of flower, were most abundant in some places, almost wholly replacing the turf. The commonest form was the little striped variety, *Crocus pusillus* of Tenore, intermixed with *estriatus*, a pale lilac unstriped variety with a bright yellow throat. Compared with the "Scotch

Crocus" of British gardens, which Dean Herbert supposed was derived from it, is a woody little plant, and on looking through Gussone's herbarium at Naples I was fortunate in finding a specimen from a native habitat on the road between Ariano and Monte Calvello, near Salerno, labelled *pasillus* var. b. Tenore, precisely identical with our garden plant; so that there is little doubt that the Scotch Crocus was derived from South Italy. Interminably with the Crocuses at the Casine was *Colchicum Leveii*, apparently of smaller habit than C. autumnale, but its flower is unknown to me.

On March 3 Mr. Sommer accompanied me on a pleasant excursion to the north-west of the city. Passing out of Florence by the Via Bolonnesa we visited the Villa Herzen, the grounds surrounding which are interesting to the botanist as the habitat of various bulbous plants. In the terraced Olive gardens and vineyards both the white and blue varieties of *Hyacinthus orientalis* occur in great profusion. There are also five or six species of Narcissi, including Bertolonii, Tazetta, odorus, italicus, papyraceus, and a species allied to *papyraceus* of shorter and more robust habit and rather larger flowers, bulbs of which I obtained through the courtesy of Dr. Herzen. *Gagea arvensis* is an abundant and attractive little plant in the fields surrounding Florence; and *Narcissus crassus*, a species separated by Professor Parlatores from N. Tazetta, occurs on the south side of the city.

From the Villa Herzen we ascended to the village of Pratolino, passing en route the grounds of Prince Demidoff, who is one of the most successful cultivators of stove plants in Italy.

In a wood about half a mile beyond the village of Pratolino the lowland form of *Crocus vernas* occurs in the greatest profusion, including an endless series of varieties from pure white to deep purple, corresponding with nearly every variety produced by the Dutch cultivators. Scarcely two individuals were precisely alike, and seminal variation must be a constant character of the species. The ground was covered with dead matting of dead thick leaves, and through seven or eight thick masses the flowers had penetrated without the slightest displacement or deviation. The leaves of the late winter's fall were tough, and as yet undecayed, and it seems difficult to believe that the penetrating force of the delicate flowers is merely mechanical. Mr. Sommer informs me that a much larger form of *Crocus vernas* is found at higher elevations about Florence, and specimens sent me by Mr. Groves of Florence, from Monte Marone, in the Abruzzo, obtained at an elevation of 6000 feet, are larger than the Pratolino form. A parallel variation in size occurs in the case of *Crocus minimus* in Corsica, the typical small form being restricted to low elevations, whilst on the mountain tops, from 2500 feet up to 6000 feet, it attains the size of *Crocus versicolor*. *Geo. Murray, F. L. S.*

Florists' Flowers.

"THE AUBICULAS are delightfully on the move," wrote a well-known cultivator a few days ago. This was the experience of a northern locality; here in the South they also commenced to move days ago. A revived root-action is taking place, and the manifests itself in an awakening of the growth. It is the occasion when the Auricula cultivator braces himself to action, when for his plants now need all his care and attention. One important duty required at his hands is that of top-dressing the plants. This is of great value to them, for during the autumn and winter the roots fill up the body and bottom of the pot. When they commence to root in spring they are put forth from the stem of the plant just beneath the soil, and they are at work near the surface; hence the necessity, therefore, for a supply of good rich soil for these roots to feed upon, for they are the main feeders during spring. Without good roots actively at work among the soil, it is useless to look for finely marked pips of excellent quality. Some cultivators do something else than top-dress their plants: they also make a point of giving them freshly cleaned quarters. The plants are taken out of the frame on a fine day, and carried into a summer-house or any place of temporary security; and then the interior of the frame is carefully cleaned and brushed. In the case of an old-fashioned garden frame, in which the plants are stood on an ash or gravelled bottom, it is customary to stir

up the surface and take some of it away, and add a fresh covering of sand, coal-ashes, &c. Mr. John Hepworth, of Haddersfield, a well-known amateur cultivator of the Auricula, prefers to make his bottom of clean washed sand from the road, with which is mixed a quantity of fresh slaked quicklime. Next comes the cleansing of the plants. The process can scarcely be better expressed than in Mr. Hepworth's own words, as given in the *Florist and Poinsettist*. "After clearing the frames," he states, "I commence to clean the plants. Having first obtained a small threepeny painter's brush, I take the pots one by one, give the plants a good brushing all over the leaves, also underneath, and round the bole of the plant." This is very necessary, for during the prevailing mild weather green-fly congregates quickly about the hearts of the plants, especially on plants kept in rather close quarters. This done, then follows the process of top-dressing. Mr. Hepworth well describes this act in plain and simple terms. "I take a wooden skewer, run it round inside the rim of the pot to the depth of an inch or so, then turn the pot on one side, just giving it a slight tip, so that the water hanging on the inside has fallen off, and having at my hand some fresh well-sweetened mould, not over old, as some folks mention, I fill up the pot with a small tin scoop to its usual depth of about half an inch from the rim—not too full up to the leaves of the plants, but leaving the bole of the plants slightly visible. This done, the pots are placed in their usual place in the frame, laying a mat or two temporarily over the lights at night till I have gone through the entire collection. Then, having got them in the frames, I put on the lights, and keep them on for a fortnight or so, tilting them slightly at the back, but allowing the plants no rains or artificial watering during the fortnight." The soil used for top-dressing is generally one with some unctuous food in it for the young rootlets. That generally employed is one part good heavy loam, one of leaf-mould, and the remaining two parts well-decomposed cow or sheep manure. The application of water carries the fertilizing properties on the surface soil down to the large root-feeders below, and they do derive benefit from the dressing. *R. D.*

Forestry.

THE difficulties of growing GAME COVERT are in most districts very considerable, owing to the circumstance that what should constitute shelter, protection, and food for one class of game, is eaten, destroyed, and rejected by others. The rearing of covert for pheasants alone, for example, is cheaply and easily accomplished; but when the threefold object of growing plants productive of food for birds, and shelter and protection for winged and ground game is to be attained, the work is difficult, and often impossible, not to speak of the expense and tediousness of the operation. When to the ordinary difficulties and obstacles of growing game covert in inland and favourable districts we add those arising from a maritime severe exposure, it taxes the most experienced and skilful forester severely to know how best to attain it. After many abortive efforts under the latter adverse circumstances I have at last partially succeeded under the following practice.

Thorough drainage, by whatever means, is an essential condition; for although we hear much about certain trees and shrubs that luxuriate on wet soils, observation and experience very clearly demonstrate that no arborescences will succeed, and endure for any length of time, in soils other than dry. The numerous kinds of Willow, the Alder, American hazel, or Bield, Cherry Spirea, with wild Briar, and common Bramble, all grow more or less successfully upon comparatively wet ground, but it must not on that account be concluded that they either prefer such, or that they will not thrive better upon good dry soil. Willow and Alder are frequently consigned to cold wet bogs and marshes, but that is simply because in such situations most other trees refuse to grow at all, and the former at best, under such circumstances, are but short-lived and unsightly, unmistakably indicating that they also prefer dry to wet soils.

In planting game covert within the influence of the sea, other matters than those for inland planting have to be considered, which the following examples will illustrate. On a bank sloping towards the open

German Ocean, soil dry and of good quality, well adapted for the growth of most hardy evergreens commonly planted for game covert, and which was desired to be grown on the site for that purpose, especially to afford protection during winter, it was evident that no evergreen would stand the winter in such an exposure, and it was chiefly winter covert that was required. What was to be done? Deciduous plants would grow, but they would not produce winter covert. Evergreens would grow to some extent in summer, but they would not stand the winter. On seeing a young Beech tree with its scathed leaves adhering tenaciously, I concluded such might, in some measure at least, meet the requirements of the case, and I forthwith proceeded to plant it closely and extensively, and with very satisfactory results. The Beech, as is generally known, retains its leaves throughout the winter, so long at least as it is low and bushy, as in hedges clipped or pruned; and in this state the leaves, though dry and withered, afford comparatively good protection to game, the best at least that can be produced under such a combination of adverse circumstances.

The scrubbe Oak, and the common Oak, when the latter is of low height, like the Beech, retain their leaves during winter, and only defoliate when the buds begin to expand in spring. Unlike the Beech, however, the former is expensive, and the latter more choice of soil, while neither of them branch and spread out so well as the Beech. The common Bramble to some extent fulfils the requirements of such situations by partially retaining its foliage, but it requires better soil than the Beech to grow luxuriantly.

The Dahpne and Berberis make excellent under-covert, as they both spread and rise to a fair height. They also produce berries which pheasants are very partial to.

The common Privet is again a well-known favourite covert for game, and will succeed upon any dry soil, even under the shade of deciduous trees. Neither of the three latter, however, will endure severe maritime exposure, and hence should not be relied upon for that purpose.

The Sea Buckthorn is an excellent plant for seaside planting, and none endures the salt spray better. As it defoliates in winter, however, it is on that account less suitable than Beech.

The common Elder, where the soil is good, grows well at the very margin of the sea, and though rendered leafless several times during the summer months, will yet shoot forth anew, and overcome its privations. *C. Y. Michx, Callen Itous, Callen, Farnham 30.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—Allamandas not yet started into growth should be got to work at once, cutting them well back, soaking their balls, getting away half of the old soil, and re-potting in new, which make quite soil, and at the same time putting them on their heels, by doing which now before they begin to grow the danger of breaking the young shoots in the operation is done away with. *Clerodendron Thompsoni* and *Balfourianum*, that are still at rest, ought to be started now, and at the same time put on their heels, and train them on the trellises they are to bloom upon. *Caladiums*, too, should be started: the amount of pot-room given them will of course be regulated by the size the plants are intended to grow to. If desired big they must not be staked in the size of their pots; whereas if they are wanted small, say, in 6 or 8-inch pots, the bulbs can be divided, not having the pieces too big in this case. As a decorative plant for conservatory use the small-leaved *C. argyrites* is very serviceable; for this purpose it should not be grown too hot, and if they are wanted small, say, in 6 or 8-inch pots, the bulbs can be divided, not having the pieces too big in this case. As a decorative plant for conservatory use the small-leaved *C. argyrites* is very serviceable; for this purpose it should not be grown too hot, and if they are wanted small, say, in 6 or 8-inch pots, the bulbs can be divided, not having the pieces too big in this case. As a decorative plant for conservatory use the small-leaved *C. argyrites* is very serviceable; for this purpose it should not be grown too hot, and if they are wanted small, say, in 6 or 8-inch pots, the bulbs can be divided, not having the pieces too big in this case. 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THE
Gardeners' Chronicle.

SATURDAY, FEBRUARY 10, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Feb. 12	12	Sale of Lilium auratum from Japan at Stevens' Rooms.
TUESDAY, Feb. 13	13	Royal Horticultural Society: Annual General Meeting, at 2 P.M. ; Royal Agricultural Society: Meeting of Field and Rural Committees, at 11 A.M. ; Scientific Committee, at 4 P.M. ; Sale of Orchids, Fowers, Bulbs, &c., at Stevens' Rooms. Meeting at 8 P.M.
WEDNESDAY, Feb. 14	14	Liverpool Horticultural Society: Meeting at 8 P.M. ; Sale of Orchids at Stevens' Rooms.
THURSDAY, Feb. 15	15	Sale of Conifers, Fruit Trees, Roses, &c., at Stevens' Rooms.

THE apprehensions felt by many at the recent utterances of the Council of the ROYAL HORTICULTURAL SOCIETY in the *Times* will, it is to be hoped, be allayed at the forthcoming ANNUAL MEETING. If not, we can but look upon the change of policy hinted at as altogether retrograde—nay, absolutely suicidal, and almost a justification of those who would seek to found a new Society. What has been the general outcome of all the meetings, stormy and peaceable, the discussions, the letters, the varied expression of opinions during the last few years? What but this, that the Royal Horticultural Society must revert to first principles, be a horticultural society in fullest reality, not half real, half sham, as now? We are weary of reiterating the proper scope and duties of a horticultural society. The right key-note has been struck again and again, in the Council-room, and out of it, by some whose voices are now quiet in the grave, as by others happily still among us, even by members of the existing Council.

But, we are told that the debenture-holders and the Commissioners between them play the part of PHARAOH, and refuse to let the horticulturists go, and that, under these circumstances, we are to make the best of a bad bargain—grin and bear it—eat our Leck, and do other unpalatable things. What the best of a bad bargain in the opinion of the Council is, is shown in the following extract sent us some time since for publication; this we had not the heart to print then, but now, in view of the approaching annual meeting, we must do, though with bitter humiliation:—

"4. The Council have determined to continue the South Kensington Gardens on their former footing, and to make them as attractive to the residents in their neighbourhood and of London generally as the means and nature of the Society will permit.

"5. If the subscription income of the Society for next year be raised to £10,000, the South Kensington Gardens will be secured to it certainly until 1892, to the great advantage of the residents and owners of property in their neighbourhood. If such income be not raised, these gardens will pass into the possession of the lessors, and probably be built over.

"6. To place the Society in a more prosperous and secure position than it has ever occupied nothing more is wanting than, for the present year, a renewal of a part only of the subscriptions which have recently been discontinued, and for the coming year an effort which wealthy South Kensington would scarcely fad, and which will raise the £20,000 above referred to.

"7. The Council are trying, so far as their funds will allow them, to meet the wishes of their London Fellows. The principal western entrance has been reopened; the gardens, which have suffered nothing that a few days' labour will not repair, are being put in order; and the bands and promenades in the conservatory will be resumed on an early date."

The horticultural expenses have been reduced to a minimum. Such men as BERKELEY, DYER, HEMSLEY, and others have been with scant ceremony dismissed from their offices, on account of insufficient funds; even the salary of the librarian has been cut off. The work at Chiswick has been reduced to a point lower than which it can hardly go. We have

acquiesced in all this because we were told it was essential; we assented to it because we saw the Council bravely struggling to pay its debts; nay, we are told, and no doubt truly, that there are now no obligations whatever save the lien of the debenture-holders, and that is looked on as a debt and not a debt! We witnessed with the greatest pleasure the paying up of prize-money, and the distribution of the long-overdue medals. We saw a general desire to conciliate the horticulturists, and to do, so far as extremely crippled means would permit, good horticultural work. On these grounds we assented to the economising policy of the Council, though it was often painful and grieved to us to have to do it. But now what reward are the horticulturists—those self-sacrificing horticulturists who have kept what little life there has been in the Society for the last few years—to have for all this? Doubtless an extension of true horticultural work—something towards the reorganisation and reconstruction of the Society on a proper footing. But no; will it be believed that the "gardens are to be continued on their former footing"? Bands and promenades, and all the worn-out machinery that have proved the downfall of the Society, are to be restored. Does not every one know that it is the South Kensington Garden upon which the Society has absolutely thrown away £73,000, which has been the main cause, if not the only one, of all the Society's troubles?—and yet it is to be reinstated as before, if means permit. If this were only intended as a temporary measure, no objection could be made to it, but the gardens are to be kept till 1892 if—oh, the force of that little if!—if the income can be raised to £10,000. Most earnestly do we wish it may not be, if such is to be the result.

At any rate, in place of expanding the basis of the Society, making it national and popular, searching the gardens of the country for new Fellows at a low subscription, instituting local committees and local secretaries all over the country, encouraging local societies, teaching gardeners of all degrees by precept and example, striving to create a general interest in gardening, and to do good to peer and peasant in every accessible corner where a flower can blossom, a fruit tree grow—in place of all this, we are to go on piping and fiddling to the South Kensington audience, who neither understand our work, nor care for our play. It may be said, and with truth, that hitherto the horticulturists have not of themselves been able to maintain their own society. But why? Mainly because the Society has neglected its proper work to provide a recreation ground for the inhabitants of wealthy Kensington, and has taken no pains to do good to the people and the country at large. And, on the other hand, what have the South Kensington residents done for the Society? Have they enabled the Society to pay its way, to keep up the gardens? Have they done the horticultural work of the Society, made its exhibitions, served on its committees? Have they even had the grace to come and look on with a smile of approval? Not a bit of it. They have not done any one of these things. Had it been otherwise it might have been prudent, nay just, to consider their interests, but, like rats, they have left what they thought a sinking ship. If they come back they will be as useless to a horticultural society as before, for it has been proved that they will not come in numbers sufficient to make the gardens pay their own expenses. They have no sympathy with the objects of the Society, so that even if they did come forward in their thousands we should still cry, warned by past experience, *non tali auxilio nec defensoribus istis*.

But it may be this is all a jest on the part of

the Council, to be explained on Tuesday next—that their utterances are meant to be taken in a non-natural sense, as some persons are said to interpret the Thirty-nine Articles; or in a Pickwickian sense—any sense but what seems to be the right one. If this be the real interpretation we may perhaps admit that "It was right to dissemble your love," but ask, "Why did you kick us downstairs?"

— THE judges in the Horticultural Department of the Philadelphia International Exhibition, 1876, recommended to the United States Centennial Commission for awards a "very choice collection of new and rare plants, well grown and in excellent condition after transportation of such delicate articles—an exceedingly creditable display," exhibited by Mr. B. S. WILLIAMS; also "a small collection of Filmy and other Ferns," exhibited by the same gentleman; "a very rare collection of Rhododendrons, Hollies, new and rare Conifers, broad-leaved evergreens of the best kinds for lawn decoration," exhibited by Messrs. JAS. VEITCH & SONS, Chelsea; also "an exhibit of evergreen plants, consisting of the best varieties of Rhododendrons, Hollier, Aucubas, &c., for fine growth and careful training, and unique in new kinds," shown by the same firm. A medal was also awarded to Mr. W. BULL for "coloured plates of flowers." The judges were:—DR. GEORGE THURBER, Messrs. W. D. BRACKENRIDGE, F. PENTLAND, and W. SAUNDERS.

— We are requested to state that the SCHEDULE OF PRIZES FOR THE AURICULA SHOW to be held on April 24, at the Crystal Palace, as a Southern offshoot of the National Auricula Society, will be ready for issue in the course of a few days, and may be obtained from Mr. E. S. DODWELL, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W. The subscriptions, which amount to nearly £70, will be nearly sufficient to admit of a liberal prize list being issued, and to meet the incidental expenses. The classes seem to be framed to suit growers of every grade, so that if the competition is at all what may be expected the show will be a most interesting one for the lovers of the Auricula, much more so than any which has taken place in the South of England during the present generation at least. It has been decided to adopt as few restrictions and limitations as possible, in order to secure greater breadth of and variety in the several classes. The chief of these adopted are:—To require *disjunct* varieties in classes containing two or more plants; to permit only one truss in Auriculas, but not to limit the trusses in the classes of alpinas; to admit shaded and unshaded varieties amongst these latter; and not to confine Polyanthes to the gold-laced types. In every class it is desired that the best should win, and so that the leading properties are not violated no rigid or fast rules beyond those indicated above will be observed. The premier class will be that for twelve *disjunct* varieties—and here it may be pointed out, for the consolation of our Northern friends, who generally adopt very rigid rules in these matters, that although the committee does not in this case limit the exhibitors to show an equal number of the four usual types—green, grey, and white-edged and self—or even representatives of each, yet those who best illustrate these several types will assuredly come nearest to the only essential limitation, that of *disjunct* varieties. The success of this attempt to organise an Auricula show in London shows that the taste has not altogether died out, and that it is possible, if set about in a right manner, and by the right men, to obtain the support of the growers and admirers of a particular flower, in an honest attempt made to advance the interests of floriculture through any of its many channels.

— The whole of Mr. LANTON's valuable stock of seedling and other Pelargoniums, including Vesta and Mrs. Trevor Clarke, which have been awarded First-class Certificates by the Floral Committee of the Royal Horticultural Society, has passed into the hands of Mr. R. GILBERT, of Burghley. The stock of named and unnamed seedling Roses, grown by Mr. LANTON, has been acquired by Mr. TURNER, of Slough; and Messrs. VEITCH & SONS have secured all his seedling Peas, including five Certificated varieties, and all the seedling Strawberries, including Pioneer.

— The continuous rainfall has so saddened the ground that those among *GLADIOLUS* cultivators who are in the habit of planting in February will, unless a quick drying time soon happens, have to postpone the operation beyond the usual time. The bulbs will remain plump and fresh till April if properly preserved during winter. They require to be kept dry and cool—dry enough to keep them from being affected with mildew and rot, and cool enough to prevent a premature growth and shrivelling up. In the warmer and milder districts of England planting may be safely commenced in February in well prepared ground, but in the North, where it is bleak and cold, it is

dener and an enthusiastic total abstainer of a special prize in cash, conditionally that the beer special prizes were refused, has been accepted, and this year at least the society's schedule will be purged of any association with the beer-barrel.

— The unusual mildness of the winter has already made *TURNIP TOPS* almost a drug in the market, the general abundance of this homely vegetable having been added to by the drought last summer, in consequence of which comparatively few of the summer sowings came up sufficiently early to produce good market roots. There has indeed been an abundance

experience is that a large number of plants, whose ordinary flowering season is in March or April, are already in flower, though, it should be stated, in many cases imperfectly. During the whole of December, and the greater part of November, the mean temperature was considerably above the average; and although we have experienced a few sharp frosts, they have only exercised a retarding influence. During the first week in January the mean temperature was (at Blackheath) 10° above the average for the last six years, namely, $46^{\circ}.8$; during the second week, $41^{\circ}.9$, or $5^{\circ}.6$ above the average; during the third week, $45^{\circ}.5$, or $8^{\circ}.7$ above the average; and during the



THOMAS ANDREW KNIGHT. (SEE P. 169.)

best to defer the operation till the end of March or beginning of April. In the latter case the bulbs cannot be too carefully preserved. In the case of extra choice varieties, it would be a wise precaution to pot the bulbs now, and transplant them to the open ground in April. A good many cultivators in the North make an annual practice of this, and find they gain considerably in doing so.

— Some time since a correspondent criticised the conduct of the committee of a large horticultural society in the South of England because *SPECIAL PRIZES* in the shape of casks of beer were admitted into the society's schedule. The expression of opinion brought to bear on the committee would seem to have borne good fruit, as the offer by a well-known gar-

den of green stuff of all kinds available for the season, Spinach also having been very abundant, not the least check so far having been given to its growth. The pinch for green stuff will probably come presently, for the Broccolis, whether purple or white, are neither large nor plentiful, drought and chub having proved enemies of potent strength at and after planting. If the open mild weather should long continue, all kinds of green tops will soon be running off to flower, thus considerably shortening the green crop season.

— The accounts from different parts respecting the *EFFECTS OF THE MILD WEATHER*—disregarding the rainfall—on vegetation vary very widely. Some correspondents assert that they find very few things in advance of their usual state at this period; our

fourth week, $39^{\circ}.4$, or $1^{\circ}.7$ above the average. With the exception of the last week the mean temperature was as high as the average mean temperature for the same weeks at Nice, Toulon, and Marseilles. To the absence of sun-light may be ascribed the relatively slight stimulation plants have received. But a couple of hours in Kew Gardens on the 5th of the present month gave us some insight into the number of hardy things in advance of their normal season. The following, among others, were noted, and doubtless many others escaped notice. Of course, a certain proportion of them are flowering at the usual period. Several common things are omitted. First among trees and shrubs there were in flower, or bursting into flower, *Amygdalus communis*, *Berberis nepalensis*, *japonica*, *Darwinia*, and *fasciculata*; *Cor-*

cus paniculata and *Mos. Chimonanthus fragrans*, *Noyalus* (4 flowers), *Coronilla glaucan*, *Erica codonodes* and *carnea*, *Kerria japonica* (single-flowered), *Lonicera Standishii* and *fragrantissima*, *Nuttallia cerasiformis*, *Oreodaphne californica*, *Prunus cerasifera*, *Pyrus japonica*, *Shepherdia argentea*, and *Yucca gloriosa*, the spikes of many of which were injured beyond recovery. Among herbaceous subjects the most noteworthy were *Iris stylosa*, *Saxifraga ligulata*, *Iberis Garreuxiana* and *semperflorens*, *Alyssum saxatile*, various species of *Crocus* and *Helleborus*, *Eranthis byemalis*, *Viola fibroides* alba, *Viola*, *Daisies*, *Wall-flowers*, &c. A few of the foregoing plants deserve a word of commendation, whilst others are so commonly seen and known that they recommend themselves. *Berberis nepalensis* is a grand subject in light soils and sheltered situations, as also its close ally, *B. japonica*; *Erica codonodes* is a fine hardy Heath, normally in bloom this month and last. The single-flowered *Kerria* against an east wall is a mass of blossom, finely shown off by the beautiful green of its foliage. Must people would prefer it to the double-flowered variety. *Nuttallia cerasiformis* is a roseaceous shrub or small tree with the aspect of a white-flowered *Ribes*, and equally as profuse a bloomer as *R. californicum*. *Oreodaphne californica* is a handsome evergreen Lauraceous tree, which has frequently been mentioned in the columns of this journal. Of the less familiar herbaceous plants noted above, *Iris stylosa* and *Helleborus caucasicus* are specially worthy of consideration. Finally, the old *Saxifraga ligulata* is a fine sturdy plant, very ornamental both in foliage and flowers. Another thing that attracted our attention was the bed in the herbaceous ground containing some nine or ten species of *Ferula*, the leaves of which were already in an advanced stage of development, and among the most beautiful objects to be found in leaf early in the year.

— The annual GRAND FLORAL FÊTE AT YORK is announced to be held on June 13, 14, and 15.

— A correspondent informs us that he has received from a publisher in Belgium a copy of a small book (which he had given no order for), accompanied by a post-card requesting that thirty stamps might be sent in return for it. Our correspondent thinks this is a good plan to adopt to sell works which are not in demand, but as he objects to being victimised himself, he would equally reject to hear of others being so treated, and recommends his *confères* in the trade not to pay.

— The next INTERNATIONAL POTATO SHOW will be held in the gardens of the Royal Horticultural Society, and probably the Council will add to the prize list a set of medals. The date is not yet fixed, but we understand the promoters contemplate holding the show somewhat earlier than hitherto.

— In large ORCHID HOUSES great difficulty is frequently experienced in keeping up a sufficient supply of ATMOSPHERIC MOISTURE during the growing season, and especially in this case in those established in which it is necessary to keep the paths sufficiently dry to be walked on with comfort. In some houses the paths are covered down the centre with ornamental iron gratings, and we have seen them covered with cocoa-nut matting, but both of these plans are somewhat expensive, and we do not think either so effective as a plan adopted by Mr. J. T. PEACOCK in one of his structures at Sudbury House, Hammersmith, and which simply consists in paving the floors with the small, square, bevel-edged blue bricks used in stables, which floors, while containing an innumerable number of channels for the holding of water, are still sufficiently dry to be walked upon with comfort by any lady or gentleman.

— M. CH. JOLY, of Paris, has issued a pamphlet on the Sewage Question—*La Question des Eaux usées*—in which he adopts for the most part the conclusions which have been arrived at by the Rivers Pollution Commissioners of this country.

— The explanation of the fall of the leaf in autumn is found in most text-books, and has frequently formed the subject of comment in these pages. But the converse question, WHY THE LEAVES OF SO-CALLED EVERGREENS DO NOT FALL, is one not so often

asked. M. MER, who has lately been investigating the matter, reports in a recent number of the *Bulletin de la Société Botanique de France*, that the reason for their retention may be found in the absence or imperfect development of the dividing layer, as in some bulbous plants, and which is one cause of the fall of deciduous leaves, and in the large number of fibrovascular bundles, which serve to tie the leaf to the branch.

— MM. DETHÉRAIN and VESQUE have been experimenting on the RESTRACTION OF ROOTS, with the general results that root-adsorb oxygen gas and emit carbonic acid gas (true respiration); and that oxygen is necessary to the roots, which must have access to that element or the plant will suffer even if the leaves be exposed to the air. A small quantity of carbonic acid is given off by the roots.

— A report and balance-sheet of the HAILSTORM RELIEF FUND have been published, from which it appears that the total amount raised for the relief of the sufferers in the neighbourhood of Tottenham was £779 18s. 7d., of which £699 15s. 8d. was distributed among forty-one persons in sums varying from £111 4s. 10d., the highest, to £1 7s. 8d., the lowest. The total amount asked for by those who suffered damage was upwards of £2000, but the assessment committee carefully investigated each case, and acted accordingly.

— As a mark of respect and friendship for Mr. JOHN LEE, who has lately retired from business, several of his friends have invited him to a complimentary dinner at the Horticultural Club, on Thursday, February 15 next.

— The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, February 12, when a paper will be read by Mr. G. J. SYMONS, entitled "Rainfall, and its Relation to Civilised Life." The chair to be taken at 8 o'clock.

— The January number of the *Nuovo Giornale Botanico Italiano* contains, among other articles, one on a variety of *Calystegia sylvatica*, with a deeply five-lobed corolla; another on galls produced on the leaves of Vines by a species of *Phytomyza*; another on a similar subject, but wherein the malady is caused by a fungus, *Antroscium*. Signor BECCARI contributes two interesting papers on the development of *Gnetum*, and on the structure of that very curious plant *Cardiopteris*, which he refers to the neighbourhood of *Convolvulaceæ*.

— What effect have the FROSTS OF WINTER ON EVERGREEN LEAVES? This is the question which M. MER has been striving to answer, and from his paper in the *Bulletin de la Société Botanique de France* we gather that in some cases, as in Ivy, the leaves may rely on the reserve stores accumulated in the stem without themselves assimilating any food from the air. In other cases they form starch in their tissues, and if this be not always readily found the explanation is to be sought in the circumstance that it is transferred to the store cells in the stem as soon as formed. M. MER'S paper must be read in detail. We can merely add that he divides the tissues of the leaf into two groups, the office of the one being to assimilate, that of the other to store the food formed by the former.

— Mr. R. SPINKS, late foreman to Mr. DICK, at Canford Manor, Dorset, has been appointed head gardener to W. F. CHILDE, Esq., Kinlet Hall, Shropshire.

— A very useful illustration of the ease with which it is possible to decorate the FORECOURT GARDENS OF COTTAGES by means of a few simple, unpretentious flowers, recently came under our notice. The cottage was one of a row, and of the humblest kind, and was tenanted by a labouring man. There was no attempt at arrangement or the production of effect, the whole was merely kept neat, and nothing more. There was, however, in bloom a fine plant of the Christmas Rose, a few bunches of the winter Aconite, several single Primrose of various hues of colour, double white and red Daisies, some common Pansies, bunches of Snowdrops just peeping up, and patches of *Myosotis disitillator* bursting into bloom. In addition were *Polyanthus*, *Arabis*, yellow *Aly-*

sum, *Daffodils*, and several other kinds of early spring flowers—enough during their season to make this little garden look very gay and pleasing. Had not this little floral display been somewhat singular, it would scarcely have been so suggestive, but the common culture of early hardy flowers in cottage gardens does not appear to be by any means so frequent as could be desired. Perhaps some of this negligence on the part of the cottager is due to the comparative discouragement given of late years to the cultivation of hardy plants by the gardens of the rich, the more showy but hardly more beautiful summer bedding stuff having considerably elbowed the hardy plants out of favour. Societies established to promote a love for horticulture amongst cottagers might do much practical good by distributing amongst them large quantities of the simpler hardy spring flowers.

— Mr. W. B. FREEMAN, of the Model Farm, Shilling (Assam), has published a brief manual on Potato cultivation. The pamphlet is intended for translation for the benefit of the natives, and is, therefore, as clear and simple as possible. The Potato disease proper does not appear to be troublesome in the Khasia hills, in spite of the large rainfall to which they are subjected.

— From a note in the last monthly Report of the American Department of Agriculture we gather that in 1876 the RAISIN GROWERS OF CALIFORNIA about trebled their product of the previous year, the receipts at San Francisco by the close of the year would probably reach 60,000 boxes, against 18,000 or 20,000 last year. It is stated that one vineyard dried 240 tons of Grapes, producing 80 tons of raisins. The dry summers of California, and the regular and limited period of her annual rainfall, give special facilities for drying in the sun. Grapes dried in this way produce much finer raisins than those dried by artificial heat. The Grape growers of California also exhibit great ingenuity in shielding their Grapes against occasional and unexpected showers; frames are provided for the spreading of the fruit, and are arranged for convenient handling and packing, so that all the grapes may be successively exposed to the sun. On the approach of rain the frames are specially placed under cover, and when dry weather reappears are again spread out.

— THE WEST OF ENGLAND ROSE SHOW will take place at Hereford on Friday, July 6, not Thursday, as recently announced in our advertising columns.

— Professor M'NAB has contributed a valuable paper to the Royal Irish Academy on the anatomical characters serving to distinguish the species of *ABELIS*. The paper is the result of the microscopical examination of many thousands of sections of the leaves. For the most part, Dr. M'NAB'S conclusions agree with those of M. BERTRAND, though there are occasional discrepancies. Throughout Dr. M'NAB has profited by the experience and practical knowledge of his father. The characters of the shoots, buds, and foliage are given, together with the anatomical characters presented by the latter. The confusion in the nomenclature of some of these plants is so great, that cultivators would gladly avail themselves of any ready means to distinguish the several forms.

— Towards the close of last year a DIGGING MACHINE, patented by Mr. KNIGHT two or three years ago, was tried on Mr. CHAMBERS' farm at Langley, Kent. The work was thought by several practical farmers present to be fairly well done, and what disapprobation was expressed referred principally to the amount of tackle required, and to minor details, which in all probability will be altered. Another digging machine was patented last August, and at the annual meeting of the Maidstone Farmers' Club, held on January 25, Mr. W. H. SAMSON, the inventor, who is a resident in Maidstone, exhibited a model of it. According to the *South Eastern Gazette*, his explanation of it was attentively listened to, and several members expressed themselves in favour of its general principles, but for the most part they wished "to see the thing at work" before giving an opinion upon its merits. "Of course," says our contemporary, "whether the machine will bear out the promises of the inventor is a mere matter of conjecture, but after a careful examination of the model we are

him. It would be a terrible tax on them. What would the richer classes say if they were asked to subscribe 1 per cent. of their income to a horticultural list? The list of young Fellows, now in the printer's hands, contains the names of many of the ablest and best known gardeners in the kingdom, who have thus shown their sympathy with the movement and greatly strengthened the list; but I think it would be Utopian to the last degree to trust to the hardy-earned wages of gardeners to furnish means of support for a great society. Professional gardeners can be excellent and most useful friends in many ways to a society without becoming Fellows, and many of them have considerable influence with their employers. In the report will be seen two instances where employers, in acknowledgment of long valuable services, have given in their gardeners names as would-be Fellows. The Rev. E. R. Benyon, of Culford, named Mr. Griese as a Patron four-guineas Fellow, as was also his friend Mr. Robert Gibson, of the Poles, gave Mr. Hill's name as a Hanbury. I believe these will not be solitary instances. It has been suggested that country societies should subscribe and nominate some of their body, and that those of them should be gardeners. I hope, somehow, we shall continue to have a fair sprinkling of them, and most of the country nurseries; but the main support of a strong society must come from owners of gardens. In the test experiment made in this neighbourhood, out of some fifty who had been asked to give their names as owners of gardens, and there was only one professional gardener, and he in a very good position. At p. 149 Mr. Fish—who I am glad to see will give his name to our list—reminds me that "the horticultural public cannot live long on the mere promise of gardeners' Fellowships." The only promise I have made is that when 500 suitable names are forthcoming all the rest will follow. It is for the "horticultural public" now to work, not for me. I will gladly furnish circulars, &c., to assist the canvass, but horticulturists must work out suitable lists in their own way, which they have influence. *George F. Wilson, Heathbank, Weybridge, Hants.*

Temperature of Outside Vine Borders.—Perhaps it may be servicable in the present discussion about heat for outside Vine borders during the period of forcing for Grapes, to have the average temperature of the soil at 1 foot below the surface as supplied by Nature to a house started April 7, compared with the underground temperature at the same depth enjoyed by Vines started December 1, supposing in each case that the house is made up with sun-heat in the afternoon, and occasionally syringed for a fortnight previous. From the daily record of the underground temperature kept here with tested thermometers for the Scottish Meteorological Society, at depths of 3, 12, and 22 inches, I have taken the mean temperature for each month at 12 inches for the years 1874 and 1875. In order to avoid any local peculiarity, and to widen the average, I have taken the means for each month over the same period as registered at Thirlestane Castle, Berwickshire, obtained from the Meteorological Office (*Journal*), and by taking the mean of the Sutherland and Berwickshire averages for each month, I think it will give a fair average for Scotland:—

Natural Mean Temperature at 1 foot Underground.

January	..	35.1	July	..	59.4
February	..	35.8	August	..	59.2
March	..	36.7	September	..	58.4
April	..	45.3	October	..	47.9
May	..	50.9	November	..	42.6
June	..	58.5	December	..	38.2

Natural Mean Temperature at 1 foot Underground for House Started Dec. 1.	Natural Mean Temperature at 1 foot Underground for House Started Dec. 1.	Natural Mean Temperature at 1 foot Underground for House Started Dec. 1.
First month, December	34.6	10.5
Second	January, 35.7	15.1
Third	February, 36.6	20.6
Fourth	March, 38.7	30.7
Fifth	April, 45.4	42.9
Sixth	May, 50.9	54.0

From these figures it will be seen that Nature supplies a considerable mean monthly increase of temperature in the soil during the first four months of growth in spring—beginning at March with 35.7; April, mean in July, at 59.4, after which commences a steady decline. It has been proposed to cover early Vine-borders early in autumn, and to depend upon Fern or thatch and covers to supply the necessary root temperature for forcing during the winter months. I have never would be considered for its attending this method, where the roots are all outside, as though no doubt a few degrees more than the natural underground temperature would be secured, yet I doubt if more than the natural increase of temperature in the soil could be looked for; indeed, from December to February there would probably be a

steady fall, as the heat retained in the border in autumn would be gradually given out and lost, thus giving a falling instead of a rising underground temperature during the first three months of growth, and reversing Nature's method. Even assuming that these coverings furnished an increase of temperature corresponding to the ordinary underground increase, that would only give a rise of 4.1 from December to March, the natural temperature at 1 foot underground being, December, 34.6; January, 35.1; February, 35.2; March, 38.7. Too much artificial heat is no doubt injurious to early Vine borders. If we go to the other extreme, and give none at all, I believe that will be found equally so. Experience and observation of Nature's teachings would seem to indicate that the road to success lies between the two extremes. *D. Melville, Dunrobin.*

Poinsettias.—In many places the conservatory is attached to the mansion or villa, the stove being some distance away, as in the case with me. The lilies go into the conservatory a hundred times where they would only go into the stove once. Therefore, to enjoy them as much as possible, Poinsettias should be moved to the conservatory as soon as they have tolerably good-sized bracts. On December 18 I took my plants into the conservatory, and to-day, February 5, they are still quite fresh. The temperature ranges between 48° and 55°, but never above the latter. I keep them on as dry a bottom as possible. They require much less water when removed to a colder house. *G. P., Holland House, Weston-super-Mare.*

Three-quarter Span-roof Garden Frame.—Messrs Boulton & Paul, Rose Lane Works, Norwich, have favoured us with the accompanying illustration, fig. 29, of a new frame made by them for growing Cucumbers, Melons, &c., and for storing fruit. It is made to give greater height and more convenience



FIG. 29.—CUCUMBER AND MELON FRAME.

than other frames made by the same firm. The front is 11 inches high without the light, 32 inches high at the ridge, and 22 inches high at the back. The front lights can be turned back on to the lights behind, and the back lights be turned on those in front, giving access to all the plants inside. They are made of red deal, and glazed with 21-oz. glass. The illustration shows the lights to open with gearing, any of the lights can be lifted up when required without altering the other lights. The back and front gearing work separately.

Large Garden Pots.—Having seen at pp. 80 and 147 notices of the different sizes of lower-pots in use, I thought it might be interesting to some of your readers to know that galvanized iron pans serve the same purpose, where a size of pot larger than is made at the potteries is wanted. Wooden tubs are generally used for plants requiring a shift at this stage, but these are not very durable, though made of the best material, when used for planting growing. We don't know how long galvanised iron pails will last, but should expect them to last much longer than wood. Some may have doubts about using iron for planting growing, but iron being considered to be injurious to plants; but such does not appear to be the case with galvanised iron, as we have had them in use for the past twelve months for different sorts of plants, which are in the best of health. The pans are full of roots, and the roots in contact with the iron are as fresh and healthy as those grown in the common earthenware pot. I may say that they are painted outside the same colour, and made the same shape as the common flower-pot, and at a little distance the one would not be known from the other; also that the first cost of them is little more than the price of the largest-sized pot made in this locality. *P. G., Leywood, Sussex.*

The Buckley Fund.—In the interest of those for whom the above fund has been subscribed, I, as hon. treasurer, beg to announce, that at a meeting of

the committee held on Monday evening the 5th inst. at the City Criterion, a sub-committee was appointed to enquire, and accordingly arrived at some decision with respect to the manner in which the balance of the fund shall be applied. Any gentleman wishing to subscribe will please do so at or before that meeting, when it is hoped as many subscribers as possible will make it convenient to attend. *George Deal, 13, Carlyle-square, Chelsea, Feb. 7.*

Bottom-heat Without Cost.—I was tickled with an article at p. 107 on "Bottom-heat Without Cost." I read it carefully, and found that it was Knight's theory revived—namely, that the earth was heated by the air, and not the air by the earth, and, *et cetera*, no plant could have any power to combat the air, but that a stage of wood, since the red brick pot and the soil therein had the same warming apparatus as that which warmed the foliage of the plant. The reasoning was faultless, but, alas! the theory could not be reduced to practice. The Pice-apple grown upon shelves were shabby and withered, and the system has been a laughing stock from that day to this by practical men. The Pice-apple has peculiarities that are not always taken into account. The plant is a regular pincer-plant, carrying in its capacity a large amount of water. At the end of the day, and of its channelled leaves are formed by Nature to keep up the supply by every watering, sprinkling, condensing, &c. By whatever means it quenches its thirst, one thing is certain, that it will endure great bottom-heat, and that, in order to get a good account of the plant is a surface feeder, and never travels far unless it gets planted out on a bed of decayed leaves, and like half the plants known riots in leaf-mould. The difficulty in getting bottom-heat for the Vine is great, on account of the rambling character of the plant, for it will travel in good pasture 30 or 40 feet from the place where it was planted. Its rambling shoots are notorious runners, but not more so than its feeders, but as the one works in the dark, and the other in the day, vague notions are entertained of the nature of the rambling eye, however, will recognise a healthy feeder, and read its history; its size, its colour, its plump appearance, are all marks of excellence regarding the medium in which it has lived. An eminent Grape grower in the North has given me the most beautiful and manufactured the finest samples of Grapes that up to that time had ever been seen, and they certainly got bottom-heat, and perhaps three times as much water as we were wont to give to growing Vines; but let any one examine a Vine branch, and see the sec loc of the one-year's wood, which is open like a wine stew, that when a Vine bleeds from mismanagement it runs like "a sma' still." Much judgment is needed to hold the candle to the Vine, for the wet and warm time is only to be tolerated when the plant is making wood, for the extraordinary size and quality of Grapes exhibited as grown by heated bottom-heat; and from Mr. Knight down to this time nothing marvellous has ever come of inside borders, simply because the heat of the earth is unable to warm the soil beyond the depth of a few inches. Cuttings not only strike best in a good bottom-heat, but much time is gained thereby, showing that a temperature much above what a cold frame yields is the best artificial medium for the most valuable and useful of our fruit ever sown, which is open like a wine stew, that when a Peach-house well managed, for when watered at random by the boy in charge it is well wetted on the surface but not so lower down, and when the fruit has hung long on the trees the earth will be dry enough, if it is to guarantee its sufficiency of water, for the earth must not be forked beyond a few inches lest the roots should suffer? At Clun, in Aberdeenshire, the fruit-houses were kept in the nearest order I have ever seen, for the surface soil wore holiday attire, and consisted of finely sifted very black peat or bog earth, and tickled into the corners with a very small birch broom. Now the state of the inside border, thus disguised and painted black, as they are galled; and the soil, being at a low level, certainly got bottom-heat as much as it could be for nothing; and I went to Leck, in Staffordshire, once to see two tanks containing gold fish, and was surprised to find what a temperature the fish could bear, for they thronged the place where the warm water came in from the engine, and had fresh water, as they were, where the condensed water from a paper-mill entered the river, the place was thronged with small fish, who evidently

ingly practise when they want bottom-wood. Mr. Murray's paper implies a general or all downward growth. He Dr. Darwin's experiment, recorded in books, by which he traced the ascent of a coloured infusion, in a species of Euphorbia, to the extremities of the leaf, and the descent of a milky juice in another set of vessels from thence into the petiole, on its way to the stem. But those who have practised ringing, or watched its effects, need not look further for evidence of a downward growth. To mention one among many cases. A thriving young Scotch Fir in my shrubbery, about a feet high, was completely killed by the weight of a snow which 2 inches by the friction of a ligature. This happened in winter. The following year it grew but little, but threw out an abundant foliage of a lighter colour than before, and the next year, in addition, a numerous crop of small cones. At this time, and during the next season, the whole stem above the standard part increased in girth, while below it remained as before the accident. Ultimately the wound grew up by an advance of the upper lip, and the tree, but with a spindle shank, resumed its ordinary growth. Such are the ordinary effects of ringing, and the effects of the upper branch at the expense of the lower stem and the roots; a shorter growth of wood, a disposition to form flower-buds, and, in the case of fruit trees, earlier, larger, and more highly coloured fruit. In this case, however, the weight of the wood, and an unusual supply of the proper juice is stored in the ringed branch, and that it is full fed, while the stem and roots are deprived of their usual share, and so perhaps checked in their action. Mr. Murray's theory does not guide us to an answer—it seems to be useless. S. S., *Sevenshoes*.

Mildness of the Season.—This place is situated about 500 feet above sea level, which no doubt has much to do with our singular exemption from frost. We have, however, the disadvantage of lying on the north side of an extensive ridge running eastward from Tunbridge Wells, and so steep, indeed, is the incline northwards that the sun does not shine on any part of the ground in the kitchen garden before 9.30 A.M. at this season of the year. Our altitude and position does not altogether account for the condition of things at the present time. In the rockwork round my house scarlet Pelargoniums of years are still alive, the lemon tree is in flower, and the plants are very comfortable, and putting out new leaves. Petonias and Maurandya Barclayana against a wall continue to grow, and Verbenas are growing almost as well as they did in the summer, but do not flower. I do not cuttings, but I see to-day (February 1) that they are making fresh leaves. Notwithstanding the mildness, the want of sun has prevented wall trees from making that progress which they often do during sharp frost when there is sunshine with it. They look much more promising, however, than they did at this time last year. D. Buchanan, *Sherrwood Park, Tunbridge Wells*.

High-class Potatoes.—Charles Mackay in one of his fine songs makes a clown to exclaim:—

"The King can drink the best of wine,
So can I, so can I;
And has enough when he would dine,
So have I, so have I;
And cannot order nor in shine,
Nor can I, nor can I;
Then where's the difference let me see
Betwixt my lord and me."

I often have this stanza brought to mind when I sit down to partake of a dish of Potatoes as good and as delicious as can be had in all the wide world, and know that even the Queen, with all her gardens and power, cannot have at her table a more acceptable dish of Potatoes than I can. Those who cultivate only coarse growing kinds, and are thoughtless how speedily to fill the bushel as a matter of preference to quality, must remain ignorant of the delicacy found in a well cooked dish of high-class Potatoes. It is a noble peculiarity of this excellent, that if intrinsically good it needs only the addition of a pinch of salt to render it perfect. All other condiments or additions serve only to spoil, and if he has but the best sorts [and somebody to cook them], the humblest cottager may have his Potatoes served up in all respects equal to those served to the table of a King. I allude to whom I see some of the Rector of Woodstock, said, "they are so delicious that I keep them expressly for my Sunday dinner," probably intending

to pay tribute to the quality of the Potato, and to the high quality of his potato. Similarly, when I can sit at my table with more than usual abundance, the mid-day meal, I have a dish of either Lapstone, the Rector, President, Scotch Lute, Onwards, Bountiful, King of Potatoes, or some similar garden variety, in none of which are found the popular Artichoke texture and earthy flavour so prominent in the coarse American kinds. On the 4th of this month I partook of a dish of President that had been lifted with others from the field only the day previous, having been almost flooded during the greater portion of the month in which it had been growing five months after ripening, and yet were as white, clean, and delicious as it was possible for a Potato to be. The prevailing rage for "bulk" is driving these more refined garden kinds out of the field, and yet there are none more fit for eating. A small Potato, the size of a hen's egg, if of the best quality, is worth one twice the size for eating, if the latter has only size to recommend it; for, after all, though the market-grower is only concerned to fill the bushel, the private gardener has his employers' table to cater for, and no gardener will be content to dine off Artichoke Potatoes when he knows he can have those of the highest quality. Those who cultivate the little Golden Pippin Apple or Winter Neis Pear tell us that they prefer flavour to mere size, and their taste is to be commended. In so many instances, the Potato less size, but of more delicate flavour than big coarse ones, should be grown by all who prefer quality to mere size and bulk. A. D.

Cauliflowers.—It is much to be feared that most plants of these raised from autumn-sown seed will play tricks this year and "bolt" for, to use a familiar agricultural term often applied to Wheat when too forward, they already look "weather-proud." This weather-proud appearance results from an unusually mild winter, accompanied by one of the most excessive rainfalls on record, and the two combined have done much to hasten on the growth of the plants. Plants are now as forward as they ought to be in April. Whether under glass or entirely in the open air, the case is just the same, and it will therefore be unwise to trust entirely to either, for the chances are that those who do so will find themselves worst supplied just at a time when they are the most needed. In view of this it is well, I think, to sound a warning note, that timely preparations may be made to avert a scarcity of a vegetable held in such universal estimation as the Cauliflower very deservingly is. The best plan to adopt, in the open air, is to place, in light rich soil in pans or boxes, and place the same in heat, so as to get it up as quickly as possible, after which it should be nursed on close up to the glass, where it can get both warmth and air, to keep the plants on drawing so soon as large enough to handle they should be pricked out at about 3 inches apart, on a gently fermenting hotbed, where they may be allowed to remain till they are of proper size, and the weather is sufficiently favourable for planting them out. Treated in this manner the plants will almost certainly do well, as those sown in August, which in even ordinary seasons are very disappointing from the premature way they turn-in, while those raised now never fail to give satisfaction, and produce full-sized heads if properly cared for as to soil and situation. The great point with spring-sown Cauliflowers is not to coddle them unnecessarily, but to keep them up close to the glass, where they can have plenty of light and air to induce a strong, sturdy habit, in which state they are most preferable to the plants that have been brought. As to the plants that are now sown, it is well to remember that there are none better for spring work than the old Early London—a variety that is in much esteem with market gardeners, who, as a rule, are pretty good judges of what is best to grow, and if with this popular variety some Walcheren are sown at the same time, they will do well, and will certainly do well in well to succeed them. As to autumn-sown plants, where they are not in too forward a condition to destroy all hope, the only thing that can be done for them now is to expose them to all the air possible by lifting the glass, and handling them as they should be, and while we get a continuance of the present mild weather; and should sharp frost occur, even then they should be tilted, as Cauliflowers will stand a good deal if they are thoroughly dry, although it should be borne in mind that they are just now more tender than usual from the free soft growth they have made. 7. 5.

The Weather of 1876 in West Herts.—The rainfall of the first four months in this year, calculating from the middle to the end of April, was very heavy, amounting to 10.7 inches, and the total for the same months of 1875 the fall of that year to the end of April amounts to a little over 6 inches. It will be seen that last year the rainfall thus far was very copious; but it is of the next three months that I can say the most remarkable contrast. In the latter part of the whole month of May was a little over half an inch. The same amount would fall quite

freely in two showery days, but in this month it took eight damp days to obtain so much, the showers being very slight. The amount of rain for the year 1876 was registered. The month of June was a little better—1.26 inch, or about equal to four showery days, though in this month it took eleven slight showery days, the heaviest fall happening on the 15th, when 0.54 inch was recorded, and the next day 0.22 inch, but no better registered. The month of June was a little better—1.26 inch, or about equal to four showery days, though in this month it took eleven slight showery days, the heaviest fall happening on the 15th, when 0.54 inch was recorded, and the next day 0.22 inch, but no better registered. The month of June was a little better—1.26 inch, or about equal to four showery days, though in this month it took eleven slight showery days, the heaviest fall happening on the 15th, when 0.54 inch was recorded, and the next day 0.22 inch, but no better registered. 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large Planes, and one of the most prized trees on the estate, the Catalpa syringifolia, shared the same fate, lying prostrate on the lawn. In the extensive pleasure-grounds huge limbs of hard-wooded trees bestrew the great walks, leaving unobstructed proofs of the violence of the storm in all directions. Adjoining the end of the pleasure-grounds is a grove, consisting chiefly of Beech trees, from which it derives its name (Beech Grove), which presents a spectacle seldom or never witnessed in this locality: scores of trees, mostly Beech, but here and there a Silver Fir or a Cedar of Lebanon, have been swept down. Several Scotch Firs and Austrian Pines, apparently having too firm a hold of the ground, were snapped asunder as if swept off, and hurled yards away from their stump. In the belts and coverts the boundaries of this and adjoining estates the trees were swept down by hundreds, and houses were partially destroyed, in some instances by chimneys falling in, and tiles and slates were blown about in all directions. Altogether this was one of the most disastrous and distressing storms experienced of late years in this locality. *Spectator.*

The Villa Garden.

WHEN will the fine weather come?—weather so brisk and drying as that "rain which raineth every day," or almost every day, may subside below the surface, and enable the gardener to get on to the soil, and resume his long suspended operations? We are among those found regretting that they dug any portion of their spare soil in autumn; but then who could have foreseen the persistent rainfall that has happened, and which will make the winter through which we are passing famous in the annals of time? Soil of any kind, of retentive character that was dug in autumn is now of a very sticky character, and moves far worse than that which has been left untouched. And yet if we had experienced instead of the rain a period of sharp frost and drying winds, the soil moved with the spade in autumn would have been benefited by it. We must, like sensible persons, take things as they are, and make the best of them.

KITCHEN GARDEN CROPS.—Early Peas sown in November are now coming through the soil; and, the rain notwithstanding, the bright sunny periods that do manifest themselves to our great gratification show us the rows of Peas making a surprising progress. If the soil is too wet to hoe it by the sides of the rows, a gentle stirring process among the Peas will greatly assist them. The genial quickening influences of the warm sun and the halmy air favourably incites the crop to active growth when they can penetrate the soil. The birds are finding these Peas out, and their depredations must be checked. A young cat hanging after its first taste of bird-life, is an excellent protector as long as the fit of enthusiasm lasts. Slugs are troublesome also, but a little dry lime or soot sprinkled along the sides of the rows generally answers the purpose of an effectual barrier. This sprinkling needs pretty constant repetition for a time.

Slugs are very troublesome just now to the winter Lettuces. They are patting forth a delicious young growth, and slugs are as much gourmands in their way as the representatives of the higher orders in the animal kingdom. Here also a sprinkling of lime is of great service, and also stirrings of the surface soil. If frost and snow should come, a few branches of Spruce Fir stretched about among the young Lettuces will prove a great protection. The cold draughts of such wintry influences coming among us with a sudden rush, and we must not presume on the tractable character of the season.

The Early Longpod Beans, planted at the same time as the Peas, are moving on with great rapidity; when sown on a slightly sloping south border, with a wall, hedge-row, or belt of trees at the back, they are in a very favourable position. In a neighbour's garden we saw a few days ago, a piece of Seville Longpod Beans fully 9 inches above the soil, and growing very strongly. They are now earthed up to within 3 or 4 inches of the tops, and the soil between the roots has been well stirred. Nothing in the garden is so promising, and if only the spring will be merciful a good crop may be anticipated. Potato planting will shortly claim attention, that is, as soon as the soil is at all workable. Seed Potatoes are giving some trouble this season, especially the early sorts, for they, owing to the mild, moist weather

are growing very fast. The best thing to be done is to get the seed spread out as thinly as possible in a cool airy place, so that they can sprout into growth. It is a good plan to have the seed in shallow boxes, so that they can be carried to the ground where they are to be planted without the necessity for meddling with or moving them. We have recommended in previous papers the ridging up for the winter of ground intended for early Potatoes. Supposing this was done last autumn, and the weather becomes dry enough to move the soil, planting can be proceeded with, and when the planting commences the rubbish-heap that we have so frequently recommended comes into play. A rubbish-heap to be in the highest degree serviceable should be occasionally fired, or at least all the coarser woody portions of it should be burned. This gives a valuable lot of ashes, and these ashes, when mingled with leaves, refuse soil from the potting-bench, clippings of turf edges and flower beds, the sweepings from walks, &c., forms an excellent material to put in with the seed Potatoes. The valleys between the ridges should be first forked up lightly, and the soil beaten to pieces as much as possible, then some of the material just referred to spread in the trench, the seed placed on it, and some more added (in quantity sufficient to cover the tubers), and then sowed (from the ridges crumbled in over them. By-and-by, when the plants grow, and earthing-up becomes necessary, the soil of the ridges can be used for the purpose, and, finally, the soil on which they rested forked over, so as to supply material for the final earthing-up.

Remembering that Onions form a leading crop in the kitchen-garden, it is time attention be turned to sowing some seed. As a general rule, Onions are not sown early enough, and the consequence is they get arrested in their growth by dry weather in spring, and seldom make up for the check after. We can here learn a lesson from the Banbury Onion-growers—the men who grow such splendid Onions for exhibiting in August; their time for sowing is the first and second weeks in February. They manure their ground well in October and November, and then throw it up rough for the winter. In January, as soon as dry weather permits of its being done, they fork it over, break it well to pieces, and then, taking advantage of a drying frost, tread it down firmly. A few days after, and when the weather is fine, drills are drawn a foot apart, and the seed thinly sown in them, some wood ashes covered over it, and then the soil is raked on to the seed, and beaten down with the back of a rake.

It may be asked, Whence the necessity for digging the ground so deeply for the Onion, seeing that it roots so sparingly? But the fact is the Onion roots much more deeply into the soil than is generally imagined, and the richer the soil is in vegetable food the quicker is the growth. The great thing with Onions is to get the roots well down into the soil before dry weather sets in, and then the bulbs swell out finely. The Banbury growers water freely in dry weather; they also (after they have thinned out the bulbs to the proper distance) keep the soil well stirred about the plants, and top-dress with wood-ashes and manure; and later on, when the bulbs are swelling, dress with bonedust and guano. All these attentions are not necessary in the case of a general crop of Onions for culinary use, but they serve to show how the crop may be augmented. The earlier Onions are ripened off, the more matured do they become for keeping, supposing it be a variety which keeps well.

Notices of Books.

Potato Pests; being an Illustrated Account of the Colorado Potato Beetle and the other Insect Enemies of the Potato in North America, with Suggestions for their Repression, and Methods for their Destruction. By Charles V. Riley, State Entomologist of Missouri. New York: Orange Judd Company; London: Trubner & Co.

Mr. Riley is well known for his able reports as State Entomologist of Missouri, and for the care and skill with which he has conducted observations into the life economy of various insect pests, from which North America has of late years suffered, or by which she has been threatened. Among those which he has so studied with much credit to himself and advantage to the public, the Colorado beetle of course occupies a prominent place; and now that that pest has spread over three-fourths of the cultivated area of the United

States east of the Rocky Mountains, it is unnecessary to say that an authoritative work regarding it, giving full information as to its habits and life, with directions as to the best means of encountering it and destroying it, must be most useful.

To us and our readers it is not, indeed, new. Most of the information contained in it has already appeared in Mr. Riley's annual reports, which have been noticed by us as they appeared, but State reports, extending over a series of years, and containing a multitude of subjects, are not the kind of work that will be sought for by the general public wanting only information on one particular subject. Mr. Riley and his publishers, in producing a small cheap work confined to this subject have, therefore, supplied an important want peculiarly felt at the present juncture. The work is in duodecimo form, and is liberally illustrated by woodcuts from Mr. Riley's own pencil, for to his other accomplishments he adds that of being an admirable artist.

The subject, not being a new one to our readers, we shall not trouble them with any extracts relating to the appearance and life of the beetle. The part that will have most interest for them will be Mr. Riley's opinion as to the chances that we have of escaping an invasion from it in this country. On that point he says:—

"In 1874 the Governments of Belgium, France, Switzerland, and Germany prohibited the importation of American Potatoes, and Italy, the Netherlands, and Great Britain, which had been urgently solicited to follow their example, began seriously inquiring into the necessities of the case.

The British Government was naturally slow to take such stringent steps, which would more deeply affect it than the other nations named, for there is no one man does the larger trade in American Potatoes. In reply to Mr. Herbert, M.P. for Kerry, who asked the Chief Secretary for Ireland whether Her Majesty's Government had taken any steps to prevent the introduction of the insect, Sir M. H. Beach sought to abate fear, rather than to encourage it, and wisely concluded that any interference with the trade should first have the most careful consideration. Those who had watched the insect's gradual spread during the past seventeen or eighteen years, from its native Rocky Mountain home to the Atlantic, and had seen how the lakes, instead of hindering its march into Canada, really accelerated that march by floating it on vessels, rafts, and other floating objects, could have no doubt that the same cause for the alarm felt by our Transatlantic friends.

"Yet the opinion had been repeatedly expressed by the writer—and very generally coincided in by all who had any familiarity with the insect's economy—that when it made its descent into Europe it would most likely be carried in the perfect beetle state on some vessel plying between the two continents. For while the beetle, especially in the non-growing season, will live for months without food, the larva would perish in a few days without fresh Potato tops, and would, I believe, starve to death in the midst of a barrel of Potatoes, even if it could get there without being embedded; for while it so voraciously devours the leaves it will not touch the tubers. The eggs, which are quite soft and easily crushed, could, of course, only be carried over on the haulm or on the living plant; and while there is a bare possibility of the insect's transmission in this way, there is little probability of it, since the plants are not objects of commercial export, and the haulm, on account of its liability to rot, is not, so far as I can learn, used to any extent in packing. Besides, Potatoes are most exported during that part of the year when there are neither eggs, larvae, nor Potato vines in existence, in the United States."

"While some Europeans have thus been induly alarmed, and inclined to take prohibitive measures to prevent the insect's introduction, others have ridiculed the idea that the insect could get to Europe, one of them declaring that there is no more danger of the insect's chance transportation than of that of our rattlesnake. Considering that half the weeds of American agriculture, and a large proportion of our hardy insect pests, find their way to beetles, viz., the Asparagus beetle (*Crioceris asparagi*), and the Elm leaf beetle (*Galeruca calmarianis*), in the very same family as our Doryphora, have been imported among us from Europe, there would seem poor foundation for such argument. Indeed, the reported occurrence has summed up in living Doryphora in the French docks, in a cargo just coming from London, is the best evidence; it effectually sets at rest the several allusions to, and bears out the views I have on former occasions expressed as to the possibility of the beetles being carried over in vessels."

"It is argued by others that on the continent of Europe our Doryphora will be more effective in England, but, on a sufficiently long residence in England, France, and Germany I am decidedly of the opinion that they delude

themselves who suppose that Doryphora could not thrive to the greater part of Europe, and that to abandon all precautionary measures against its introduction on such grounds would be the height of folly. An insect which has spread from the high table-lands of the Rocky Mountains across the Mississippi valley to the Atlantic, and that flourishes alike in the States of Minnesota, Wisconsin, Upper Canada and Maine, and in Maryland, Virginia, and Texas—in fact, wherever the Potato succeeds—will not likely be discomfited in the Potato-growing districts of Europe."

We must refrain from entering into the contrary arguments of those who maintain that its invasion is a purely imaginary danger; but we may say that our own opinion coincides with that of Mr. Riley. We have no expectation that we shall be able to keep the beetle from coming into Britain. It will come, we do not doubt, again and again. Nor do we think that if it were allowed to settle it would have any difficulty in establishing itself permanently. The wideness of its range in America shows that it possesses a degree of adaptability various conditions that must dispel any hope of that kind. But we have no fear on that account that the Potato crop will be destroyed, or that we shall have to pay \$1. a bushel for them, like the inhabitants of St. Louis in 1873. We cannot keep it from coming over, but it will be our own fault if we allow it to gain a footing. It will be an easy job to stamp out the first broods. It is a very different thing clearing them off a single Potato field or two compared with resisting a solid invading army of them extending over 15° of latitude, as in America. Of course, if we act like ostriches, and think that by shutting our eyes to the danger we shall escape it, then we should soon find how helpless we are in contending against it; but we have no fear on that account, and whatever the *laissez faire* gentlemen may say we do not intend to be, nor do we think that there is any danger of, our being caught napping.

We have not left ourselves space to say anything about the proper precautionary and remedial measures, but as in no view could these be required before the month of June, we have plenty of time to return to the subject. *A. M.*

Among publications on our table we may mention a new edition of *Stornom's Etymological and Pronouncing Dictionary* of the English language (Blackwood & Sons), which in small compass contains a very large amount of information relating to the significance and varied adaptation of words. The grouping of compound words appears to us very serviceable. Many of the more modern scientific terms are included, so that the volume is likely to be very useful for those who require a compact and useful dictionary.

The last number of the *Bulletin d'Agriculture* contains a coloured plate of the striped variety of the Duchesse d'Angoulême Pear. The following varieties are mentioned as having striped forms:—Alexandre Lambre, Bergamote Crassane, De Hollande, d'Été, Beurré blanc, Beurré d'Amalins, Beurré Gris, Beurré d'Hardenpont, Beurré Crassane, Élé de Chaumont, Williams' Bon Chretien, Bon Chretien d'Hyver, Citron des Carnes, Doyenné du Comier, Duchesse d'Angoulême, Longue verte, Louise Bonne d'Avanches, Messire Jean, Fasse Colmar, Roussellet de Reims, St. Germain.

PUBLICATIONS RECEIVED.—Synopsis Cedeomyiadarum, by J. E. von Bergenstamm and Paul Low, a very complete synoptical résumé of the literature, the classification, and the plants affected by the gall midges.

Natural History.

THE FIRST BUTTERFLY was captured here on the 6th. Having had sufficient conversation with him, I send him on, that you may for yourself judge how wonderful are the products of our delectable mountains. He is a fine specimen of the small Tortoiseshell, Vanessa urticae, of which thousands are annually produced here, on a fringe of Nettles I allow to root on the margin of a grass field. The small copper, common blue, large and small meadow-brown, orange-tipped, and brimstone are also common, the last-named being usually the first butterfly of the season. In 1874 the brimstone was captured here on March 23, and in 1875 on April 17. The rare Death-head, *Acherontia atropos*, bred so freely here last summer

that we found about thirty of the handsome caterpillars well fed and ready to hibernize when the Potatoes were lifted. *Shirley Hibberd, Stoke Newington, Feb. 7.*

THE GOATSUCKER.—Professor Rymer Jones, in his *Animal Catalogue*, gives the following description of this bird:—"Their eyes are large, their beak, furnished with strong moustaches, and more deeply cleft than in swallows, is capable of receiving the largest insects, which it retains by means of a viscid saliva. The nostrils are in the form of small tubes near its base. Their wings are long, their legs short and feathered, and the thumb can be directed forwards. These birds live solitary, and only fly during the twilight or on fine nights. They pursue moths and other nocturnal insects, and lay a small number of eggs. When they fly the rushing of the air into their wide mouths produces a peculiar humming noise. They have been accused of sucking goats, whence their name; but this is an unfounded calumny that, perhaps, had its origin from the circumstance of their frequenting fields where goats and sheep are herded, in pursuit of the insects that are attracted by their presence." *R.*

Law Notes.

IMPORTANT TO IMPORTERS OF FRUIT FROM BELGIUM.—*Scorrier v. The Great Eastern Railway Company*.—At the Westminster County Court on Tuesday last, before Mr. Judge Bayley, the plaintiff, proprietor of the Coburg Hotel, Charles Street, Grosvenor Square, and the defendant to recover the sum of 30s. for loss of fruit in transit from Belgium by the company's line.

The plaintiff said that on November 11, 1876, he ordered from a grower at Lessing in Belgium 6 cwt. of Apples at the rate of 30s. per cwt., but on the delivery of the hamper at his residence in London it was weighed, and found that 1 cwt. of the fruit had been abstracted. He had made several applications to the company, who denied their liability, hence the present action.

In reply to the learned Judge, the plaintiff said the goods were in the first place delivered at the station of the Belgian State Railway Company, at Lessing in that country, upon which his Honour remarked that he was of opinion he had used the wrong company.

In this view of the case the Company's solicitor coincided, remarking that in doing so he could prove, if necessary, that the contract was originally made with the Belgian State Company, they having the usual running powers over the Great Eastern line; still that did not render the Great Eastern Company liable for any contract entered into with the Belgian State Company, and that if the goods had been either stolen or lost the Belgian Company were alone liable, and that the plaintiff's remedy was against them, and not against the defendants.

Judgment was accordingly entered for the defendants, who did not apply for costs.

RAILWAY LIABILITY AGAIN.—*Iretton v. The Great Northern Railway Company*.—At the Westminster County Court, on January 10, the case was heard before Mr. Judge Bayley, in which Mr. H. T. Roberts appeared as solicitor for the plaintiff, and Mr. Harnsworth as standing Counsel for the Company.

Mr. Roberts, in opening his client's case, said he was a fruiterer carrying on business in Covent Garden and at Leeds, and urged that the goods in question were not delivered within reasonable time, as the Leeds market opens at 6 and closes at 11. The goods—several baskets of Strawberries and Grapes—were sent on July 3, and not arriving in time the Strawberries, which were worth 8s. per basket, had to be sold for 4s. per basket; and the Grapes, originally worth 2s. 6d. per pound, were sold, in consequence of loss of market, at 1s. 6d. per pound, and that the loss the plaintiff had sustained was £6 5s.

Arthur John Iretton, salesman in Covent Garden, stated that on July 3 he consigned fifteen dozen baskets of Strawberries and 65½ lb. of Grapes to Leeds, where he had an establishment. They were delivered to the defendant's carman and marked "Fruit: perishable," with orders to forward them at once, without delay, and received the signature of Sinnet, the defendant's carman, for their receipt on account of John Ashley, the goods traffic manager, of

King's Cross. The plaintiff said he had applied to the Company for indemnification, but they declined to come to any compromise, and would not even answer his letters.—In cross-examination he stated that he was also a wholesale salesman at Leeds, and knew the Leeds market well, and all business there was over by about 8 o'clock in the morning. Mr. Bailey, to whom the goods were consigned, was his commission salesman there. The loss on the goods was £6 5s., as customers would not wait, and the goods did not arrive till 11 o'clock in the forenoon.—Re-examined: There was no doubt as to when the goods were delivered to Sinnet, the carman.

William Bayley said he came from the Leeds market; he received the consignment in question, but not till after the market had closed, which it usually does at 11 o'clock. The Strawberries deteriorated from 8s. to 4s. a dozen baskets, and the Grapes from 2s. to 1s. 6d. per pound, as he had to sell them to retail dealers, they being of no good to his usual customers.—Cross-examined: There is a second market, but not of a wholesale nature. It is not always the custom to send perishable goods by passenger train, but such a course is sometimes adopted.—The Grapes were to be sent to Harrogate, and were too late to be of any avail.

This being the plaintiff's case, Mr. Harnsworth urged that there was a discrepancy in the dates, as there was no evidence that the goods were delivered on July 3, as the 11th was on the particulars. The learned Judge said that appeared to be so, and offered to adjourn the case, but Mr. Harnsworth elected to go on with it.

Sinnet, the defendant's carman, was called, and deposed to receiving the goods between 4 and 6 o'clock on July 2, which ought to have been at the Great Northern Station at King's Cross about 7 P.M.

After this evidence, Mr. Harnsworth addressed the Court at considerable length, and called several witnesses on behalf of the Company, whose evidence went to prove that the Company were not liable; but the learned Judge, after reviewing the whole facts of the case, ruled in favour of plaintiff for the amount claimed, with costs.



STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, FEB. 7, 1877.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.		HYGROMETRIC REDUCTIONS FROM GLASGOW'S TABLES 6th Edition.	WIND.	RAINFALL.
	Mean Reading Reduced to Sea Level.	Range of 24 Hours.	Highest.	Lowest.			
Feb. 1	29.85	+0.09 0.97	38.2	25.44 0 + 53	87	W.S.W.	0.05
2	29.88	+0.12 52.45	40.1	16.7 + 80.3	83	S.W.	0.00
3	29.90	+0.15 51.48	40.5	16.4 42.7 + 30	84	S.W.	0.05
4	30.05	+0.28 45.95	43.5	40.8 + 13	84	S.W.	0.00
5	30.13	+0.30 57.1	48.8	41.4 + 22.3	88	S.W.	0.00
6	30.26	+0.34 51.1	43.3	41.6 + 0.8	87	S.W.	0.11
7	30.00	+0.23 50.1	44.1	50.5 + 23.4	85	S.W.	0.04
Mean	29.99	+0.23 50.1	43.5	45.4 + 65.4	84	S.W.	sum 0.22

- Feb. 1.—Dull, very cloudy. Rain fell in morning, and at 10 P.M. Mild.
- 2.—A dull cloudy day. Mild. Rain in morning and evening. Cloudless at night.
- 3.—A fine bright day. Rain fell in early morning, and again at 7 P.M.
- 4.—A fine bright day. Cloudless at night.
- 5.—Fine but cloudy. Dull, with thin rain at times.
- 6.—A fine cloudy day. Occasional thin rain till evening. Mild.
- 7.—Fine, but cloudy and dull at times. Smart shower of rain at 8 P.M. Temperature unusually high for the season.

LONDON: *Barometer*.—During the week ending Saturday, February 3, in the suburbs of London the reading of the barometer at the level of the sea decreased from 30.24 inches at the beginning of the

FRUIT.

Table listing various fruits and their prices per bushel or dozen, including Apples, Peaches, Pears, Lemons, and Melons.

VEGETABLES.

Table listing various vegetables and their prices per bushel or dozen, including Artichokes, Asparagus, Beans, Carrots, Cabbages, and others.

SEEDS.

LONDON: Feb. 7.—Messrs. John Shaw & Sons, of Mark Lane, write that the seed markets have this week exhibited no special feature of interest...

CORN.

At Mark Lane on Monday trade was very dull for Wheat, and quotations were fully 2s. per quarter lower than on Monday se'night.

POTATOS.

The reports from the Borough and Spitalfields markets state that Regents were dull at a reduction, but otherwise the trade maintained a moderately firm appearance.

COALS.

There was a large supply of house coals at market on Monday, and prices fell 1s. The top price was 17s. per ton.

Special Offer.—150,000 Vesuvius. WILLIAM BADMAN offers strong autumn-struck VESUVIUS, from single pots, 10s. per 1000; or from store-pots, 8s. per 1000, 75s. per 1000, package included.

DANSY BLUE KING.—The finest hardy Blue Plant in cultivation; strong flowering plants, 10s. per 1000, 75s. per 1000, 2s. 6d. per dozen.

PALMS for TABLE DECORATION.—Twelve distinct choice sorts, ready to pot in 5-inch pots, 10s. per 1000, 75s. per 1000, 2s. 6d. per dozen.

JOHN L. COUPLAND, FLORIST, HESSLE. Double FLORIGONIUM.—Beauty of Osebo, Queen Victoria, Prince of Novelties, Captain Raltes, Marcellino Florenpe, King Albert—15s. per 1000.

EARLY FLOWERING PELAGONIUMS.—Dignity Charlie, Alma, Kingston Beauty, Madam Gewinckel, James O'Neil, &c. 15s. per 1000.

Special Offer of FOREST and ORNAMENTAL TREES. PINE AUSTRIACA, well furnished, 3 to 4 feet, 15s. per 1000; 4 to 6 feet, 20s. per 1000.

Messrs. HALL and CO., having large quantities of the above plants, offer them at special prices; the whole are clean and well grown, and are confidently recommended to intending planters.

Patented Peat for Orchids, &c. BROWN HICK CO. PATENT. Best quality for Orchids, Stone Plants, &c., 26s. 6d. per truck.

MANURE, first-class, made from Blood, Bone, &c., of animals, 12s. per cwt., 40s. per 1000.

COCA-NUT FIBRE REFUSE, FOR POTTING and PROPAGATING. Cheapest and best advertised. Before purchasing elsewhere write for Sample and Prices, &c.

M. H. BENTOTE, FIBRE MAKER, LAUSANNE ROAD, NUNHEAD, SE. COCA-NUT FIBRE REFUSE, newly made.—Reduced price, 30 bushels, 6s. 8d.; 100, 20s.; 250, 45s.; 500, 85s.; 1000, 150s.

COCA-NUT FIBRE REFUSE, invaluable for Gardening purposes. One thousand tons of refuse, 10s. per 1000, 75s. per 1000, 2s. 6d. per dozen.

ODAMS' MANURES, FOR ALL CROPS. Manufactured by NITRO-PHOSPHATE and ODAMS' CHEMICAL MANURE COMPANY (LIMITED), consisting of Tenant-Farmers occupying upwards of 150,000 acres of Land.

SHURSTON'S COMPOUND.—Used by many of the leading Gardeners since 1859, against Rust, Mildew, Fire, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and also as a winter dressing for the roots of Fruit Trees.

SIMPSON'S RED SPIDER, THRIPS, &c. ANTIDOTE. Testimonials of the highest order on application. Per quart, condensed, 6s.; per pint, 3s. 6d.

RUSSIA MATS, for Covering from Frost. From 30s. to 70s. per 1000; packing from 20s. GUNNY BAGS, from 2s. to 4s. per 1000, according to quality.

RUSSIA MATS.—A large stock of Archedal and Petersburg, for Covering and Packing (price on application for Archedal)—Petersburg, 60s. to 100s. per 1000.

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BEST & CHEAPEST INSECTICIDES

Duty Free, under permission of the Hon. Board of Customs.

THE "LONDON" TOBACCO POWDER, "Horticultural" Tobacco Juice, also TOBACCO PAPER, CLOTH and CORD.

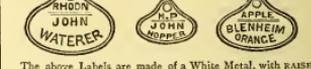
Particulars on application, GORRY & SOPER, BONDED TOBACCO STORES, SHAD THAMES, LONDON, S.E.

Important Notice. GENUINE ROLL TOBACCO PAPER, in packets; also CLOTH of best quality. Trade price very low.

TOBACCO CLOTH and PAPER.—The cheapest and best article for Smoking Greenhouses and Destroying Fly. Price 21s. per lb. or 10c. per lb., 12s. Tobacco Paper, 10s. per 1000, 4s. per cwt. P.O. payable at 16, Blackfriars Road, S.E.

GENUINE TOBACCO PAPER of best quality, price 10s. per lb., or 4s. per cwt. W.M. KENYON, Tobaccoist, 4, Pollard Street, New Town, London, E.C.

Under the Patronage of the Queen. J. SMITH'S IMPERISHABLE STRATFORD LABELS.



The above Labels are made of a White Metal, with RAISED BLACK-FACE LETTERS. The Gardener's Magazine says:—"We must give these the palm before all other plant labels; as the very first in merit."

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MADE OF PREPARED HAIR and WOOL. A perfect one-sided covering for the glass, keeping a fixed temperature where it is applied. A good covering for Pits and Forcing Frames.

PROTECTION from COLD WINDS and MORNING FROSTS. "FRIGI DOMO" NETTING, 2 yards wide, 12s. 6d. and 12s. 6d. per yard run.

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NOTICE.—REMOVED from 3, CANNON STREET, CITY. RUSSIA MATS, for Covering from Frost. From 30s. to 70s. per 1000; packing from 20s. GUNNY BAGS, from 2s. to 4s. per 1000, according to quality.

RUSSIA MATS.—A large stock of Archedal and Petersburg, for Covering and Packing (price on application for Archedal)—Petersburg, 60s. to 100s. per 1000.

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RUSSIA MAT MERCHANTS.—Seedsmen, Growers, and other bona fide Buyers, can have the Wholesale Prices of ARCHANGEL and all kinds of PETERSBURG MATS, RAFFIA MATS, &c., on application to **MARSHALL AND FISHER**, James Street, Covent Garden, London, W.C.

RUSSIA MATS, for Covering Garden Frames—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size of every class of Mats, forwarded post-free on application to **JAS. L. ANDERSON**, 7, Commercial Street, Shoreditch, London, E.C.

Bocher's Garden Edging Tiles.



THE ABOVE and many other PATTERNS are made in materials of great durability. The plain sets are specially suited for KITCHEN GARDENS, as they are so convenient, and so durable, as they take up little room, and, once put down, incur no further labour or expense, do "crown" Edgings, consequently being much cheaper. GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design. **F. ROSHER AND CO.**, Manufacturers, Upper Ground Street, Eleanors, S.E. King's Road, Chelsea, S.W.; Kingsland Road, E.

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One Hundred Melon and Cucumber Frames and Light glazed with best 21-oz. glass of the following sizes, ready for delivery. Lists, with full particulars, post-free:—

Light frame, 4 feet by 6 feet	£ 37 6
2 " " " 8 " " " "	53 3
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Apply to HILL and SMITH, Brierly Hill Ironworks, near Dudley; and 148, Queen Victoria Street, London, E.C., from whom only it can be obtained.

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TABLE CUTLERY.	Table.	Dessert.	Carvers.
The Blades are all of the finest Steel.			
3/4-inch ivory handles ... per doz.	14 0	11 0	6 0
3 1/2 " " " " " "	18 0	14 0	7 0
3 3/4 " " " " " "	20 0	15 0	7 0
3 5/8 " " " " " "	25 0	20 0	8 0
4 " " " " " "	30 0	22 0	8 0
4 " " " " " "	33 0	24 0	9 0
4 " " " " " "	35 0	28 0	10 0
4 " " " " " "	40 0	35 0	13 0
4 " " " " " "	48 0	43 0	16 0
4 " " " " " "	48 0	35 0	10 0
Do. electro-silvered handles	23 0	19 0	7 0

WILLIAM S. BURTON, GENERAL FURNISHING IRONMONGER, by appointment to H.R.H. the Prince of Wales, sends a Catalogue gratis and post-paid. It contains upwards of 800 Illustrations of his unrivalled Stock, with Lists of Prices and Plans of the Thirty Large Show-rooms, at 23, Oxford Street, W.; 1, 1A, 3, 1 and 4, Newman Street; 1, 5, and 6, Perry's Place; and 1, Newman Yard, Manufacturers, 84, Newman Street, and Newman Mews, London, W.

Garden Wall Wiring.



R. HOLLIDAY, PRACTICAL WIREWORKER, No. 24, Portobello Terrace, Notting Hill Gate, London, W., begs to call the attention of all Gardeners who are about to have their Garden Walls Wired to his system of Wire Walls, Garden Water Ferneries, &c., for neatness, strength, and durability.

FOR NEATNESS—Because all the Wires are kept perfectly tight without the use of the Raktidiser.

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The above engraving is an example of our system of Wiring Garden Walls. We have recently completed the Wiring of the New Garden Walls for the Marquis of Salisbury, Hatfield House. The Walls are 4 feet high and 7 1/2 yards long, wired on both sides; making a total length of 1200 yards—our system being chosen in preference to any other.

Illustrated Catalogues of Garden and Conservatory Wirework, Rabbit-proof Hurdle Fencing, &c., may be had on application as above.

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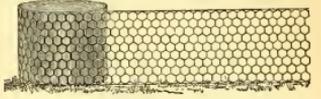
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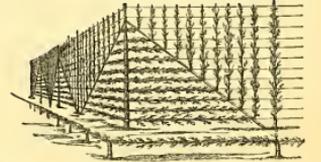
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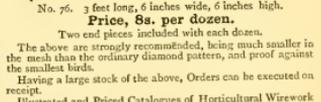
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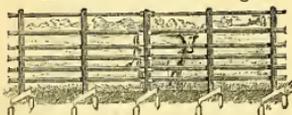
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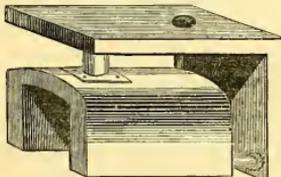


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20 " 18 " 24 "	400	8 0 0
20 " 18 " 30 "	500	9 0 0
24 " 24 " 18 "	700	11 0 0
24 " 24 " 24 "	850	14 0 0
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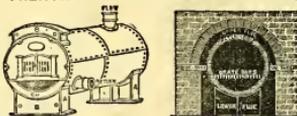
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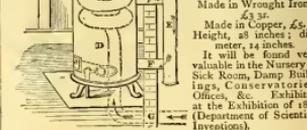
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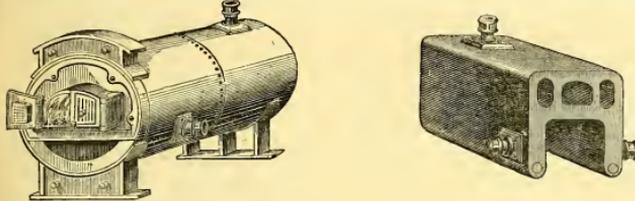
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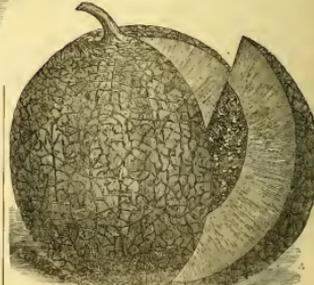
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Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 164.—VOL. VII. { NEW SERIES }

SATURDAY, FEBRUARY 17, 1877.

{ Registered at the General } Price 5d.
{ Post Office as a C.C. newspaper. } Post FREE, 5d.

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Agents:—Messrs. B. K. ELISS and SONS, Seed Merchant, 24, Barclay Street, New York; Messrs. M. COLE and CO., Drawer No. 11, Atlanta Post Office, Atlanta, Fulton County, Georgia; and Mr. C. H. MAROT, 874 Chestnut Street, Philadelphia; through whom Subscriptions may be sent.

Now Ready, in cloth, 16s. 6d.
THE GARDENERS' CHRONICLE
FOR THE YEAR 1877, TO DECEMBER, 1876.
W. RICHARDS, 47, Wellington Street, Strand, W.C.

ROYAL BOTANIC SOCIETY GARDENS,
Regent's Park, N.W.
EXHIBITIONS OF SPRING FLOWERS, WEDNESDAYS, March 27, April 18. SUMMER EXHIBITIONS, WEDNESDAYS, May 16, June 23.
Societies of Plants are ready, and can be had by post.

ROYAL MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY.
FLORAL and HORTICULTURAL MEETING, at the Town Hall, Manchester, on THURSDAY, March 26. AURICULA SHOW, FRIDAY, April 27. THE GRAND NATIONAL HORTICULTURAL EXHIBITION OF 1877, MAY 6 to 25. For Schedules apply to the undersigned.
Botanic Gardens, Manchester. BRUCE FINDLAY.

CRYSTAL PALACE.—ARTIFICIAL FLOWER and FRUIT SHOW, March 3 to 17, 1877.
Intending Exhibitors are invited to apply to the GENERAL MANAGER, Crystal Palace.

Roses.
MILTON TURNER has still fine plants to offer. In addition to his own varied stock C. Turner has purchased the Laxton Roses.
The Royal Nurseries, Slough.

Roses, Roses, Roses.
ROSES, Dwarf.—25,000 good strong plants, 12s. per 100, 6s. per dozen, may by selection, package included. Terms Cash.
C. ALLEN, Stone Hills Nursery, Higham, Norwich.

GERANIUMS, strong, from Store Pots.
—Bijou, Venustus, Beauty of Calderdale, Perilla, Master Charles, and others. Well-rooted Seedlings. A selection of Crystal Palace Gem, Indian Yellow, &c. per dozen.
W. BROADBENT, 92, Wellclose Lane, Warwick.

Special To The Trade.
CUPRESSUS LAWSONIANA.—Nice healthy Plants, 2 to 4 feet, per 100.
E. COOLING, Mile Ash Nursery, Deity.

Larch—Surplus Stock.
JNO. CARTER, NURSERYMAN, Keighley, has about 20,000 good, strong transplants, Larch 1½ to 3 feet, to offer, and will be glad to furnish sample and price.

ASPARAGUS PLANTS, 20,000 2-YR., 20s. per 1000.
ARTHUR WRIGHT, Nurseryman, Hendon, N.W.

Feet Stocks, Extra Strong.
CHARLES LEE and SON have a few Thousands to offer to the Trade.
Royal Vineyard Nursery and Seed Establishment, Hammer-smith, London, W.

Who have a Garden should send for ALLIED HANDS' SPRING CATALOGUE OF VEGETABLE and FLOWER SEEDS, the best work on Gardening matters yet published, which will be found available to the amateur as well as to the Professional Gardener. Post-free, 1s. 1 grain to customers.

WEBB'S COMPLETE COLLECTIONS of choice VEGETABLE SEEDS produce a constant supply of the best Vegetables all the year round.

COMPLETE COLLECTIONS for Small Gardens, 20s. 6d., 15s., and 12s. each.

COMPLETE COLLECTIONS for Medium-sized Gardens, £1 2s. and £2 2s. each.

COMPLETE COLLECTIONS for Large Gardens, £3 3s. and £5 5s. All goods of 20s. value and upwards carriage free to any Railway Station in England or Wales. 5 per cent. discount for cash.

WEBB AND SONS, THE QUEEN'S SEEDSMEN, Worthing, South-bridge.

Dahlia Pot Roots.
RAWLINGS BROS., Romford (formerly Geo. Rawlings), beg to offer splendid varieties at 6s. per dozen. They will also send their superb Seedlings, Earl of Beaconsfield and Singularity, in May.

Winter-flowering Orchids.
CALANTHE VESTITA RUBRA Oculata. Price, 9s. per dozen, or 50s. per 100.
S. WOLFEY, Nurseryman, Chesham, Herts.

ROSES.—Extra fine Plants, 10,000 DWARF to offer cheap. Special quotations given.
JOHN THOMPSON, Nurseryman, Seedsmen and Florist, 21, Pilgrim Street, Newcastle-on-Tyne.

CAMELIAS.—Double White and Red, to G. ELLEN, Manager, South-East London Garden, near Bournemouth.

Carnations and Picotees, Named Show Varieties.
WOOD and INGRAM offer fine Plants of the above in 12 varieties, one pair of each, 12s. per dozen pairs, package free.
The Nurseries, Huntingdon.

Gentlemen's Gardeners, Amateurs, and Others who desire to purchase **GARDEN POTS** of best quality, are invited to send their orders to
J. MATTHEWS, Royal Pottery, Wotton-under-Tree.
Price List on application.

The Advertiser has to Offer.
FOR EXCHANGE, nice healthy Plants of GARDENIA, in 4½ and 7½, also FERNS, CYRANOGRAMMA, PHECICIA, ADIANTUM, PUKERSIENSIS, PHYLLODENDRUM AUREUM, &c. Would take double PRIMULAS, EPACRIS, DAPHNES, &c.
MANAEGE, Winter Garden, Christchurch, Hants.

WANTED, to PURCHASE, for Cash, or liberal EXCHANGE in Plants, some good Specimens of CAMELLIA, alpha plants and Master's roses, 4 to 5 feet high. Apply to
JOHN STANDISH and CO., Royal Nurseries, Ascot.

WANTED, Cuttings of GERANIUMS, Vesuvius, Madame Vancher, Master Christine, any sort Double and bicolors. Also CALADIUMS and ALOECIA LILLOI, ORCHIDS, TUBEROSES, LILY OF THE VALLEY CLUMPS, SEEDS, &c., may be had in EXCHANGE.
W. F. BOFF, 203, Upper Street, Illington, N.

WANTED, 20,000 more SEEDLING BRIARS (Rosa canina). Send samples, with price, per 100.
EWING and COMPANY, Eaton, Norwich.

WANTED, good bushy Plants of ARALIA SIEBOLDI and ASPIDISTRA VARIEGATA; also a few large plants of OLEANDER and HYDRANGEA, old variety.
JOHN MILES and CO., Bristol Nurseries, Kemp Town, Brighton.

WANTED, Transplanted PINUS AUSTRIACA, 2 to 4 feet and 2 to 2½ feet; also GERANIUMS of sorts, well-rooted cuttings. State quantity and price to
D. R. DAVIS (late E. Pierce), Yeovil Nursery, Yeovil.

WANTED, 300 to 500 PLANE TREES, 10 to 12 feet high. Send lowest estimate to
Mr. J. GIBBS, Florist, 75, Cloudebury Road, Illington, N.

Asiatic Japonica.
WANTED, IMMEDIATELY, well berried Plants of the above, in pots, not to exceed 6 inches in height. Apply to
DISCROTOR, Mr. Jackson, High Town, Hereford.

WANTED, SHALOTS. State price per cwt. for Cash, with sample, to
POPE and SONS, 120, Market Hall, Birmingham.

WANTED, 3 Tons of OLD ASHLEAF. State lowest Cash price, with sample.
S. A. Gardener's Chronicle Office, W.C.

SUTTON'S HOME-GROWN SEEDS.
ECONOMY IN THE GARDEN.

A Constant Supply of the Best Vegetables is Ensured by PURCHASING
SUTTON'S COMPLETE COLLECTIONS of CHOICE VEGETABLE SEEDS, specially arranged for various size gardens.

For a Large Garden.
SUTTON'S £2 2s. and £3 3s. COLLECTIONS of CHOICE VEGETABLE SEEDS. Carriage free to any Railway Station in England or Scotland, also to any Irish Port.

For a Moderate-Size Garden.
SUTTON'S £1 1s. and £1 11s. 6d. COLLECTIONS of CHOICE VEGETABLE SEEDS. Carriage free to any Railway Station in England.

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SUTTON'S £1 1s. COLLECTION of CHOICE VEGETABLE SEEDS. Carriage free to any Railway Station in England.

Every one who has a Garden should read SUTTON'S AMATEUR'S GUIDE IN HORTICULTURE. Now ready, post-free for 14 stamps.

The Formation and Improvement of Garden Lawns.
SUTTON'S AMATEUR'S GUIDE IN HORTICULTURE.

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SUTTON'S CHOICE SEED POTATOS.
—For Particulars and Prices see "Sutton's Descriptive List," which may be had, gratis and post-free, on application.

SUTTON AND SONS, THE QUEEN'S SEEDSMEN, Reading.

SYMPHYTUM ASPERRIMUM (Prickly Comfrey).—Whole Roots Purchased at per cwt. (after examination). Store prices at Railway Station.
F. CHRISTIE and CO., 155, Fenchurch Street, E.C.

HAWES, or THORN QUICK SEED.
—Sound Haws, fit for sowing at present, or spring coming, guaranteed free from soil or other mixture, and thoroughly well preserved. About 20 tons on hand. For lowest prices apply to
GRANT and CO., Park Nursery, Portlanoth, Ireland.

SPRING PALMATA.—Fine crowns for forcing, 7s. ½; smaller, 2s. to 5s. per 100.
CHARLES NOBLE, E. Bagshot.

ORCHARD-HOUSE TREES, Fruiting in Fruit—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant Worcester.

Francis R. Kinghorn has still to offer strong planting and fruiting Canes of most of the leading sorts. Particulars on application.
Broom Nursery, Richmond, Surrey.

POT VINES.—3000 Pot Vines, of all the best varieties, on Sale at the Garston Vineyard, 6 miles from Liverpool. Price 18s. 6d. post-free.
COWAN PATENT CO. MANUFACTURERS, near Liverpool.

Vines, Vines, Vines.
B. S. WILLIAMS beg to announce that his B. GRAPE VINES this year are unusually fine, and are now ready for distribution.
For Details, List, see Bulb Catalogue.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

SNOWFLAKE POTATOS.—Warranted true and free from disease, in cwt. bags, 2½, 4½, 6½, and carriage paid to any Railway Station in England on receipt of Post-office Order or Cheque.
DANIELS BROS., Royal Norfolk Seed Establishment Norwich.

POTATOS, Early Kidneys.—A few Tons of Webb's Imperial for Sale, £2s. 4s. per ton. Sample and note on receipt of 16s.
D. BRINKWORTH and SON, Potato Growers, Reading, Berks.

To the Trade.
JAMES BIRD, NURSERYMAN, Downham, has to offer extra fine Standard MAYDUCK CHERRIES.

JOHN PERKINS and SON beg to offer the following—
BEECH, fine transplanted, 2 to 4 feet, 18s. per 100.
BLACKTHORN, 1½ to 2 feet, 10s. per 100.
Bilting Road Nurseries, Northampton.

CAUCASIAN PRICKLY COMFREY (Symphytum asperissimum).—Price 6s. per 1000; larger quantities at reduced price. Allowance to the Trade. Circulars and all particulars on application.
JAMES DICKSON and SONS, "Newton" Nurseries, Chester.

SALES BY AUCTION.

SALE THIS DAY, at HALF-PAST TWELVE O'CLOCK.

Consignment.
MR. J. C. STEVENS will SELL BY AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, February 17, at half-past 12 o'clock precisely, 200 GAMELIAS, 200 INDIAN AZALEAS, all with buds; 100 Hybrid RHODODENDRONS, choice sorts; 200 TRITOMA UVARIA GRANDIFLORA, also a good number for grouping; 100 LILUM LANGFOLIUM ALBUM, 25 PHENIX RECLINATA, 25 ARCA MORGANIANA, 25 GARDNERI, 25 CELSA, and 25 LATANIA BORBONICA, from Ghent; also GLADIOLI, LILUMS, &c., for present planting, MOWING MACHINES, &c.
 On view the morning of Sale, and Catalogues had.

The Collection of Established Orchids of the late F. G. WILKINS, Esq., of Leyton.

MR. J. C. STEVENS has received instructions to offer for SALE BY AUCTION, at his Great Rooms, 38, King Street, Covent Garden, on THURSDAY, MARCH 2, at half-past 12 o'clock precisely, the valuable COLLECTION OF ORCHIDS formed by the late F. G. WILKINS, Esq., of the Poplars, Leyton, comprising almost all other fine things, two magnificent plants of *Odontoglossum Phalaenopsis*, several extra fine plants of *Odontoglossum vociferarium*, a beautiful assortment of *O. crispum* Alexandræ, *psaronia*, &c., many with white-spikes; *Odontium macranthum*, *O. aspianthum* majus (usually fine); *Lycaeus Stimmeri*, in variety; *Mastodella Haryana*, *N. ignea*, and others; *Laelia elegans* Turneri, *Aerides Fitchii*, *Saccia*, *Crassula*, *Crassula*, *Crassula*, *Crassula*, *Crassula*, *Crassula*, *Crassula*, and other good sorts; *Coleogyne crinita*, *Agrostis* sequipetala, *Cypripedium*, &c.
 May be viewed the morning of Sale, and Catalogues had.

The Unrivalled Collection of SPECIMEN STOVE and GREENHOUSE PLANTS of the late F. G. WILKINS, Esq., of Leyton.

MR. J. C. STEVENS has received instructions to offer for SALE BY AUCTION, on the Premises, EARLY IN MARCH, the magnificent Collection of STOVE and GREENHOUSE PLANTS of the late F. G. WILKINS, Esq., of the Poplars, Leyton, comprising Heaths, Aplexis, Stickers, Heliconias, Ixoras, Bougainvilleas, Clerodendrons, Crotons, Anthuriums, Ananas, Palms, Ferns, trained Pelargoniums, &c.
 This Collection is, without doubt, one of the finest in the kingdom and has never been exhibited more successfully by Mr. Ward for the last ten years.

City Auction Rooms, 38 & 39, Gracechurch Street, E.G. MESSRS. PROTHEROE and MORRIS will SELL BY AUCTION, at the Rooms as above, on THURSDAY, February 25, at half-past 12 o'clock precisely, a choice collection of English rose double CAMELIAS, 20 to 2½ feet, beautifully set with bloom-buds and in perfect health; choice AZALEA LINDLEYI, 20 to 2½ feet; PLANTS, a splendid assortment of 500 Standard and Dwarf Roses of the best varieties, selected FRUIT TREES, hardy BACCHAN PLANTS, 200 to 300 specimens, many with some fine Buds of LILUM AURATUM and LONGIFOLIUM, GLADIOLI, RAUNUNCULUS, ANEMONES, and THUSAS, and LILIAS, &c.
 On view the morning of Sale. Catalogues may be had at the Rooms, and at the Auctioneers', 38, Gracechurch Street, E.C., and Leytonstone, E.

Tooting, S.W.

MESSRS. PROTHEROE and MORRIS are instructed by Mr. R. Parker, to SELL BY AUCTION, on the Premises, EARLY IN MARCH, at 12 o'clock precisely, a splendid assortment of thriving YUCCA NURSERY STOCK, comprising several hundred specimens of *Yucca* and *Confederata* plants in specimen borders, admirably adapted for effective planting; a splendid assortment of Ornamental and Forest trees, Fruit trees, &c. For a very remarkable fine Rose, Clematis, Virginian Creepers, Lily of the Valley, &c.
 May be viewed prior to the Sale, and Catalogues may be had on the Premises, and at the Auctioneers', 38, Gracechurch Street, E.C., and Leytonstone, E.

Final Sale this Season of Lilium auratum.
MESSRS. PROTHEROE and MORRIS will SELL BY AUCTION, at the Auction Mart, Tottenham, and E.C., on SATURDAY, February 17, at half-past 12 o'clock precisely, a large quantity of LILUM AURATUM, AZALEAS, GLADIOLI, RAUNUNCULUS, ANEMONES, in choice clumps, AMARYLLIS, &c., together with a specimen of New Zealand TREE FERNS, &c.
 On view the morning of Sale. Catalogues may be had at the Mart, and at the Auctioneers', 38, Gracechurch Street, E.C., and Leytonstone, E.

Without Reserve.—Barnet, Herts.

IMPORTANT SALE of well-grown NURSERY STOCK, consisting of a fine assortment of specimen Conifers and Evergreen Shrubs, also 1000 Variegated Hollies, handsome Hardy Plants, 2 to 6 feet, several remarkably fine Golden Hybrid Rhododendrons, 200 Bushy Aucubas, 2 to 3 feet; clean-grown Fruit Trees, together with a choice assortment of Standard and Dwarf Roses, &c.
MESSRS. PROTHEROE and MORRIS will SELL the above by AUCTION, on the Premises, the Barnet Nurseries, Barnet, Herts., on THURSDAY, February 27, at 12 o'clock precisely, by Mr. J. C. Stevens, Auctioneer, & Son.
 May be viewed two days prior to the Sale. Catalogues obtained on the Premises, at the Highgate Nurseries, and at the Auctioneers', 95, Gracechurch Street, E.C., and Leytonstone, E.

Clearance Sale, Lee, Kent, E.C.

MESSRS. PROTHEROE and MORRIS are instructed by Mr. E. Malter to SELL BY AUCTION, on the Premises, the Burnt Ash Lane Nurseries, Lee, adjoining the station, on THURSDAY, February 17, at 12 o'clock precisely, a portion of the land being required for other purposes, the valuable NURSERY STOCK comprising 2000 Standard and Dwarf Roses, 1000 Standard Roses, 1000 Evergreen and Coniferous Shrubs, 200 fine Hybrid Rhododendrons, 1000 Azaleas, 1000 Gladioli, 1000 Anemones, 1000 choice Ferns, Camellias, and other Greenhouse Plants.
 May be viewed prior to the Sale. Catalogues may be had on the Premises, and at the Auctioneers', 95, Gracechurch Street, E.C., and Leytonstone, E.

Near Chislehurst, Kent.

MR. WM. HODSOLL will SELL BY AUCTION, at the "Black Boy" Inn, St. Mary's Cross, on THURSDAY, February 17, at 4 o'clock precisely, the excellent PLEAT on about 3 acres of land, in Lots of One Quarter of an Acre each, to be dug and cleared by the purchaser.
MR. ELLIS, Gamekeeper, Paul's Cray Common, near Chislehurst, will show the advantages of the above, and may be had also at the place of Sale, and of the Auctioneer, Farningham, Kent.

To Florists, Seedsmen, and Others

TO LET, on Lease or Agreement, HOUSE, SHOP, and GROUND, well stocked with Small Plants, has been in the line 40 years, and worked with a success. Premises for Stock and Vessels, &c.
J. MERS, Auctioneer, 507 and 509, Wandsworth Road, adjoining the London, Chatham, and Dover Railway Station, London S.W.

TO BE LET, forty-seven ACRES of good deep soil, thoroughly drained, together with a comfortable HOUSE and suitable BUILDINGS, within an easy distance of Wandsworth Road, and near to two railway stations. Particulars may be had of Messrs. VIGERS, Land Agents and Surveyors, 4, Fenchurch Lane, Old Jewry, E.C.

WANTED, a PARTNERSHIP, or YW SHARE in the BUSINESS of a FLORIST, by a young Man of experience in the Culture of Florists' Flowers for Market, and in the business of a florist. Particulars and experience to the Advertiser required. Address, by letter, to H. P. M. Edwards, Florist and Seedsmen, 25, Bishopsgate Street Within, E.C.

Notice to Creditors, &c.

MR. JOHN HARRISON, Deceased.
NOTICE IS HEREBY GIVEN, that any person having a claim AGAINST the ESTATE of the late MR. JOHN HARRISON, of the North of England Rose Nurseries, Carterick Bridge (late of Darlington), are requested to SEND at once a FULL STATEMENT THEREOF to the undersigned; and all persons INDEBTED to the said ESTATE must PAY the AMOUNTS DUE, to me, within 14 days, so that no person being authorized to receive the same.
 The Business will be carried on as usual at the Nurseries at COTTAGE ROAD, LONDON, N.W., on THURSDAY, February 13, 1897. WILLIAM HARRISON.

HARRIET SCOTT, WOOD-BROKER, BROOM-MAKER, and DEALER in all kinds of Garden Materials, SEND at once a FULL STATEMENT of what is NO LONGER in HER EMPLOY, and requests that all ORDERS may be given and ACCOUNTS PAID TO HER SOON, who will call in a few days. Woodside, S.E.—February 1, 1897.

Standard Azaleas, Camellias, and Portugal Laurels.
F. AND A. SMITH offer the above, which are unusually fine, and priced moderate.
 Nurseries, 10, St. John's Street, E.C.

STEPHANOTIS, one large; and ALOES, six large green American, and two variegated. Prices on application.
T. W. DASHWOOD, Queen's Road Nursery, Peckham, S.E.

GRAPE VINES, strong planting Cane of the best Hamburg, Pearson Golden Queen, Muscat of Alexandria, and other leading sorts, *3d. to 3s. each.*
EWING and COMPANY, Eaton, Norwich.

English Yews

YEWs, English—Good, strong, well-picked open plants, 10 to 15 feet high, 75s. to 100s. per 100, with complete. *Term Cash.*
C. ALLEN, Stone Hills Nursery, Heigham, Norwich.

MANETTII STOCKS.—For Sale, a few thousand, clean stem. Price on application. Apply to MR. JOHN HUBLE, Eastgate Nurseries, Peterborough.

POTATOS, Rivers' Royal Ashleaf.—To be Sold, 20 tons, field grown and perfectly dry. Apply to MR. THOS. BULMAN, Farm Ballois, West Auckland, Bishop Auckland.

Early Rose Potliff.

POTATO, Early Rose, the best in cultivation, good sound seed, and warranted true, in cwt. bags, 12s. 6d. gratis, on receipt of P.O.O.
W. S. SUTTON'S HILLS NURSERY, Heigham, Norwich.

WHITE MULBERRIES for SILK-WORKS, 2000, very dried, or very large, 2 to 3 feet, 5s. to 12s. 6d. per 100. Price to Trade, and for large quantities, on application.
EWING and COMPANY, Eaton, Norwich.

YEWs, 2000 for Sale,—3 to 3½ feet, 70s. per 100; 3½ to 4½ feet, 90s. per 100. All well-rooted and furnished. Good time for planting now. Well adapted for hedge or ornament trees. Cannot see better grown, and for quality, anywhere.
JOSH. SPOONER, Goldworth, Woking.

To the Trade.

CHERRY, Morello, Maidan, fine; and APPLS, Lord Suffolk, Blenheim Orange, New Hawthornden, Cox's Orange, Keswick Collin, and other leading kinds; MESSRS. HARRISON'S CRAB APPLES, clean stock.
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

BLUE BUNYON BLUE KING.—The finest hardy Blue Plant in cultivation; strong flowering plants, 100 per 100, 12s. 6d. per 100.
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

Cucumber Plants, clean, strong and healthy.
F. W. COOPER can supply the above: *Londoners' Telegraph* (Mrs.) of Richmond, Blue Gown, and Tender Truce; also seed of all the varieties grown under his own supervision and guaranteed true. The Trade supplied. Fretz, Huntingdon.

Now Ready.
CHARLES TURNER'S Descriptive CATALOGUE of SEEDS. Post-free on application.
The Finest Dwarf Marrow Pea in TURNER'S DR. MACLEAN'S.
 See CATALOGUE, now ready.
New Early Frollie Pea.
ALLAN'S CHAMPION.
 Full description in CATALOGUE, now ready.

Schoolmaster.
FINEST POTATO.
 Description, with testimonials, in CATALOGUE, now ready.
CHARLES TURNER, The Royal Nurseries, Slough.

CALCEOLARIA, Golden Gem, strong plants, 12s. 6d. per 100, and 2s. per 100.
GERANIUM, Veasium, strong, autumn-stem, from 10s. to 8s. per 100. Cash with order, postage free.
WILLIAM FIELD (late Field Brothers), Tavistock Road Nursery, Chesham.

For Cover.
PONTICUM RHODODENDRONS, 12s. 6d. per 100.
J. JACKSON, Nursery, Kidderminster.

LARCH, 60,000, 1½ to 3 feet; ASH, 2 to 4 feet; PINES, Austrian, fine specimens, 4 to 6 feet; the new HYDRANGEA, Thomas Hogg, 5s. each; CALCEOLARIA, Yellow Gem, 10s. per 100. Strong New Ready autumn-stem plants.

M. GROVE, Seed Warehouse and Nursery, St. Owen's, Hereford.

Morello Cherries.—Special Offer to the Trade.
R. AND G. NEAL having a very large stock of Dwarf-trained MORELLO CHERRIES, can offer them very cheap in quantities. Prices per dozen or hundred on application.
 The Nurseries, Wandsworth Common, S.W.

Herbaceous and Alpine Plants (Illustrated).
THOMAS SWARE'S CATALOGUE of the above for the present season. New Ready and includes New, Rare, and Choice Perennials, Bamboos, and Ornamental Grasses, Bog Plants, and Aquatics; also, a few Bulbs.
 Hale Farm Nurseries, Tottenham, London.

Cabbage Plants.—East Ham, Enfield Market, Little Fines. Strong plants of the above, fine to tall, 3s. per 1000, postage included.
 Strong transplanted English OAK, 4 to 5 feet, 40s. per 1000.
WILLIAM McADAM, Nurseries, Romford, Essex.

AVENUE and OTHER TREES.—Elm, Lime, Chestnut, Poplar, Oak, Beech, &c. Extra fine Beech, 3 to 4 and 4 to 5 feet; Spruce, 2 to 3 feet. The above to be sold cheap. Ground must be cleared.
E. R. DAVIS (late E. & F. Davis), Romford Nursery, Yeovil.

Trade.
ASPARAGUS.—Three million Grayson's Giant, 175s. 10s. per 1000; 27s. 10s. per 1000; 37s. 10s. per 1000. 10 million Conover's, 12s. 10s. per 1000; 27s. 10s. per 1000.
SEAKALE, planting, 50s. per 1000, for Cash.
RICHARD LUCK, 10, St. John's Street, E.C.

Hardy Florists' Flowers.
THOMAS S. WARE'S NEW SPRING CATALOGUE of the above, including Pansies, Violas (Bedding), Delphiniums, Daisies, Pinks, Frenchie, Phlox, Pyrethrum, and other bedding plants, &c. Catalogues may be had free on application.
 Hale Farm Nurseries, Tottenham, London.

To the Trade.
HUGH LOW and CO. can still offer good Dwarf-trained Moorpark APRICOTS, Dwarf-trained PEACHES and NECTARINES, Dwarf-trained PLUMS (principally Victoria and Cox's Golden Drop), Dwarf Maidan May Duke and Morello CHERRIES. Prices on application.
 Clapton Nursery, London, E.

GERANIUM WONDERFUL (G. SMITH).
 Wonderful, a semi-double, intense orange-crimm, it decidedly the best double Geranium, and most profuse flowering GERANIUM ever yet sent out, either as a bedding plant, or for winter flowering. Being semi-double it saves the trouble of requiring to be cut down. Price 12s. per dozen, 90s. per 100, and 80s. per 1000.
RAPER and SON, Nursery, Leamington.

Special Offer of
ELMS (Splendid), for Avenue or Hedgerows.
 Fine Huntingdon, from 20 to 25 feet high, 6 to 7 inches in circumference at 1 foot from ground, limed with splendid roots, and warranted true in removal. 6s. per 100, 60s. per 1000.
CATALOGUES of cheap and genuine SEEDS now ready. Post-free on application.
EWING and COMPANY, 4, Mercers' Row, Northampton. Nurseries: Bedford Road and Kettering Road.

LARGE ESPALIER APPLES.—Very fine large Trees, full of fruit-buds, measuring 6 to 12 feet wide and 12 to 15 feet high, 12s. 6d. each.
FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

To the Trade.
PRIMROSES, Double Blue, 12s. 6d. per 100, 100s. per 1000. Also 1500s. to 1000 to dispose of, good plants.
RODGER McCLELLAND and CO., 64, Hill Street, Leeds.

To Purchasers of Large Quantities, Market GARDENERS and OTHERS.
SUTTON and SONS

SUTTON'S IMPROVED EARLY CHAMPION, the best and most productive Early Pea in cultivation.
WILLIAM SUTTON'S SEEDS, 20, Abchurch Lane, London, E.C. 4.
 Daniel O'Rourke and other leading kinds.
 Lowest price per Bushel or Quarter on application.
SUTTON AND BROS., Seed Growers, Reading.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of PRIZE FRUIT from Mr. Webb's Catalogue.

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 For remarks and List of Plants offered, with prices, see last week's large Advertisement. Plants true to name, well hardened off, low in price. See **NEW CATALOGUE.**
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E. LACK, The Nurseries, Wellingborough, N. Northamptonshire, offers at 2s. per 100, in sizes, from 1 1/2 feet to 2 1/2 feet. Also **PINUS AUSTRIACA**, from 1 to 2 1/2 feet; **YEW**, English, from 4 to 6 feet—11/2 well-grown and well-rooted plants at low prices per 100, which will be sent on P.S.—A very fine stock of Standard LIMES.

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YEWs, English, clean, well-grown plants, 6 to 8 inches, 10s. per 100; 8 to 12 inches, 15s. per 100; 12 to 18 inches, 20s. per 100; 18 to 24 inches, 25s. per 100; 24 to 3 1/2 feet, bushy, 30s. per 100.

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 1877

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The best New Potato
Hooper's Garden
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 Mr. SHIRLEY HIBBERD describes it, after two years' trial, as "the very model of a gentleman's Potato."
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 All the above are very fine and very cheap.
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 Messrs. Charles Lee & Son are now prepared to offer this very useful and delicious new Melon in sealed packets, at 3s. 6d. per packet.
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STEPHANOTIS FLORINDA, Remarkably fine. A flowering variety from the Mauritius, 12 6d. per packet.
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ROBERT PARKER begs to announce that his NEW CATALOGUE is now published, and will be forwarded to all applicants. It contains Select Descriptive and Price Lists of Alpine and Herbaceous Plants, Aquatic and Marsh Plants, Asters (herbaceous), Chrysanthemums (early blooming bedding varieties), Delphiniums, Fruit Trees, Helianthemums, Iris germanica, miscellaneous Bedding and Decorative Plants, Paeonia stansis, Phlox (herbaceous), Potentillas, Pyrethrum (double flowered), Sweet Violets, &c.
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 ALDER, 1 to 1 1/2 feet, 12s. per 1000; 1 1/2 to 2 inches, 6d. ASH, 1 to 1 1/2 feet, 12s.; 1 1/2 to 2 feet, 12s.; 2 to 2 1/2 feet, 12s.; 2 1/2 to 3 feet, 12s.; 3 to 4 feet, 12s.; 4 to 5 feet, 12s.; 5 to 6 feet, 12s.; 6 to 7 feet, 12s.; 7 to 8 feet, 12s.; 8 to 9 feet, 12s.; 9 to 10 feet, 12s.; 10 to 12 feet, 12s.
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 YEW, 1 1/2 to 2 feet, 12s.; 2 to 2 1/2 feet, 12s.; 2 1/2 to 3 feet, 12s.; 3 to 4 feet, 12s.; 4 to 5 feet, 12s.; 5 to 6 feet, 12s.; 6 to 7 feet, 12s.; 7 to 8 feet, 12s.; 8 to 9 feet, 12s.; 9 to 10 feet, 12s.; 10 to 12 feet, 12s.
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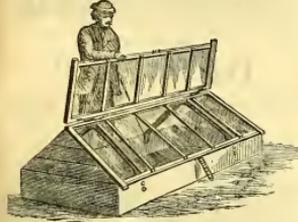
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These excellent span-roof frames are made with wood sides, to which are bolted iron girders to carry the lights. These lights will turn completely over and lie on the other side while attending to the plants inside. They are very portable; a man can easily remove the small size, two men can carry any size up to 12 feet by 4 feet. The use to which they may be applied is unlimited, as almost any class of plants can be grown in them.

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Length.	Width.	Height of sides.	Height to ridge.	£ s. d.	per pair.	Ends.
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12 "	3 "	"	1 ft. 9 in.	2	10 0	5' "
12 "	4 "	"	"	3	5 0	7' "
12 "	5 "	"	2 ft. 0 in.	2	0 0	8' "
12 "	6 "	"	"	4	0 0	9' "
12 "	8 "	11 inches	2 ft. 6 in.	5	10 0	10' "
12 "	6 "	"	3 ft. 0 in.	7	0 0	12' "

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18 "	7 "	5 0	18 "	9 "	9 0 0
24 "	9 "	2 6	24 "	11 10 0	9 0 0
33 "	11 "	2 6	33 "	14 0 0	10 0 0
36 "	13 "	2 6	36 "	16 0 0	10 0 0
43 "	15 0 "	4 2	43 "	19 0 0	10 0 0

"Gentlemen,—The frames arrived safely, and give satisfaction. I would not have thought they could have been packed to have come in such good order, the paint on the lights was not even scratched.

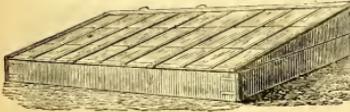
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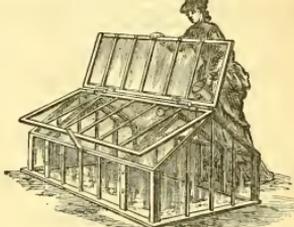
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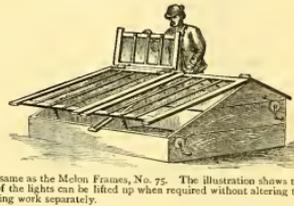


CASH PRICES.		Length.	Width.	£ s. d.
No. 1	5 feet	2 feet 6 inches	3 5 0	
No. 2	5 feet	3 feet	3 10 0	
No. 3	6 feet	3 feet	3 17 6	
No. 4	6 feet	4 feet	4 5 0	
No. 5	9 feet	4 feet	6 0 0	
No. 6	9 feet	5 feet	7 0 0	

No. 1 and 2 made with brackets and side trays for planting Ferns; extra for No. 1 size, 12s. 6d., No. 2 size, 15s. Any size of No. 62 carriage paid on any Railway Station in England, also to Dublin, Edinburgh, and Glasgow.

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Our illustration shows a New Frame for growing Cucumbers, Melons, &c., and for storing plants. It is made to give greater light and more convenience than the Melon frame, No. 72. The front is 21 in. high, without the light, 24 in. high at the ridge, and 22 in. high at the back. The front lights can be turned back on the lights behind, and back lights turned on to the front lights, giving access to all the plants inside. They are made of the best red deal, sides and ends 1 1/2 in. thick, 2 1/2 in. light; all are painted four times, and glazed with 21-oz. sheet glass, nailed and putted in, same as the Melon Frames, No. 72. The illustration shows the lights to open with gearing; any of the lights can be lifted up when required without altering the other lights. Back and front gearing work separately.



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

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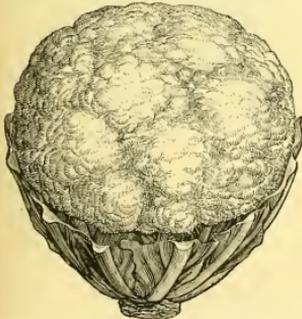
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SATURDAY, FEBRUARY 17, 1877.

SCHOOL GARDENS IN SWEDEN.

GOTHENBURG in Sweden has been lately boasting in the full sunshine of celebrity on account of its experimental attempt to diminish intemperance by establishing municipal public-houses. From the last accounts there seems some reason to doubt whether the experiment has been attended with all the success claimed for it, but no one will dispute the town's claim (if it care to make it) to originality and independent thought. The matter recalls to our mind another instance of a similar character emanating from that quarter, and relating to our own special subject.

A few years ago an attempt was made in Sweden to teach gardening at country schools, of which a full description was given at the time by Von Huttig of Gothenburg; which, however, attracted no attention in this country. As, however, some features of the plan may possibly be of use as hints for ourselves, we think we may occupy the attention of the reader to more purposes than by giving a summary of the information communicated by Von Huttig.

By the term school garden is meant a garden granted by the Town Council or others in authority, to the public school of a district, in which the pupils shall receive instruction in horticulture.

In Germany they are almost unknown, and in Sweden they are still rare; and even at the present day they there receive much opposition from the prejudiced ideas of the people, who are of opinion that every minute not occupied in reading is so much time lost.

For more than ten years an eminent Swedish author and pomologist, Dr. O. Eneroth, sought to awaken public interest to the importance of introducing horticulture as a subject of instruction into our public schools. His efforts have not been wholly fruitless; all the authorities, including the Ministry, desire the introduction, but as yet it is not the law of the land. A new school statute indeed has lately been promulgated, but sufficient provision has not been made for securing competent teachers. The teachers have to be taught before they can teach. Various other difficulties were encountered, in the way of inducement, inspection, time, interference with other studies, and the ambulatory character of many of the schools in Sweden, arising from the sparse population and the want of school houses. Where these do not exist, the master collects some of the scholars together in one peasant's house, then passes on to another in three months' time, when he gets some more—and so on. The teacher has often to go miles to his scholars—and it is not surprising that under such untoward circumstances the teaching of horticulture has not made the desired or expected progress.

Some progress, however, has been made. The establishment of regular schools, with judiciously contrived school-houses built by the pecuniary assistance granted by the State, the provincial representatives, and the agricultural society of the province, as well as by private individuals, is going on. Every community requires, according to its extent of from 1 to 4 and more square miles, a greater or less number of school-houses, with a corresponding number of teachers; and when any new school building is now erected, at the representation of the school inspector, a possible garden at some later period is borne in mind, and the inspector usually does not rest

by whom it will be distributed. In habit and general character it is said to resemble the well-known popular variety called Vesuvius, differing only in having the blooms invariably striped. Mr. Cannell in his characteristic style remarks that "its sale and propagation will never cease until it is seen in every window." A cutting, it appears, has been stolen, and a reward is offered for its discovery.

FLORENTINE GARDENS.

FLORENCE: *March 2, 1876.*—Situated at a low level, and completely sheltered by hills, Florence in the advance of vegetation presented a greater contrast to the North Lombardy plain than two degrees of lower latitude would represent, for spring was here at least a month earlier than at Trieste and the northern Italian cities; and the *fortis*, or flower-women, both in the flower-markets and streets, were already well supplied with the early produce of the delicious

duction of feathery masses of *Ferala* and *Araucaria excelsa* as central features.

Our English climate would of course limit the available selection, but with *Yucca*, *Thuja*, *Araucaria imbricata*, *Retinosporas*, and other *Conifera*, associated with *Ferala*, *Gunnera scabra*, and the common *Rhubarb*, just such effects could be obtained as are so pleasant to the eye in the Florentine squares.

Florence is rich in public gardens. The Cascine, a continuation of the Lang Arno, is a noble promenade, well-kept, and perfect as regards planting and simple dignity of effect, though there is nothing special to note in a purely horticultural sense. The establishment, including the *Muses de Storia Naturale* and the Botanical Garden, is the central point of attraction to the naturalist visiting Florence, and for its size is one of the most complete and best ordered in Europe. It has been of gradual growth by additions made to the *giardin*, or observatory, founded under the Medicis. The botanical collections include a fine series of wax models prepared by MM. Calamai and Tortari, under

species under the names of *lageniformis striatus* and *aureus striatus*, to which I must draw the attention of Crocologists, as it accords with nothing that has hitherto been described, with a bright orange limb, the three outer divisions suffused externally with bronze. It somewhat resembles the plants in cultivation under the names of *stellaris* and *sulphureus striatus*, but the almost entirely indented scarlet stigma separates it from the aureus and musicus group, and seems to connect it with *susianus* and *reticulatus*, between one of which and *aureus* it may possibly be a hybrid: there were a few patches of it grown for ornament in the King's garden, but I could ascertain nothing about its history or origin.

The botanic garden is too limited for an extensive collection of trees, but in a small open quadrangle fenced in by high walls under the Pitti Palace is an interesting collection of Chinese and Japanese species, including a grand specimen of *Sophora japonica*, various species of *Camellia*, *Saliburgia adiantifolia*, *Magnolia fuscata*, M. Yulan, M. obovata, M. anoneflora, *Cunninghamia sinensis*, *Daphne variegata*, *Chamaecyparis excelsa*, *Leucis Camphora*, *Hydrangea quercifolia*, *Thea viridis*, &c.

There are also a few good *Conifera* scattered about the garden, but the general collection of trees is meagre, and might be augmented with advantage. *Geo. Hays, F.L.S.*

THE PHYLLOXERA.

A GENTLEMAN the other day called my attention to a long article on the subject of the invasion of France by the Phylloxera, from the pen of Professor Planchon, of Montpellier, in the *Revue des Deux Mondes* for January 15 of the present year. From what this writer indicates, there is an opinion prevalent, which, however, he does not seem to vouch for, that some of the American foxy Vines resist the attacks of the insect. [See our issues for August 21, 1875, and June 3, 1876. Eds.] If this could be verified, say by the Scientific Committee of the Royal Horticultural Society, it would be worth while to grow such Vines as *V. Labrusca*, *V. rotundifolia*, or any other that might be found to be proof against the attacks of the pest, and inarch our own Vines on them, as Plums, Pears, Peaches, and other fruit trees are inarched or grafted. Some say that all the foxy flavoured Vines of America are exempt from attack.

It is not for me to say how the committee should proceed in the matter, but one certain way of getting at the truth would be to plant a Vine infested with the insect in a box, or pot, with one or other of these American Vines, and in the course of one season the proof either way would be absolute. If this question could be set at rest, and the fact certified, that such Vines as I have alluded to really resisted the insect, a boon of immense value would be conferred, not only on this country, but on Europe.

To practical men it is perfectly clear that though the sulphocarbonates, and other remedies proclaimed by Mr. Phylloxera, may kill the Phylloxera, it is not possible to get it applied so as to secure this result. Any one who has seen and examined the vineyards of the Rhine, must know that the roots of the Vines extend into fissures of the rocks, where no insecticide can get near them. If a remedy of universal application is ever discovered, it must be in the use of a stock that the insect won't feed upon; and whoever makes this discovery will immortalise his name. From what Mr. Tiley writes the other day, I observe that he is making experiments with some infested Vines: let me call his attention to the subject in hand.

While on this matter it may not be out of place to remark that smaller matters than the ravages of Phylloxera have attracted the attention of Government, and that it might be well if by an Order in Council, or in some other way, it was made compulsory on any one having the pest to report it at once, and to destroy the Vines within a given time. In this way it might be stamped out of the country, and kept out, if the importation of Vines was forbidden under severe penalty. *W. Thomson, Tuxed Vineyard, February, 1877.*

FERTILISATION OF PLANTS.

(Continued from p. 139.)

Petunia violacea.—A dingy purple variety was cultivated for five generations. The ratio of the average heights of the intercrossed to the self-fertilised was 100 : 71; but in the third generation the difference was reversed, for the heights were then as 100 : 131. Mr. Darwin's explanation (p. 275) is, that the seeds from which the self-fertilised plants of the third generation were raised, were not well ripened, which fact,

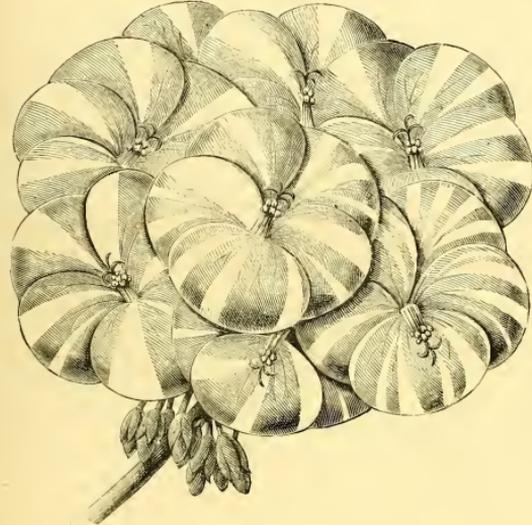


FIG. 32.—PELARGONIUM (ZONAL) NEW LIFE.

climate. Seen from the surrounding heights, the huge dome of the cathedral, with its many-coloured campanile, and the towers of the churches rise out of the dense variegated mass of the mediæval city, which dies away into the surrounding grey hills through a bright halo of white villages and villas spreading up on all sides amidst Olive gardens, sombre groups of Cypress, and light fleecy patches of Almond trees in full flower. One of the most striking features to the new-comer is the laying out of the squares or piazzas, in which the horticultural features harmonise so thoroughly with the surroundings, as to put to shame our own efforts at city gardening, which in our West Central squares goes little beyond the fencing-in of an unhealthy deciduous thicket by a forbidding iron railing.

In the Florentine squares the development of distinct features is aimed at. Crowding is always avoided, and the symmetrical disposition of a few trees and plants, generally in association with sculpture and fountains, brings all into pleasant harmony with the architectural surroundings. *Chamærops Fortunei*, C. humilis, and tall *Yucca* are contrasted with *Thuja* area and other *Conifera* of massive form; and a farther contrast to the whole is obtained by the intro-

duction of Professor Amici, also a good collection of wood sections, fossil plants, &c. The first nucleus of the natural history collection was formed by Pietro Leopoldo and Targioni, by the former of whom the garden was founded a few years after the museum. The formation of the splendid main herbarium (L'Herbier Central) is due to Professor Parlatore, the present director, who commenced it about the year 1844, and to this has recently been added, in a separate adjacent gallery, the fine private herbarium of the late Philip Barker Webb.

The botanical garden, immediately adjacent to the museum, though well-ordered, bears evidence of intermittent growth, and consists of semi-isolated patches and terraces rising up to and intermixed with the Boboli Gardens. The glass-houses, as in most Italian gardens, are defective in structure, and the cultural details are, in consequence, scarcely equal to those in English establishments of the kind.

In the cultivation of bulbous plants in pots and cold frames the garden greatly excels, and there is perhaps no other botanical garden in Europe that could exhibit so complete a collection of European bulbs in a thoroughly healthy condition. Amongst the *Croc*, of which there is a fine series, there is a

he says, gave them an advantage (?), and refers to a similar case in Iberis, but in p. 192 he attributes the inferiority of the very same crossed plants of this third generation of *Petunia* to their not having been sufficiently ripened, and thus producing weakly plants compared with the self-fertilised, as (he again says) also occurred with Iberis; but on p. 103 we read:—"I record in my notes that the self-fertilised seeds [of Iberis] from which the self-fertilised plants were raised [and which were 5 or 6 inches taller than the crossed], were not so well ripened as the crossed." Hence, there are two errors of statement as well as adverse reasonings from the data! Mr. Darwin also accounts for the greater growth of the eighth generation of *Ipomoea* from their having been raised from unhealthy parents (pp. 38, 39). Surely, if it be beneficial to have unripened seeds and unhealthy parents, at least as far as height is concerned—and Mr. Darwin has selected that as his standard of superiority—natural selection ought to have prevented seeds from maturing, and encouraged the visits of aphides! But I think we may find another explanation. On p. 274, Mr. Darwin says, "very significant sentence." It is a remarkable fact that in one pot in which the plants of both lots grew extremely crowded, the intercrossed were thrice as tall as the self-fertilised." This implies that in the other pots they were not so crowded. Now, there is abundant evidence throughout the book that intercrossed and perhaps especially crossed plants, *i.e.*, with new stocks, show, as a rule, a very great superiority over self-fertilised plants when struggling in competition; but, when not crowded, or when grown in open ground, then the difference between their heights and weights is greatly reduced, and may be actually reversed. Indeed Mr. Darwin had already stated this fact in his *Animals and Plants under Domestication*, vol. II., p. 128, in alluding to his method of culture. It is of importance that the two lots of seed should be sown or planted on opposite sides of the same pot, so that the seedlings may struggle against each other, for if sown separately in ample and good soil, there is often but little difference in their growth." I will return to this fact hereafter. Hence I would attribute the vigour shown by the self-fertilised plants of the third generation of *Petunia* to less crowding. And here I will venture to remark that Mr. Darwin's plan of sowing both intercrossed and self-fertilised seedlings in the same pot—though with the express object of imitating Nature, and thereby revealing the superiority of the former—would have been readily met by also growing similar pairs in separate pots. Then, there is reason to know that the relative heights would have been much nearer uniformity. As it is, the absolute vigour of neither can be estimated, though the relative vigour is clearly in favour of the intercrossed. Mr. Darwin, indeed, himself elsewhere recognises the great importance of freedom of growth for self-fertilisation to be successful; for in speaking of an experiment with an equal-styled "very self-fertilising red-flowered variety of *Primula veris*," he says:—"Judging from the previous generations, the extreme unproductiveness of the self-fertilised plants in this experiment was wholly due to their having been subjected to unfavorable conditions, and to severe competition with crossed plants; for had they grown up in good soil, it is almost certain that they would have produced a large number of capsules."

Canna Warvicevicum affords another case resembling *Pisum sativum*, for this species is highly self-fertile, and "as plants are cultivated in pots, and are not exposed to competition, they have been long subjected to uniform conditions;" and Mr. Darwin adds, "we have no right to expect much or any good from intercrossing plants thus descended and thus treated." And no good did follow, except that the intercrossed plants yielded rather more seeds, viz., as 100:85. But the self-fertilised plants mostly flowered before the intercrossed.

There are two more plants, *Eschscholzia californica* and *Reseda odorata*, I will remark upon, for I think Mr. Darwin has drawn erroneous conclusions from them.

In the reader will carefully peruse the first paragraph of chap. xii., pp. 436-7, I think he would be led to suppose that *Reseda* and *Eschscholzia* were good examples to illustrate the "injurious effects of self-fertilisation, for as [some individuals of] these are sterile with their own pollen, they have been long naturally crossed, and the artificial crosses in my experiments,"

says Mr. Darwin, "cannot have increased the vigour of the offspring beyond that of their progenitors. Therefore the difference between the self-fertilised and crossed plants raised by me cannot be attributed to the superiority of the crossed, but to the inferiority of the self-fertilised seedlings, due to the injurious effects of self-fertilisation."

The last sentence, which I have italicised, is very misleading.

In the introductory remarks on *Eschscholzia* (p. 109), the second sentence directly contradicts the above; for it runs as follows:—"A cross greatly increases the procreancy of the flowers of the parent plant." This is repeated on p. 275, in the words, "A cross does some good."

Mr. Darwin received seed from Brazil, where *Eschscholzia* is "absolutely self-sterile," and, therefore, unlike English-grown plants, which are more or less self-fertile. It proved, however, to be not so sterile in this country; hence he was able to raise self-fertilised plants; the relative fertility of the intercrossed to the self-fertilised being as 100:15, where the "15" represents so much absolute gain, and considerable for a single generation; but in the next generation the relative fertility appears now as 100:86.7! Turning next to the comparative results between the heights of the first generations—*i.e.*, grandchildren of those grown in Brazil—the heights are as 100:101, and in the second generation as 100:116! Mr. Darwin observes on this:—"As the grand-parents absolutely required cross-fertilisation, I expected that self-fertilisation would have proved very injurious to these seedlings. . . . But the result showed that my anticipation was erroneous."

He next crossed the Brazilian plant with an English stock, and it would be inferred by analogy that great benefit should accrue; but the self-fertilised actually beat the crossed in height, 100:109, and in weight as 118:100; and Mr. Darwin further remarks that the self-fertilised were also apparently superior in hardiness. The only point, then, where the crossed were superior to the self-fertilised was in fertility; but when we remember that *Eschscholzia* is absolutely self-sterile in Brazil, it is more surprising to find the ratio so near equality in two generations.

Surely, then, it is unfortunate that Mr. Darwin should have specially alluded to this plant as proving the "injuriousness" of self-fertilisation, for his own data not only fail to support his conclusion, but maintain exactly the reverse, for the acquirement of self-fertilisation is, *per se*, so much actual gain to the plant of a new and benefited means of propagation, and, as he has already ascertained that, such plants, by gaining new constitutional elements by transportation to this country, became more vigorous than the normally intercrossed, or even than plants crossed with a new stock.

Eschscholzia is not a unique case, for *Reseda*, likewise mentioned as supporting the idea of the injuriousness of self-fertilisation, also tells against such being the case.

Reseda lutea is sometimes absolutely self-sterile. Some plants, however, produced a few spontaneously self-fertilised capsules; propagating from these latter in pots, the results gave the mean ratio of heights as 100:85, and in open ground as 100:82. And Mr. Darwin adds, "It is a singular fact that the tallest plant in the two rows was one of the self-fertilised." The ratio of their weights was still more striking—*viz.*, of those in pots 100:21, but in open ground as 100:40.

Reseda odorata.—This species shows degrees of fertility from absolute self-sterility to full self-fertility. Arranging Mr. Darwin's results as follows:—I. Intercrossed plants from the highly self-fertile parents, compared with self-fertilised. *a* (in pots), heights were as 100:82, weights as 100:67; *b* (in open ground), height as 100:105 (weights not given). II. Intercrossed plants raised from a semi-self-sterile parent, and compared with self-fertilised plants, raised from the same parent. Mr. Darwin here makes a remark similar to that upon *Eschscholzia*:—"I expected that the seedlings from this semi-self-sterile plant would have profited in a higher degree from a cross than did the seedlings from the fully self-fertile plant, but my anticipation was quite wrong." *a*, height as 100:192, weight as 100:99; *b*, height as 100:90 (weights not given).

Now, comparing these two sets of results, a remarkable fact is seen, that in the first generation the plants from fully self-fertile and self-fertilised parents grown in pots (*a*) do not give such high results as the self-fertilised plants raised from semi-sterile parents under

the same circumstances. But while the former show a vast improvement when grown in the open ground (I., *b*), the latter show none!

Now it is a general rule, as already stated, that self-fertilised plants cannot stand competition at all equal to intercrossed plants; but when planted in the open ground the contrast is greatly lessened, *i.e.*, the ratio becomes more nearly one of equality, in other words the self-fertilised recover vigour in a higher ratio than the intercrossed are improved by freedom of growth. So here, from I. (*b*) it is to be inferred that the self-fertilised have a greater "elasticity" of growth, so to say, than the intercrossed. This was likewise the case with the weights of *Reseda* lutea. II. (*a*) would seem to show that the vigour of the offspring from parents semi-sterile is relatively greater than that of the offspring from fully fertile parents when compared with the intercrossed plants of each kind; and had not *Eschscholzia* showed a similar fact these results of *Reseda* could scarcely have been considered trustworthy.

Hence it is very unfortunate for Mr. Darwin's argument to have especially selected *Reseda* and *Eschscholzia*, for these certainly do not prove any "injurious" effects to arise from self-fertilisation, but just the reverse!

The fact appears to me to be this:—The word "injurious" is a purely relative term. If a plant is so highly differentiated that it has not only become adapted to insect agency but also to be self-sterile, then, of course, to put its own pollen upon the stigma of a flower, rather than that of another plant, may be said to be, relatively to the latter process, at least useless if not injurious. But when we see a plant thus usually self-sterile becoming, under changed circumstances, self-fertile, this power of self-fertilisation is actually so much positive gain, as Mr. Darwin admits "the obvious fact, that the production of seed is the chief end of the act of fertilisation, and that this end can be gained by hermaphroditic plants with incomparably greater certainty by self-fertilisation." Now it is clear that many plants have become highly differentiated by adaptation to insects, and in becoming so, the pollen has physiologically changed correlatively to such a degree as to be useless on the flower's own stigma. This therefore is so much absolute loss to the plant, as it now has to depend, with less certainty, upon the chance visit of insects; but when the plant can recover its lost power, and especially when it can acquire fresh and new constitutional elements, then, as we see in *Reseda* and *Eschscholzia*, the first result is the absolute re-gain of self-fertilisation, which may be accompanied by an equality with, or even a superiority in vigour to, the intercrossed.

In a later communication I propose continuing the subject of self-fertilisation. *George Henslow.*

ASPECTS FOR PLANT-HOUSES.

MR. BESTER'S arguments in favour of altering the aspect of span-roof plant-houses, from east and west, to north and south, strike me as being a little one-sided, and I fear the plants would think so too, if only the effect of the east-bars was opposed to the sun. It appears to me that a lean-to house placed against a wall would suit the plant nearly as well, and be much warmer. As regards the shading of the house in winter by the framework, I should think that the sun about noon-dawning comparatively perpendicularly, first on the east side, then passing over the ridge to the west side, would meet very little obstruction, and I do not think the sun would melt ice on the north side of a span-roof at all. Secondly, the fact of a house being warmer at 5 o'clock than at 10 on a summer morning may be due to the ventilation being closed at 5 o'clock and open at 10, rather than to the effect of the east-bars shading the interior. Thirdly, as to the impossibility of closing span-roof houses facing east and west till late on a summer evening, owing to the sun shining full on the west side till late at night—that is a question between the sun and the advocates of the early-closing movement; and as the sun is rather behind the times in the matter of shortening its working hours, the only thing to be done is to leave down the blinds on the west side, till Old Sol retires for the night. This is surely better than in a roof facing south, where the sun only gets shining into the interior for a few hours near noonday, owing to the east-bars acting as a shade as soon as it gets a few degrees on either side of the

meridian—at least, if they shade it in one case they will in another also.

Now, let us look for a little at the position Mr. Bester advocates—viz, sides facing north and south. He says it receives the full force of the sun, and it shines right through the house. I say the sun can shine on the south side only, and if there are tall plants in the centre of the house, as is generally the case in span-roofed buildings, they will keep the sun from shining past them, and a lean-to would suit the same purpose, and be warm too.

I believe there is more scorching due to the thin 16 oz. glass so extensively used now-a-days, than to the sun's glare on the moisture.

All great cultivators will have great difficulties to contend with, in this world, so long as the sun goes its daily rounds in the hot-headed, independent way it has done hitherto; and I would respectfully advise your readers to consider the other (or north) side of the question before they alter the position of span-roof houses.

While an article like Mr. Bester's is very good as affording an opportunity of discussing the question in the pages of the *Gardener's Chronicle*, still, as a friend of mine, a horticultural builder, said to me the other day, "You have no idea, Mr. C., what trouble such articles give us builders; for instance, when a gentleman getting up a span-roof house sees an article like this, he makes me put it up according to the directions given in the article; and then other people seeing the house, blame the builder for placing it with a bad aspect; and make up their mind that they will not employ me to do their work, if I do not know how to place it properly." But that is a mild case. Why, it is only a month or two since one of the garden papers had an article copied from another paper giving full instructions to those about to erect glass, with a specification, specifying among other things that the boiler is to be capable of heating the whole up to a temperature of 180° in the coldest weather, and the wood to be sent to the job without being painted or primed, so that people may see if the timber is good or not. Fine work it would be, especially in wet weather like this, and you know no person will take a builder's word against such an article.

"It is the same in the heating, too. There is that new endless something boiler that burns dirt; in fact I expect to hear every day that they are burning bricks in it, without fuel; then we shall have a brick-kin as well as a jimekin heating apparatus. In fact, I am thinking of bringing out a new boiler myself; it is to be heated with turpentine flannels wrapped all round the boiler. You know there is an awful heat in a piece of flannel wetted with turpentine. I use it on my breast when I have a cold, so I can speak from experience, and remember, Mr. C., I shall expect a first-class testimonial from you when you see it." *Aqua-Calida.*

NOTES ON OPEN-AIR VEGETATION.*

THE winter, so far as it has gone, has been rather remarkable, wind and rain in excess, with comparatively little snow and frost, particularly in this district of Scotland. The first snow which fell, and perhaps the heaviest, was on the 8th and 9th of November, doing a vast amount of injury at the time by breaking down the branches, and damaging the bark of many deciduous and evergreen trees throughout Scotland, such as Oaks, Beches, Elms, Silver Firs, and Spruce. This, with subsequent falls, rapidly disappeared. Although snow up to this time in this locality has been less in comparison to many winters, rain has, however, fallen in greater abundance during the last five months than has been known in this district during the same period for many years. So much has this been the case that all low and level grounds are saturated with water, and all therefore very much against the flowering of many of the hardy spring bulbs. The Snowdrop, for instance, at this particular time (January 31) used to be abundantly in bloom, not only on the elevated grounds, but all over the level garden lawns; now they are only to be seen partially in flower on raised and sloping banks where the ground is somewhat dry, while those on flat lawns and in low, damp situations are scarcely appearing above the surface of the soil. This dampness may

also account for the backwardness apparent in the flowers of the Crimean Snowdrops (*Galanthus plicatus*), *Leucojum vernum*, *Crocus susianus*, and even the varieties of *Crocus vernus*, all of which were recorded in flower during the month of January last year, when the weather was colder. I am not prepared to say how long it is since we had such an amount of moisture during any one winter; this, however, I do know, that for the last fifty years we have never been troubled with water in some of our garden stakesholes till the last month, necessitating pits to be sunk in them, and a daily baling out of a quantity of clear water. What effect this excess of moisture will ultimately have on the roots of many shrubby and herbaceous plants growing near the surface it is difficult to say.

Owing to the comparative mildness of the winter, so far as it has gone, many of the autumn plants carried more or less in flower throughout it, not, however, in very good condition—kinds in all probability which would not have been in flower during an ordinary severe one, such as *Primroses*, *Polyanthus*, *Gentiana acialis*, *Veronica repastris*, *Lithospermum fruticosum*, *Potentilla alba*, *Iberis*, *Aubrietia*, *Wallflower*, &c., while the various species of *Helioleba* have been remarkably fine, as well as *Tussilago fragrans*, *Sternbergia lutea*, and *Crocus Imperati* (both the latter growing on high parts of the rock garden), *Erica carnea alba*, *Jasminum nudiflorum*, *Garrya elliptica*, and *Viburnum Tinus*. The flowers of the common *Cardus* have been particularly abundant throughout the month, and if no frost should occur a full crop of *Hazel-nuts* may be looked for in autumn.

From the selected list of forty-two plants whose flowering has been annually recorded during the last twenty-seven years four species only flowered during January, while eleven species of this number were noted during the same month last year.

<i>Caryoph. Avellana</i> ..	January 14, 1876.	January 1, 1877.
<i>Tussilago fragrans</i> ..	" 12 "	" 3 "
<i>Helioleba tripartita</i> ..	" 12 "	" 8 "
<i>Colchid. nivale</i> ..	" 16 "	" 15 "

Besides herbaceous plants, there are also several other shrubby species which are usually noted as being in bloom in the open air at this particular time, but which are still considerably behind. Of these may be mentioned, *Rosa*, *Myrica*, *Menyanthes*, *Rhododendron*, *Myrtillus*, *R. Nobleanum*, and *Cornus mascula*; but whether this arises from the sunless, wet autumn, or the want of the necessary amount of frost to mature them for early blooming, it is difficult to say, probably both combined.

In order to continue the meteorological tables which I have carried on during the last twenty-two years, showing the amount of frost during each month from October till April inclusive, I have to add the following observations. During October, 1876, we did not record a single degree of frost, notwithstanding that 35° were registered during the united October months for the last twenty-two years. The lowest markings were during 1856, 1857, and 1862, when 3° only were indicated during each October month; while the highest was during 1859, when 56° of frost were registered. The lowest markings during the month of October, 1876, were on the 2d, 23d, 25th, 26th, 27th, and 31st, when 37°, 37°, 36°, 37°, 33°, and 35° were indicated, while the highest morning temperatures were on the 7th, 8th, 9th, 17th, 18th, and 19th, indicating respectively 55°, 53°, 50°, 50°, and 50°.

During the month of November, 1876, the thermometer was the same time as at below the freezing point, indicating collectively 82°, being two more than was noticed the previous year—the lowest markings being on the mornings of the 7th, 8th, 10th, 11th, 20th, and 30th, indicating 26°, 26°, 20°, 22°, 23°, and 25°, while the highest morning temperatures were on the 3d, 4th, 5th, 17th, 18th, and 19th, indicating 45°, 45°, 46°, 45°, 43°, and 43°.

During the month of December, 1876, the thermometer was twelve times at or below the freezing-point, indicating collectively 43°, while the corresponding month last year indicated 84°. The lowest temperatures were on the mornings of the 1st, 3th, 23d, 24th, 26th, and 27th, indicating 29°, 25°, 24°, 16°, 27°, and 27°, while the highest morning readings were on the 2d, 5th, 6th, 7th, 10th, and 11th, indicating respectively 42°, 43°, 44°, 45°, 43°, and 43°.

This last January the thermometer was sixteen times at or below the freezing-point, indicating collectively 73°, while 103° were registered during the same month last year. The lowest markings during

January were on the mornings of the 2d, 3d, 12th, 15th, 22d, and 23d, indicating 20°, 18°, 25°, 27°, 26°, and 28°, while the highest morning temperatures were on the 8th, 9th, 11th, 19th, 20th, and 28th, indicating 40°, 37°, 37°, 38°, 39°, and 37°.

NITROGEN AND VEGETATION.

(Concluded from p. 175.)

THE absorption of ammonia by soil is controlled by a number of conditions; the physical and chemical characters of the soil, its condition as to moisture, and its being covered or not by vegetable growth, all largely influence the extent of the absorption. Schlösing made experiments on two soils. The ammonia in these soils was determined, and they were then freely exposed to air, but sheltered from rain. Dry soil was found to absorb ammonia to a considerable extent; a limit must, however, be reached as soon as the tension of ammonia in the soil equals that in the atmosphere. With moist soil the case is different; here the ammonia absorbed is quickly oxidized to nitric acid, and the soil is consequently capable of continuing the absorption of ammonia for a far longer time, and of taking up a much greater quantity.

In the appropriation of atmospheric ammonia by plants and by soil, but especially by the latter, we appear to have an important supply of nitrogen to vegetation. The amount of combined nitrogen sufficient to account for the amount found in the vegetable growth annually produced; the supply furnished by the rain is, however, supplemented by this direct absorption from the atmosphere both by soil and plant. Schlösing has repeated with great care the experiments of Debrünn, but can find no evidence that the decayed vegetable matter of soils has the power (as was asserted) to produce ammonia from the free nitrogen of the atmosphere. He believes that there is at present no evidence that the free nitrogen of the atmosphere becomes available to plants, except to the small extent in which it is converted into nitrous acid by electrical discharges in the atmosphere. This nitrous acid is oxidized and carried to the soil by rain in the form of nitrate of ammonium.

While this action of electricity is, in Schlösing's judgment, the only original source of combined nitrogen on the surface of our globe, there are several actions by which combined nitrogen is lost. It is absolutely lost to some extent during the decay of nitrogenous organic matter (as farmyard manure), when an insufficient quantity of oxygen is present, a portion of the nitrogen reverting under these conditions to the free state. It is lost to our soils to a large extent by the removal of nitrates in the drainage water in the form of *Urea*, which has already been discussed by Dr. Gilbert in the lecture previously referred to. The loss to the soil from this cause must in many cases exceed the whole amount of nitrogen supplied by rain. The nitrates thus lost by drainage pass into the rivers, and finally into the sea. Here they serve as food for marine plants, which in their turn become the nutriment of marine animals. The plants and animals on their decay furnish ammonia; but the ammonia contents of the ocean cannot exceed a certain point without interchange taking place with the air resting on its surface. The atmosphere is thus continually enriched with ammonia, which is immediately dried, and carried by winds over the surface of the land. From the atmosphere the soil finally takes up as ammonia the nitrogen it had previously lost as nitric acid. Continents, with their porous soils, and shallow waters, are, in fact, an oxidising medium; continental nitrogen tends to resolve itself into nitric acid, which finds its way to the sea. The deep waters of the ocean present no such facilities for oxidation; here nitrogen finally takes the form of ammonia, and entering the atmosphere recommends its circulation in Nature.

Such is the simple and beautiful conception of Schlösing. The ocean is the vast storehouse of combined nitrogen for the whole world; ammonia is the carrier by which this nitrogen is gradually conveyed to every part of the globe, which supplies nitrogenous food to the whole vegetable kingdom, and balances the gains and losses of land and sea. If we believe with Boussingault that the production of nitrous acid by electric discharges takes place to a very considerable extent in tropical regions, far exceeding the amount annually brought down in rain in these higher latitudes, we have also in the am-

* Read at the February meeting of the Edinburgh Botanical Society, by Mr. M. Nabu.

moma of the atmosphere the vehicle by which this great original source of combined nitrogen is made available for the whole globe; for as the nitrates produced by electrical discharges in the tropics run their course, they must sooner or later take the form of ammonia, and entering the atmosphere become subject to the laws of diffusion.

We must, in conclusion, say a few words respecting the recent investigations of another French chemist, M. Berthelot. We have spoken already of the fact that an electric discharge through the atmosphere causes a small quantity of the nitrogen and oxygen in the air to combine and form nitrous acid. M. Berthelot has made the results produced by an electric discharge through gases a special subject of study; he finds that many combinations and transformations can be effected by this means, and that a silent discharge of electricity produces a greater chemical effect than a visible spark. In the course of his experiments he observed that moist cellulose (filter-paper), or a solution of dextrin, absorbed nitrogen from ordinary air when placed in a vessel through which an electric discharge was maintained; this nitrogen he states entered into non-volatile combinations, and was evolved as ammonia only when the paper or dextrin was heated with alkalis at a high temperature. In the earlier experiments Berthelot employed a powerful induction coil as the source of electricity; in his last published paper he gives the results obtained when employing only the ordinary electrical tension of the atmosphere. The moist paper, or dextrin, was placed in a sealed glass tube filled with air; the outside of the tube was coated with tinfoil, and connected with the earth. Inside the glass tube was another tube, insulated from the outer one; this was coated with silver foil, and connected, by a platinum wire, passing through the outer glass, with the atmosphere at a height of about 2 yards from the ground. The construction was such that the outer tube had the electric tension of the earth, and the inner tube the tension of a layer of air 2 yards above the earth's surface. The experiments continued two months. On opening the tube, and analysing the paper or dextrin, nitrogen was found in every case to have been fixed in appreciable quantity.

These results obtained by M. Berthelot are certainly startling, and will require thorough confirmation before they can be received as established facts. In M. Berthelot's opinion they point to a hitherto unrecognised source of combined nitrogen to vegetation. Plants, on his view, acquire nitrogen from the atmosphere through the medium of electric action. The question will doubtless before long be submitted to investigation by other chemists.

Before closing these notes of recent investigations we may remark how little either of them touch the great practical questions brought out by the Rothamsted field experiments, and dwelt on by Dr. Gilbert in his lecture. The action of atmospheric ammonia, and of atmospheric electricity, however important we may suppose them to be, must have their action on the fields at Rothamsted as well as on other parts of the globe; it is clear, therefore, that their united efforts are incapable of sustaining the small and gradually diminishing cereal crops which are grown at Rothamsted without nitrogenous manure. On the other hand, it requires a distinct kind of facts from those yet assumed to explain the widely different relations to nitrogen of graminaceous and leguminous crops, which is taught so prominently by the Rothamsted results, and is supported by universal agricultural experience. *A. Warrington.*

SPECIMEN FUCHSIAS.

THE county of Wilts is famous for its splendid exhibition Fuchsias. A batch of growers living in the districts of Trowbridge and Devizes have for some years past vied with each other as to who should produce the finest examples of cultural skill at the exhibitions of the Trowbridge and Keovil district horticultural societies, the Bath floral *fiête*, and other places, during the months of August and September, and the invariable result is such an exhibition of specimen Fuchsias as is perhaps scarcely equalled in any other part of the United Kingdom. The leading growers are Mr. J. Lye, gr. to the Hon. Mrs. Hay, Clyffe Hall, Devizes; Mr. Thomas King, gr. to R. V. Leach, Esq., Devizes Castle; Mr. J. Doel, gr. to J. E. Hayward, Esq., Trowbridge; Mr. J. Hobbs, gr. to J. Gayton, Esq., Trowbridge; Mr. J. F.

Mould, nurseryman, Pewsey, and Mr. J. Matthews, Trowbridge.

The illustration on p. 211 (fig. 35) represents an example of the well-known variety *Arabella*, one of a group of six varieties exhibited by Mr. J. Lye, Clyffe Hall Gardens, at the meeting of the Trowbridge Horticultural Society on August 25 last. On this occasion Mr. Lye was placed first with six and four varieties, Mr. J. Hobbs being 2d in each class. Mr. Lye's plants averaged 6 to 7 feet in height, and from 3 to 4 feet in diameter at the base, most symmetrical in shape, and with the lowermost branches completely draping the pots. Cleanliness, freshness, and a general style showing high-class culture, were the characteristics of all the plants in the leading groups in these two classes. Mr. Lye is now the champion grower of the district, and every year he has to run the gauntlet of a severe competition. His

bited these plants 8 feet in height and 4 feet through, well covered with flowers.

Mr. Lye does not confine his exhibiting to plants eighteen months old; as his best specimens vary in age from one and a-half to five years, according to the duration of the varieties, as some last longer than others. After the plants are five years of age they are discarded, and replaced by young plants raised in the manner above described.

But to continue the method of treatment followed by Mr. Lye. About the end of October, when the plants have done flowering, they are pruned back to two or three joints beyond where they were cut back the previous year, placed in their winter quarters to rest, and kept moderately dry. The last week in January or the first week in February, the roots of the plants are thoroughly shaken clear of the old soil, and repotted. The young



FIG. 33.—DWARF JAPANESE PINE TREE.

plants excite the highest admiration of all who see them, and could they be exhibited in London in the style in which they are shown at Trowbridge they would be looked upon as illustrating a veritable floral-censational sensation.

The cultural process adopted by Mr. Lye can be set forth in a few words. Cuttings are taken at the end of March or the beginning of April, the most vigorous growths being selected for the purpose; they are placed singly in thumb-pots, and put into a Cucumber or Melon frame having a suitable moist bottom-heat. As soon as the roots reach the side of the pots the plants are repotted, and this is repeated as required up to the first or second week in July; at the same time stopping and pinching back the shoots, in order to get the plants to the proper shape required.

The plants are then allowed to flower during the autumn, and thus is laid the foundation, so to speak, of the plants that will be exhibited a twelvemonth after. At eighteen months of age Mr. Lye has exhibi-

plants struck the previous spring are placed in 14-inch pots; the older ones into 16-inch pots, and the compost used is made up of equal parts of good fibry loam and leaf-mould, a little peat, and silver or sea sand, and some good rotten cow-dung, all of which is well mixed together before using. The plants are placed after repotting in a cold greenhouse, and kept under glass till the first week in June, then they are placed out-of-doors, and are well sprinkled during hot weather to keep down red-spider, &c., and occasional doses of manure-water are given. The best kind of liquid-manure for the Fuchsia, Mr. Lye finds to be horse-dung or soot, put into a tub to soak for a week or ten days before using, and a good soaking is given to the plant about once a week. With plants cultivated in this way Mr. Lye has taken twenty-nine first prizes with Fuchsias since 1866, and that in the face of severe competition.

Mr. Lye is also a raiser as well as a cultivator of Fuchsias, and has produced some fine exhibition forms, found in the following list of the varieties he culti-

vates for show purposes. Light varieties : Mrs. J. Lye, white tube and sepals, dark red corolla shaded with purple—remarkably free, and possessing an excellent pyramidal growth; Arabella, a good old variety; Miss Lye (Lye), in the way of Arabella, but having a darker corolla; Marginata, a charming variety, the pretty pink corolla being distinctly margined with carmine on the edges; Schiller, a good old variety; Rose of Castile, remarkably free and effective; Delicata (Lye), white tube and sepals, light rose corolla, good free habit of growth; Arabella Improved (Lye), a marked improvement on the old form; Beauty of Swanley (Lye), an extremely pretty light Fuchsia, pure waxy white tube and sepals, the latter most elegantly reflexed; corolla bright pink, of

and sepals, purple corolla, excellent habit, and a good grower: a specimen of this shown by Mr. Lye at the Bath exhibition held in September last was acknowledged by all the leading growers present to be the best flowered specimen they had ever seen; Elegance (Lye), scarlet tube and sepals, with light blue corolla, drooping graceful habit; Puritani, a fine old variety; Improvement, glossy red-carmine tube and vermilion sepals, deep violet-blue corolla tinged with carmine; Swanley Gem, tube and sepals coral-scarlet, the corolla rose-coloured and prettily frilled, a distinct and showy variety; and the Hon. Mrs. Hay (Lye), a very free blooming and showy dark variety, but rather coarse. Of double varieties the two following are grown by Mr. Lye:—Marksman, tube and sepals

Hall Gardens ever since he was a lad, and gradually worked his way up to be head gardener. Mr. Lye's father had the management of the farm lands under Admiral Bouverie, and the Hon. Mrs. Hay, his daughter, for the space of forty years; and when he became disabled he was pensioned for life, and Mr. Lye succeeded to the management both of the farm and garden. One of the principal features of the estate is the fine examples of Scotch Fir, which are much admired for their magnificent proportions.

Mr. Lye is also the raiser of one of the most promising of the new Potatoes of last year, viz., Lye's Favourite. It is a seedling from the Red Emperor, very distinct in character, and of excellent quality. R. D.



FIG. 34.—A JAPANESE HOUSE GARDEN.

good shape; habit free and most graceful; white Souvenir de Chiswick (Lye), a showy white variety, resembling in general habit the dark variety known by this name—white tube and sepals, the latter long and beautifully reflexed, corolla bright rose-pink; Queen Victoria (Doel), white tube and sepals, with dark red corolla, very good for exhibition; and Covent Garden White (Doel), an excellent market and decorative variety.

Of dark varieties the following are grown:—Favourite (Doel), scarlet tube and sepals, very free blooming—a capital show variety; Pauline, dark red tube and sepals, and purple corolla, a good old exhibition variety; Gazelle, scarlet tube and sepals, and purple-blue corolla, one of the very best of the section, and having a good habit; Constellation, much in the way of Gazelle; Charming (Lye), scarlet tube

bright carmine, purple corolla, a good grower, and one of the very best doubles; and La Neige, a variety resembling Madame Cornellissen, but much larger, tube and sepals carmine-red, and snow-white corolla.

One great feature in Mr. Lye's specimen plants is the entire absence of the appearance of anything like artificial supports, except in the case of the central stake to maintain the plant in an erect position. There is a complete covering of leaves and blossoms, even the pots in which the plants are growing are almost, if not quite, hidden from view.

Mr. Lye's professional triumphs are not confined alone to Fuchsias. For fourteen years past he has been an exhibitor of fruit, flowers, and vegetables, and has taken over 400 prizes, the greater portion having been 1st prizes. He has been in the Clyffe

JAPANESE GARDENS.

SOME time since we were enabled to lay before our readers some account of the process by which the Japanese gardeners succeed in dwarfing trees of various kinds, and growing them in vases of porcelain of relatively small dimensions. The illustration we gave on that occasion (fig. 33 p. 206) was copied from one which appeared in the *Revue Horticole*. The present one (fig. 34) is taken from a treatise on Japanese gardening, brought home in the *Challenger* by Mr. Moseley, and represents a miniature mountain, with toy-houses amid trees and woods, and laved at the base by a tiny lake. The "trees" most frequently used are species of *Retinospora* and other dwarf Conifers, and frequently dwarfed species of *Pyrus*, the flowers of which have a pretty effect.

Notices of Books.

Thomé's Text-Book of Botany.*

Mr. A. W. Bennett has issued a translation of "the recognised text-book of botany in use in the technical schools of Germany, which (first published in 1869) is now in a fourth edition" and he recommends it on the score that it is believed "that no work of the same scope is yet to be found in the English language embracing the whole range of elementary botany, of a size and price (for the student within the reach of all) nearly as good of natural science."

The first three out of (in all) eight chapters deal with anatomy. Whether Germans begin with anatomy in teaching botany we know not, but we unhesitatingly say that the arrangement is unphilosophical. A young pupil must follow in his individual case the methods by which the science itself has been elaborated, *i.e.*, analytically and not synthetically. He must begin with morphology. Lindley, Henty, and Oliver rightly follow this plan; and to try to teach the pupil to reconstruct the plant out of its elements is a method only to be regarded as a pernicious survival. The algebraic figures before us do not constitute for this purpose principles, although in the matter appears to be brought down to the latest knowledge.

Mr. Bennett's object (he says) was to adapt the work to the use of candidates for the South Kensington, and for seven of the London University examinations; but we doubt whether he has entirely succeeded. Chapter 4, on morphology, has hardly a page of letterpress on roots, and involves one, if not more errors, *e.g.*, *Plantago major* (and Mr. Bennett gratuitously adds *Scabiosa succisa*) is given as an example of a præmorse root, both being rootstocks. "Phylloclasis," "stipulation," and "metamorphosis" are requirements in the London University scheme. The first is most meagrely treated; the two-fifth and three-eighth "divergences" being alone alluded to; the spines of *Gossypium* are called stipules, and the bladders of *Urticaria* are described as "floats," and figured; but not a word is added as to their true carnivorous nature, and Mr. Bennett adds in a note that the pitcher of *Nepenthes* is regarded as an "expansion of the lamina" instead of a gland.

Another error of importance is the retention of the old theory of a calyx-tube, no mention whatever being made of the receptacular tube. It is not only thus in the text, but supported by the translator in a note. This is the more remarkable, as he translated Sachs' *Zeichn.*, where the development is fully described (p. 200).

Of all the requirements of a candidate for the London University examinations, that upon which the examiners lay most stress is the "demonstrations of the botanical characters of plants," and no work professing to be a guide for their examinations is complete without some instructions as to how to describe plants. Lindley, Henty's *Text-Book* (edited by Masters), and Oliver alike insist upon this, and the total absence is a serious blot in Mr. Bennett's adaptation of Thomé's work.

The systematic portion, which is equally divided between Cryptogam and flowering plants, is adapted to the *Genera Plantarum*, and describes the cohorts, together with such orders as are required for the above-mentioned examinations. X.

— Messrs. Cassell, Petter & Galpin announce the early publication, in monthly parts, of a new work, with paintings from Nature of the wild flowers and plants of Great Britain, under the title of *Familiar Wild Flowers*, by F. E. Hulme, F.L.S., F.S.A., Art Master at Marlborough College.

— Among the articles in the February number of the *Gardener* are the following:—Bottom-heat, &c.; Manures and Manuring; Lessons in Drawing; the Apple—Cultural Suggestions; Dissemination of Seeds; Gardeners' Mutual Improvement Societies; Flowering Pelargoniums in Winter; A Seventh Year of Rest for Vines—Would it be Gain? Sympathy Between Head and Under Gardeners; Double Chinese Primulas; Notes on Alchemists; Forcing in Darkness to get the Common Lilac White, &c.

— The principal contents of the *Villa Gardener* for February are articles on How to Reduce your

Coal Bills; Embellishing Villa Residences; the Economy of the Rubbish Heap; Gardening for Beginners; *Coccyzium discolor*; Stocks in Pots; Hedge Rose Budding, and the Budding of Wild Rose Stocks in Shrubberies or Woods; Winter Dressing Fruit Trees for Insects.

PUBLICATIONS RECEIVED.—L'Oliver, par A. Coatanne (Paris, Rothschild).—Report of the Commissioners of Agriculture for the Year 1875 (Washington).—Monatsschrift—Journal de la Société Centrale d'Horticulture de France—American Agriculturist.—Report of the Board appointed to enquire into the Cause of Disease affecting Live Stock and Plants of Brisbane.—Le Moniteur Horticole Belge.—The Garden Oracle.

Natural History.

STOCK Doves.—I enclose the contents of the crows of two doves shot here this day, numbered 1 and 2. Packet No. 1 contains the leaves of *Taraxis* (I imagine), and a few grains of Wheat, and other seeds. I have never before found this mixture of food in the craw of the stock dove. The contents of No. 2 are the same that I have often found in them. I hope to learn that these latter are the seeds of some noxious weeds; for if so, these beautiful birds must be doing incalculable good at this time of year, and ought not to be condemned (as they frequently are, I fear) to wholesale destruction by their really mischievous brethren of the Columba family—the wood-pigeons. *H. F. V.* [Seeds found in No. 1 were *Cerastium arvense*, *Chenopodium*, *Polygonum*, probably avicular; few *Taraxacum* or *Charlock* seeds, Wheat grains (decayed), and possibly *Taraxacum*. In No. 2, almost entirely *Chenopodium*; the remainder, *Polygonum avicularis*.]

Obituary.

WE have the painful duty of recording the demise of Mr. JOHN HARRISON, of The Nuth of England Rose Nurseries, Darlington. Mr. Harrison a few months ago removed from the establishment at Darlington, to a comfortable residence in his nursery at Catterick Bridge. On Sunday afternoon, the 4th inst., whilst on his way to chapel, he fell down suddenly as if in a fit; he was removed home as speedily as possible, and soon afterwards died. The deceased had been in the nursery trade upwards of fifty years, and died at the advanced age of seventy-six. The event will create a void in the horticultural world, and many will have to deplore the loss of a valued and sincere friend. As a Rose grower he stood deservedly high, and was an efficient supporter of most of the principal exhibitions in Yorkshire and Northumberland, besides other parts of England.

He had been a successful exhibitor of the Rose for a number of years, taking prizes at all the leading exhibitions. If there is a consolation for his loss, or if there is a mitigation for our grief, surely it will be found in the good name he has left behind; high and low, rich and poor, everybody speaks well of him. His innate goodness of heart, his genial happy disposition, his ready disposition, his only straightforward bearing, his noble nature, and the proud position he had attained for himself, all combine to make us feel the loss we have sustained. Mr. Harrison leaves behind him a sorrowing wife, and several children. Two of his sons, aged from thirty to forty, have been brought up to the nursery business.

Mr. Harrison's remains were removed from his residence at Catterick Bridge, near Richmond, to Darlington, on Wednesday, the 7th inst., and interred in the family burial ground.

— We also record with regret the death of Mr. WILLIAM MELVILLE, of the Tyneville Vineeries, Jersey, which sad event took place on January 27, in the sixty-sixth year of his age. Mr. Melville was for thirty years gardener at Dalmeny Park, near Edinburgh, and retired about eight years ago on a handsome annuity from the Earl of Rosebery. He was an enthusiastic cross-breeder of plants, particularly of the Brassica tribe, and sent out amongst others the Albert and Rosebery Sprouts and the Variegated Kale. He was also the raiser of the Muscat Champion Grape, and was one of the first in early life to improve the Pansy. He brought up a family of fifteen children, to all of whom he gave a good education, and six of them were brought up as

gardeners. Mr. Melville had a happy and pleasing disposition, and was fond of talking about, and communicating his ideas upon, his favourite hobby—the cross-breeding of plants.

— Died, at Croydon, on February 8, JOHN SAMUEL GLENDINNING, aged 33 years.

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Any additions that have to be made to the hard-wooded stock in the shape of young plants to be obtained from the nurseries, should at once be attended to, as when this got before has commenced, they are much better than when subjected to packing and transit with fresh soft shoots upon them. In all cases give the preference to young healthy plants, however small, over such as have suffered the slightest through being kept too long in the pots they occupy. The larger plants may tempt the eye, but little ones in a free condition always outgrow them, and rarely fail to outlive them. *Erythrina cristata-galli* (the Coral plant) is a very useful subject for conservatory decoration; if it is kept in a greenhouse temperature it will bloom about the end of July, but by treating as hereafter described for an induced to flower twice. Plants shook out now, potted in good loam, to which is added a sixth of well-rotten manure and a fair amount of sand, and put in a house where there is a nice growing temperature, will bloom during the spring. After they have had a rest, shake them out, cut back, re-pot, and start again. They will flower in the autumn—a time when there are not so many indoor blooming things. Plants of *Aralia Sieboldii*, raised from seed last year, if now put into from 10 to 12-inch pots, will, before the time comes to plunge them outdoors, get nicely established. Potting soils that were advised a few weeks ago to be got under cover should be frequently looked to and turned over, so as to bring them from the saturated condition which everything exposed has been in to a fit state for use, and to see that there is a sufficient quantity of peat, loam, and leaf-mould for all purposes that may be required during the spring months. They should occupy, if possible, an open shed where the wind will have full access to them. If however they are to be kept in a greenhouse, an account attempt to carry out the work until the soil is in a fit state to dryness, as even the strongest growing plants in existence will not succeed if potted in material that is too wet, however porous it may be rendered by the use of sand. Begonias in permanent culture are frequently too much inclined to this matter. One means that I have used to test the state of the soil as to moisture is to take a bit between the finger and thumb, just a small pinch, when prepared with the sand in it, and if any perceptible water can be squeezed out, it is too wet.

Heaths.—Many of these, if in a healthy satisfactory state, will be growing actively, and pushing up their blooming shoots, the roots, too, being correspondingly at work. Plants that need it should have a shift now. If this is done carefully, they will not be checked at all, and will bloom better than if left in a cramped state; there is also one great additional advantage, that there is not near so much danger of their dying when the potting operation is performed early, as when it is deferred until later on. It is a matter of course, that if they have been of a harder description, and they must not have so much root-room as sorts that are free growers, which latter ought never to be allowed to get into a condition anything like pot-bound. If this ever occurs, they are a deal more likely to suffer from it, by more root-room given them; these do not need so much sand in the soils as the others. Pot all hard, and do not for a few weeks admit any side air near the plants. A day or two previous to potting go over them very carefully, and see that they are all well. Camellias.—Plants that bloomed in the autumn will now be commencing to grow; they ought to be encouraged by putting them where they will have a temperature of 55° by night, and 10° or 15° more in the day, with plenty of moisture in the atmosphere and also at the roots. As they go out of flower they should be cleaned well with sponge and brush; this ought to be done before they begin to grow, as the young tender leaves are soon injured.

CONSERVATORY.—The climbers here should be regulated, cutting-in those that need it closer now than at any other time in the year. Give as good and thorough a cleaning as possible if mealy-bug or scale exists. All subjects that are permanently planted out will be benefited as well as those that are not infested with either of the insects mentioned above, by being well cleaned to remove the dirt that gets on the leaves during the winter season when the syringe is not much used.

* Thomé's *Structural and Physiological Botany*. Translated and edited by A. W. Bennett. (Longmans.)

SOFT-WOODED GREENHOUSE PLANTS.—There is no time in the year when *Chicorarias* are more useful for cutting than just about Christmas, as they give us the scarce, indispensable colour—blue, at a season when there is little else of it but early forced Hyacinths and Violets, and however acceptable both these are, they look dull by the side of a bright *Chicoraria*. To have them at this time they should be sown at once as an attempt at forcing them, and the season stages is sure to end in weak, poor heads of flower. Such kinds of Lilies as commence growing early, as, for instance, eximium, or longiflorum as known by some, will by this time have appeared above-ground, and should be sown in pots, and either in a cold frame where they can be protected from frost, otherwise, if they are allowed to become drawn now, no after treatment can remedy the mischief. *T. Britton.*

ORCHIDS.—It will now be necessary to go through the collection, and top-dress or pot many of the plants, according to their several requirements. If there are a number that will need potting, whether to give them a larger shift or on account of the soil having got into a sour and soddened condition, it should be borne in mind that only such sized pots should be used as the plant can reasonably be expected to fill in one, or at the most two seasons. Orchids invariably delight in having their roots in a similar sized pot, and the roots may sprout freely some soon after they start away from the base of the bulb or young growths; and if this is the inside of the pot, or crocks, or charcoal, the roots will keep longer in a healthy and growing state than if large plants are put in a smaller sized shifted, and if the crocks or crocks used among the soil. Bearing this in mind, see that in potting the pots are well crocked, the pot-sheds being fixed in the pots in an upright position, and taking care to put them in so that they will be as open as it is possible to get them. On these plants some sphagnum moss, and in making the plant up use some small crocks or pieces of charcoal in the soil, as well as fixing some larger pieces with the soil as the operation progresses. A little sharp silver-sand mixed with the soil will be very beneficial in keeping the soil open and sweet. Many of the plants, however, will not require fresh potting this season, and where such is the case they should be top-dressed as far as it can be done without injury to the roots and young breaks. The surface, too, of some of the plants should be covered with some of the best fern or with the green conifers that so quickly spreads upon plants that for a lengthened period during the season are kept continually moist. Pick this all carefully out, and then work some moss, or manure, or other such matter, amongst the plants, and press the whole well together, that the plant may stand firm, and with a few stakes make the whole secure and steady. Where, as recommended last season, any bulbs of *Dendrobiums* were pegged down on the pots of the *Ardisias*, *Yandias*, and a little more moss given dried, and fastened on blocks, or put into small baskets, where they will get a little more careful attendance than if left to push up long shoots among the other plants. They should, however, be taken away, and should be beneath the roof of the house, and the pots in the pots they were pegged down in, would make it in some cases a difficult matter to get them out, at the same time endangering the plant from whence they are taken. The *East India* plants and the *Dendrobiums* should be taken in hand first. Before the houses are rearranged, sponge all the glass inside, and scrub the woodwork, rafters, &c., and arrange them all so that each may have the advantage of the direct rays of sunlight so far as it can be managed. An advance must now be made in the temperature of the houses, and a little more moisture given during the daytime. Morning readings:—*East India* plants, 60° to 65°; *Dendrobium-house*, 55° to 60°; *Cattleya-house*, 55° to 58°; *Odontoglossum-house*, 50° to 53°. Raise the temperature 5° by fire-heat, and if the sun should break through, another 5° by hot air, and it may be permitted and gladly accepted. When the air outside is favourable—and this winter at present it has been so in an unusual manner—advantage must be taken of the opportunity, and air given to all the houses, and the bottom ventilators of the *East India* plants will now be gay with bloom; see that they are kept free from damp, otherwise they soon become spotted. Another of this genus that will now be showing signs of growth is *C. pandurata*; it will grow very freely in moss and peat, and should be kept in a cold *East India* house: as the young growths advance the flower-spikes push up in the centre of the new leaves, and as its peculiar green and black flowers expand it forms an object at once attractive and fantastic. When growing it must have a good supply of water, and as its large leaves are liable to be attacked by red-spider, it will continually need looking over and sponging. *W. Swan, Fallowfield.*

FRUIT HOUSES.

PEACHES AND NECTARINES.—In early started houses by this time the trees will have reached that

stage of growth when disbudbing is usually effected. Although this practice is necessary at times, without doubt it is, in the case of early forcing trees, especially those to be applied, so much as to be even more detrimental than beneficial. Instead of divesting the trees of so much foliage at the present period, we nip out the points of the shoots, leaving from four to six leaves below, and thin out the foliage and fruit as follows:—In the case of the male and fruit are somewhat more developed, letting all the terminals run which are not over-exuberant, and otherwise checking those which are likely to absorb more than their share of sap. Continue to liberally apply the syringe over the trees twice every day, and especially to the portions which are placed near the heating medium, whereabout that invincible enemy, red-spider, often first appears. Every means which is calculated to produce a stimulating effect in the house should now be used, in the way of stimulating the soil, and light sowing about once a week of guano on the mulching material will also be productive of good; artificially, 55° to 60° at night, and 60° to 65° in the day should still rule, and 70° to 85° by solar means; ventilate at 70° and close at 75°. Be cautious in airing at the front of the house when cold drying winds prevail, unless, as it should be, a heated pipe is so fixed as to moderate its effects. Take advantage of suitable occasions for impregnating the flowers as they open with insecticides, and give a similar course of treatment here to that already indicated for the early house. In later houses the mildness of the season has brought out the flowers considerably before the usual time. A free course of ventilation is indispensable here, and either inside or outside, otherwise, should severe winter weather, much harm may happen in those houses without means of resistance. *G. T. Miles, Wycombe Abbey.*

CUCUMBERS.—Since my last paper was written we have experienced a few bright sunny days, a condition under which forcing has made satisfactory progress, and as few plants more speedily show the beneficial effects of sun-heat than Cucumbers, the occupants of this department have made considerable improvement in growth, vigour, and quality of the fruit. Unfortunately, a return to wet weather will necessitate increased firing to keep up the top and bottom heat, and the cultivators must be content with the watch for red-spider, which invariably follows, and if not at once checked will soon work serious mischief among plants which have been some time in bearing. If taken in time, the best remedy for its destruction is careful sponging of the leaves; but when it has become very rampant, occasional sowings with a weak solution of Gishurst or mildewers when hard firing can be dispensed with will be found the means of keeping the *Cucumber* grower's worst enemy in check. In middle, the result of this course of treatment is to be seen in the low straggling plants. Use, itself, apply the usual remedy and resort to conditions the reverse of those which have caused it. Remove male blossoms. Avoid overcrowding of young growths and foliage; impregnate the most promising fruit with a little saltpetre. Keep up a good supply of fermenting stable dung and Oak leaves for use as required, and see that the stock of loam under cover does not fall short. If through the past winter it has been out in the wet, a few days' exposure to the atmosphere in a dry airy place will be necessary before it is taken in to use. *W. Coleman.*

ORCHARD HOUSE.—Although the temperature has ranged high, fruit trees in cold houses, particularly when ventilation is given, will be found to be little and far forward than those on open walls. This undoubtedly is due to the absence of sun, but with a change to bright weather trees under glass will make rapid progress, and many of the early flowering kinds will soon begin to develop their blossoms—more the most delightful. It is the anxious time for the owner of the unheated orchard-house, who will of course have canvas, tiffany, or other protecting material ready for use in the event of a change to frosty weather. When the pot culture of fruit trees was in its infancy the idea of warming an orchard-house was looked upon as an unnecessary extravagance, but experience proves the contrary—the cost of many of the small slow-combustion boilers is so trifling, they require no brickwork for setting, and the pipes can be fixed by the bank labourer, and that is required in the way of fuel is a moderate supply of small coal or coke for producing sufficient heat to counteract the injurious effects of frost or damp where the trees are in bloom. Trees which have been some time under glass must have sufficient water to keep the soil in a healthy growing state, but those which have recently been taken in will hardly require it before the end of the month. The modern mode of preparing trees for

pot-work by annual lifting, root-pruning, and replanting in the open ground until well furnished with fibrous roots is more economical than the old system of potting up maidens to fill up space in the orchard-house which might otherwise be occupied by fruit-bearing trees. *W. Coleman.*

KITCHEN GARDEN.

Some few rows will require particular attention in sowing about this time, and although a very much of its utility will depend upon the state of the soil, for it is not in a good state to receive seed, it is better to wait a week or so rather than risk the crop; but Parsnips, if required fine and in quantity, should be sown the first favourable chance. These are not all that are sown at this time, and well manured the previous year. And at the time of sowing, if the soil is not in a well-pulverised condition on its surface, and tolerably dry, draw out the drills, and sow the seeds (which should always be new), and fill up the drills with fine dry sand sifted through a sieve. If slugs attack the young plants when up, put some quicklime in a serim canvas bag, and shake it over the beds on mild evenings. Peas will again require attention in sowing about the end of the month, and one long row of an early sort and one of a good second early will suffice for succession at present. The advancing crops will require to have the earth drawn up to the rows, and the earliest will require some shelter against cutting winds. Small branches of Spruce Fir are well adapted for the purpose; we have also used with great advantage the stumps of young Birch besoms, which, stuck in thickly on each side of the rows, are excellent protectors. The earliest sown Beans will also be advancing, and should be sown in proportion to the rows, and some dry leaf-mould inserted along the rows among the plants, which, owing to the mild winter, are rather drawn. Look over *Cashiflow* plants in frames and under handlights, and remove all decaying foliage, stir the surface of the soil, and once more dust the surface with dry soot, lime, and sharp cal-cabes, mixed together. Lettuce plants in frames or under south walls will also be benefited by surface stirring and dressing. Some Myatt's or Veitch's Ash-leaved Potatoes planted now at the foot of south walls will come in very useful for succession after brasses and ridges, which, when there is a sufficient supply of fermenting materials, may be made up at the end of the month similar to *Cucumber* and *Vegetable Marrow* ridges, by marking a bed in the open quarters, 6 feet in width, and of such length in proportion to the material available. Throw out the soil right and left to the depth of 18 inches or 2 feet, fill up the trench with from 2 to 3 feet of prepared dung, let it stand a few days for the violent heat to pass off, then cover the surface with 4 inches of soil, and 5 inches of manure row from row, and 6 inches in the row, and let it all up about 5 inches; the middle will sink considerably, so that by the time the tops appear through poles may be laid from side to side, and mats spread over on cold nights. Here, again, some Wood's Early Frame Lettuch is sure to come in useful, and if a pinch or two of Lettuce seed also thinly scattered over the surface will do no harm, and often proves very valuable for maintaining a succession. Some Brussels Sprouts should be got in at once for the earliest planting; a warm south border is best, and if possible place some handlights over the bed for a time, but avoid drawing the plants up weakly. The first opportunity should be taken, when the soil is sufficiently dry, to stir the surface well amongst growing crops of Cabbage and Lettuce, also to remove all dead and decaying leaves from the beds of winter greens of all sorts as well as from the Broccoli beds. Looking forward a little to the requirements of next month beds should be at once put through the process of deep trenching and manure mixing, and the main range of open plantations of Globe Artichokes and Sea-kale at the proper time. Jerusalem Artichokes should now be planted; these are generally banished to the out-kirts, but if much in request they will pay for good ground and extra attention. A busy time is presented in the way of cutting up of trenching, manuring, and preparation of the soil should be pushed forward at every opportunity. *John Cox, Redfern.*

THE JAPANESE PERSIMMON (*Diospyros Kaki*) fruited with Mr. G. F. Wilson. It was tried by the members of the Royal Horticultural Society—result, a general outcry—only the account put it “very faces.” Such an ignominy must have beenfalling on the name of the fruit. Over two per cent of tannic acid found. Now we know what was the matter. Any Southern darkey would have said, “Dem ‘Simmins wasn’t ripe.” It must have been a very funny thing to have seen that august body with its mouth full of a fruit in a winter position. We doubt if this fruit will completely ripen in England. We tasted of the first fruit that matured here, and there was no trace of astringency. *American Agriculturist.*

THE

Gardeners' Chronicle.

SATURDAY, FEBRUARY 17, 1877.

THE annual meeting of the ROYAL HORTICULTURAL SOCIETY passed off in the quietest and tamest of manners, reflecting, perhaps, the paralysis which seems to have temporarily affected the Council. The official report was taken as read, although it was only put into the hands of the Fellows as they entered the room, together with a very imperfect balance-sheet. We must refer to the full reports on another page for the details. It must suffice here to make a few general remarks. In the first place, in spite of the disappointment that will be felt at the absence of any scheme of reorganisation and reconstruction, there is much to support the opinion that the existing Council is the best and most honest that the Society has had for some years. It is satisfactory, too, to note that the utterances of the President are decidedly more horticultural than on a former occasion. Though himself one of Her Majesty's Commissioners, and having local interests of his own in South Kensington, the President fully admits the disastrous nature of the alliance between a horticultural society consisting of a small number who care for practical and scientific horticulture, and (at one time) a large number who had no special taste for gardening, but who were willing to pay to be amused, and to subscribe towards maintaining a private recreation ground for their families.

The President told the Society that if between Christmas next and the Christmas following £10,000 be not raised, Her Majesty's Commissioners will be in a position to "extinguish the Society," a phrase that we presume is not to be interpreted literally.

With reference to the debenture-holders (whose only claim we are told is upon *surplus* income), the Council, like honest men, but not uninfluenced by the fear of personal liability we imagine, express their sense of the obligation under which the Society rests to the holders of those documents, and their desire to meet those obligations honourably.

What, then, is the outlook? Suppose—and it is not impossible that, at the last moment, some of the residents, awakening from their present indifference, and fearful of losing a convenient airing-place, will render it more than a supposition—suppose the £10,000 is raised, what will be the result? Why, that the Kensington Garden, with all its burdens, would be retained till the expiration of the lease, unless, indeed, Parliament, urged on by the general Press, should interfere to prevent the appropriation to a class of what should be free to the public. Surely this is not a pleasant prospect to look forward to, for it has been all but universally admitted as most desirable that the connection between the two discordant interests—the horticultural and the residential—should be put an end to as soon as possible. Each might work in harmony with the other if desired, but practical independence is the best for both parties. This has been affirmed at a general meeting, and, as we have seen, the Council admit its desirability. But, say they, they have tried in vain to effect this separation in various ways. They find that the Society is so tied and fettered this way and that, that it is impossible to obtain that freedom and liberty that all desire so strongly. We give the Council credit for what they have done in this matter, and if they have failed, their failure is not greater than that of their predecessors, while it is partly redeemed by excellent work of a horticultural kind for which all horticulturists are

grateful. But their failure to accomplish their purpose surely does not justify them in hugging their chains and making them girt more tightly. If they cannot rid themselves of their fetters all at once, a persistent application of the file will ultimately accomplish the desired end. "We have done all we can: what more remains to be done that we have not done?" is in effect the cry of the Council. And as they have not been able to decide upon any satisfactory answer to this question they have decided to go on in the old rut—to spend a thousand a year (see the report) at Chiswick, for the purpose of growing decorative plants for Kensington, and thus waste a large portion of what little substance they have, in the interests of the resident Fellows, in the hope, unquenched by experience, that they will be repaid by an increased subscription list.

It is this tendency to move in one groove only that has aroused the alarm, we might even say the indignation, of many of the staunchest horticulturists. Let the Council take example by a beast that is tethered. He does not—albeit tied and restricted in his range—move backwards and forwards in the same directions only, like a sentry, but he radiates in all directions, and he goes round from one point to another to an extent limited by the length of his tether. He does indeed make the best of his situation. The Council is tied—we all want to loosen the tie. We can't do it at present, but surely our choice of work is not limited to one direction only, and that direction one which has been proved to be woefully unprofitable. Granted that for the present we must wear our fetters, we are not debarred from extending the real horticultural work of the Society in the provinces and elsewhere in some one or other of the many ways in which, as we have often pointed out, good useful work may be done. Lord ALFRED CHURCHILL, who more than once has shown a broad comprehensive judgment of the duties of the Society, did indeed announce a proposal which is decidedly a step in the right direction. Many more of a similar character have been already pointed out, and might be adopted with very little cost and without prejudice to South Kensington interests. The re-establishment of a great provincial show is one powerful means for good, which we are glad to find is again under the consideration of the Council. Anything in fact, which is conceived in a broad liberal spirit in the interests of horticulture and of the general public, deserves support, and will certainly win approbation; while, on the contrary, any narrow, class or local policy is unworthy a great Society, and is sure to meet with the reprobation it deserves.

— SOME curious facts in connection with the *FLORA* of RODRIGUEZ have been set forth in a communication to the Linnean Society (February 1) by Dr. L. BALLEZ BALFOUR, son of the distinguished Edinburgh Professor. The vegetation is essentially insular, as might be expected, but dry and temperate rather than humid, and tropical in character; it is of Mascarene type, with affinities, however, bearing likeness to Polynesian and American regions, though Asiatic types prevail. It seems many common and wide-spread plants have been introduced, and the ancient flora of the island from various and unknown or doubtful causes in great part destroyed, in this respect calling to mind the St. Helena flora, well known to have been destroyed by man's agency. A somewhat remarkable and well marked feature is the heteromorphism exhibited in the leaves of many of the plants, especially shrubs. It seems that the young produce leaves, as it were, of a lower stage of development than the adult; and as the individual increases in age the leaves successively produced approach more nearly the mature form, until at a certain stage of its growth only typical leaves of the adult are found. Once this stage is reached all the leaves produced on the branches are of the adult form; but should any

adventitious shoots develop from the base of the trunk, or appear on the stem anywhere below its first branching, these always have the juvenile, and not the adult form of leaf. This heterophylly, as a whole, is in degree and kind somewhat variable, though among species pretty uniform in its variations.

— BETWEEN the years 1870 and 1875 Professor STEERE, of the University of Michigan, U.S., made a journey across South America, thence to the Philippines and other regions in the East, for the purpose of collecting objects of natural history to enrich the museum of his University. Among other things obtained was a collection of plants. His colleague, Professor HARRINGTON, has now worked some of these out, and at a late meeting of the Linnean Society (February 1) gave a list of the tropical *Ferros* met with. Among these many novelties from the little frequented islands of the Philippines have now been described, and Formosa has likewise yielded several new forms.

— Mr. DOWNIE has planted in front of his residence in the Pinckhill Nursery some thirty varieties of bedding Pansies and Violas, one row of each, for proving during the coming season, and he informs us that a white Pansy which he raised two years ago, and named *Profusion*, opened its first flowers on January 6, and is now nearly in full blossom, while there is hardly a flower to be seen on the other varieties.

— As illustrative of the retention of the dormant living power in the vegetable embryo when subject to a long-continued low temperature, Mr. R. LEVING LYNCH exhibited at the meeting of the Linnean Society (January 18) a MEMENTO OF THE ILL-FATED "POLARIS" EXPEDITION. This consisted of a pot of growing Wheat, sown from some of the grain left in Polaris Bay, Smith's Sound, 81° 38' N. lat., by the crew of the American Expedition. Captain SIR GEORGE NARES, who obtained it, in a letter to Dr. HOOKER says the grain lay exposed to all the rigours of the climate from 1872 to 1876. Nevertheless, the sample brought home, when sown at Kew, yielded about 64 per cent. as capable of germination. Two Peas also sprouted, besides a grain of Maize, this latter having a special interest from being a comparatively tropical plant.

— It is impossible to contemplate the beauties just now being developed in country gardens by names of many coloured Primroses, Polyanthas, double Daisies, early Violas and Pansies, the beautiful *Myosotis dissitiflora*, the rich vermillion *Anemone fulgens*, varied Hepaticas, crimson and golden Wall-flowers, and others of the charming hardy spring flowering plants, without feeling an anxious desire that some of these rural delights might be made to administer to the pleasure and happiness of our town-ridden poor, whose floral sights are chiefly confined to the exceedingly formal and, alas! too evanescent display of bedding-out arranged for their delectation during the summer months. To carry out spring gardening on a large scale might well prove too great a burden for any of our park superintendents, but in suitable spots and within convenient range it surely would not be impossible to create a small spring flower garden such as are now common even in well kept gardens. To be transplant Belvoir, Cliveden, or Glen Eyre, into the midst of London would be beyond the power of mortal, but to attempt even at a distance a humble imitation is not impossible. Such a spot as the garden adjoining Palace Yard would perhaps offer the desired space, and the introduction of hardy flowering plants in that locality in the early spring would, perchance, assist to shed a little sweetness where it is much needed. The requisite material need not be planted until just before the flowering period, and then the masses of colour would soon become prominent. Even if the result was not all that could be desired it is well worthy a trial.

— NEXT MAY the HORTICULTURAL SOCIETY OF VIENNA will hold a festival exhibition, to celebrate the fiftieth anniversary of its existence. According to the circular issued by the committee of organisation, the first flower show in Vienna was held on May 9, 1827, counting among its supporters Professor JACQUIN and Baron HUGEL, both names familiar to botanists in this country. Although the exhibition is



FIG. 35.—FUCHSIA ARABELLÆ, AS GROWN BY MR. LYE.

not to be of an exactly international character, foreigners are invited to take part in it. Dr. E. FENZL is the Secretary.

— In view of the proposed NEW FLOWER MARKET IN VIENNA, various reports on the markets and market plants of other countries have appeared in *Der Gartenfreund*. The list for the Paris markets during the first three months of the year may be of interest for comparison with the plants and flowers to be had at Covent Garden during the same period:—

1. Tropical and temperate plants grown for their flowers:—Azaleas, Camellias, Rhododendrons, Roses, Lilies, Hoteia japonica, Dutzira gracilis, Berberis, Lonicera, Erica, Echeverria retusa and coccinea, Frankia sinensis, Tulips, Crocuses, Mignonette, yucca Polargonium, various winter flowering Begonias, Lily of the Valley, Cyclamen, Violets, and Gardenias.
2. Tropical and temperate plants with ornamental foliage:—Chamcerops, Latisana, Areca, Coccoloba, Cocos, Rhipis, Philodendron, Dracaena, Fandanus, Ficus, various Ferns, Bromelia, Curculigo, Aspidistra, Cycas, artemifolia, Tradescantia, Peperomia, Oplismenus, Maranta, Echeverria, &c.
3. Hardy plants with ornamental foliage:—Acanthus, Aucuba, Eucyamus, Viburnum Tims, Heliosorus niger, Yucca, Hedera in variety, various Coelebs, &c.
4. Annual and other plants for bedding, &c. in boxes:—Alyssum saxatile, Arabis verna, Viola tricolor, Cheiranthus Cheiri, Aubrietia deltoidea, Bellis, Silene, Myosotis, Primula, Centranthus, Theris, Saxifrage, &c.
5. Trees and shrubs of all kinds.

— At the February meeting of the Edinburgh Botanical Society Mr. M'NAB laid on the table a bunch of what is generally called the FLORIDA MOSS (*Tillandsia usneoides*). This is a Bromeliaceous plant, the order to which the Pine-apple belongs, and named from its resemblance to the *Usnea barbata* (Old Man's Beard), a lichen found covering the bark of many trees in damp British woods. The Florida moss is sent to the United States for the purpose of decorating churches and dwelling-houses at Christmas. In Florida this plant is found in large quantities, covering and often killing the Live Oak (*Quercus virens*), the tree on which it is parasitic and mostly abounds. It is also extensively used for packing Oranges for exportation. The specimens exhibited by Mr. M'NAB were all quite fresh, as seen when exposed to heat and moisture, and were presented by Mrs. MASON, of Philadelphia, to Mr. M'NAB's two daughters before leaving America on January 25. It was with this plant that the Philadelphia Centennial Exhibition was decorated.

— THE HISTORY OF VEGETABLE GALLS is no unimportant study, and Mr. W. BEYERINCK, who is making them his speciality, has a wide field for operations. In a quite recent number of the *Botanische Zeitung* he gives the first of a series of articles on this subject. His idea is to work them out physiologically and systematically. An arrangement of galls based upon their animal occupants without regard to the nature of the perfectly developed galls, although to great extent in harmony with Nature, he would not regard as natural. All excrescences caused by insects are taken into account. The leading idea in the investigation is that every gall formation is the consequence of an effusion of fluid in the cells. The nature of this fluid is taken into consideration. When this scheme of arrangement is completed we shall probably give an outline of it.

— According to GODLEWSKI (*Bibliographische Berichte über die Publikationen der Akademie der Wissenschaften in Wien*, 1876), the first of a series of at least Borrera ciliaris, the one employed in the experiments, in darkness use up all the oxygen of the air, and exhale carbonic acid; and they form no other gas until there is available oxygen. The intensity of respiration increases with the temperature. In twenty-four hours they will appropriate about their own volume of oxygen when subject to a temperature of 62.6 Fahr.

— Our young contemporary, the *Journal des Roses*, describes in the February number a show of 6000 Roses held at Coulommiers towards the end of last September. One exhibitor sent a collection of 190 select varieties; another sent 500 flowers of the Rose du Roi and 220 of Paul Neyron. One of the features of many French shows, including the one

named, are the lady patronesses, who contribute separate prizes awarded by judges selected from their own ranks. The coloured plate in this number is the Rose Mrs. LAXTON, as drawn by MACFARLANE for the *Florist and Pomologist*. Among miscellaneous matter is a list of shrubs and trees in flower in the open air at Eric-Comte-Robert, including a plant of the Rose Camille Bernadine, with six half-expanded buds as fine as they are often seen in May or June.

— Sir WALTER C. TRÉVELYAN informs us that MANDRAGORA MACROCARPA, seeds of which he got many years ago on the Island of Cerigo, Greece, has been flowering freely in the open ground all the winter in his garden at Wallington, Northumberland.

— We learn that the named and certificated ROSES raised by Mr. LAXTON, viz., Dr. Hogg, Mrs. LAXTON, Charles Darwin, Emily LAXTON, and Marchioness of Exeter, are in the hands of Messrs. PAUL & SON, of Cheamstead. Mr. TURNER, as we mentioned previously, tendered for the purchase of the unnamed seedlings.

— M. SARATÉ has devised, and exhibited before the Horticultural Society of France, a gauntlet of chain armour to be used for removing the bark of the Vines, and with it the winter eggs of the PHYLLOXERA. The sulpho-carbonates are proved useful as an application to the roots, but it is necessary to attack the enemy in the cracks of the bark also, and for this purpose the rods are drawn through the gloved hand with the result of removing the old bark and the insects. The glove might be used for removal of moss from the bark of trees and for other purposes.

The following questions are proposed for discussion at the CONGRESS AT AMSTERDAM, and we are asked to give an opinion on the subject before February 20. As we have but just received the paper, it is impossible to express any opinion upon them. We may, however, say, that Dr. RAUWENHOFF, of Utrecht, is the Chairman of the Committee, and that Drs. Oudemans, of Amsterdam, Suringar, of Leiden, Mulder, of the Hague, and De Boer, of Groningen, with other eminent men, form part of it. The Congress will be divided into three divisions:—1, Botany; 2, Horticulture; 3, Vegetable Products. We subjoin the questions proposed to be discussed in relation to horticulture:—

What is the best way to organise experimental gardens and horticultural laboratories?

The best mode of conveying instruction in horticulture.

The permanence of varieties among bulbous plants.

The influence of manures on cultivated plants, especially on Hyacinths, Tulips, and Cabbages.

The best method of ventilating greenhouses.

The influence of coloured glass on the development of flowers.

— Mr. GAMMIE, of the Sikkim Cinchona plantations, has lately adopted the plan of FROOTING THE CINCHONA TREES, for the sake of the bark of the roots, which is found to be very rich in Cinchona alkaloids (8 per cent.). In this way thinning is effected, and through deep cultivation of the soil is effected, which may be replanted at once, allowed to lie fallow, or used for some other crop in rotation.

— According to M. DUBOST the total annual value of the following VEGETABLE PRODUCTS OF FRANCE may be estimated approximately as follows:—

—Cereals, 2430 millions of francs; farinas, 310; vegetables, 282; fruits, 180; wine and cider, 1200; miscellaneous, 531; woods and plantations, 350; straw and forage, 250. Total, 5533 millions of francs.

— From documents just received (though dated as far back as December 9, 1876) we learn that the opening of the AMSTERDAM INTERNATIONAL HORTICULTURAL EXHIBITION AND BOTANICAL CONGRESS will take place on April 12. We give the following abstract of rules, &c. —

Any one will be allowed to exhibit and compete for the prizes.

Those who intend to exhibit must notify their intention by writing (post-paid) before March 1, 1877, directed to the Secretary-General, with statement of the objects they wish to send, as each object must be notified on a separate form.

Those who have complied with the regulations will receive forms to fill up, and will be informed of the conditions on which a reduction of freight will be allowed by the different means of transport.

Foreign exhibitors will be duly informed as to the conditions on which free import, without examination on the frontiers, will be granted by the Minister of Finance.

The forms mentioned will have to be sent in properly filled up, in duplicate, to the Secretary-General before March 15 next.

All plants must be duly labelled, with the scientific name distinctly stated.

Plants newly introduced must bear, besides the name, as far as possible, the statement of their origin, the period of their introduction, and the names of the person or persons who have transmitted them, the places where they were introduced, and who first named or described them; hybrids, by whom reared, and their pedigree.

The articles must be forwarded carriage-free, and addressed to the Board of Commissioners of the International Horticultural Exhibition, Palace of Industry, Amsterdam, on April 6, 7, or 9 next.

Live flowers, bouquets, and fresh vegetables will also be admitted on April 12, before 9 o'clock A.M. Trees, shrubs or plants for the open air will be received from March 15 until March 31.

Plant-houses and other buildings, fountains, or such-like objects, requiring much time for their location, will be admitted only during the month of March. Exhibitors abroad will have exceptional facilities allowed as much as possible.

A jury, to consist of competent Dutch and foreign scientific gentlemen, will be invited to award the prizes. The jurors will assemble on April 20, at 11 o'clock A.M.

The exhibition will be open to the public from April 13 until May 2, 1877.

The objects shown must be removed on May 3 and 4. Objects not reclaimed three days after the closing of the exhibition, remain at the exhibitor's risk.

During the exhibition no objects may be removed without a special permission of the Commission.

In no case will it be allowed to deliver objects sold during the exhibition to the purchasers, or to remove them in any other way from the exhibition.

During the exhibition a Congress will be held, where opportunities will be offered for discussing subjects connected with the exhibition. Of this Congress a separate programme is issued.

Nearly seven hundred classes are mentioned in the schedule, for which gold, silver, and bronze medals, and certificates of various grades will be offered. In addition to the horticultural exhibition, there will be an exhibition of various vegetable products, as cotton, tobacco, cinchona, madder, indigo, caoutchouc and gatta-percha, fatty and oily substances, materials for making paper, cereals, catechu, vanilla, rhubarb and sarsaparilla. Medals and prizes will be awarded as in the case of the horticultural exhibition. The secretary is Mr. J. B. GROENEWEGEN.

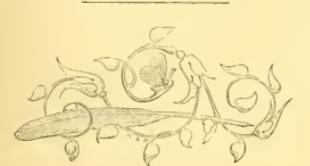
— Dr. GEORGE KING, the Superintendent of the Royal Botanic Gardens, Calcutta, has lately published a valuable MANUAL OF CINCHONA CULTIVATION IN INDIA, giving an account of the history of the Cinchona, the collection of the seeds in South America, the introduction of the plant into India, the modes of cultivation adopted in that country, the chemistry of the bark crop, and various appendices giving statistical details as to the condition of the plantations, the value of the products, and various other matters. The publication will be of very great value in all those colonies where Cinchona cultivation is practicable.

— Few people will assert that the prevalent style of STAGING CUT BLOOMS OF ROSES in this country is an artistic or pleasing one; but when the judging of the merits of perhaps one from half-a-dozen to a dozen collections has to be got through in about a minute, and this is not infrequently the case—it is out of the question to permit exhibitors to exercise their ingenuity in setting off their collections by auxiliary plants and flowers. Space, as a rule, is not wanting, but so much is sacrificed to time. This, doubtless, will continue to be the rule at most provincial shows, because, in the first place, it is next to impossible for some of the exhibitors to get their products staged unless they bring a sufficient number of hands with them to do the work—local committees commonly forgetting, or not knowing, that they should make it a part of their duty to provide men to assist in this work. Secondly, the managing committees of many provincial shows, although most

anxious for the success of their shows and energetic in their labours to secure it, do not include among their number, men of practical experience in making the most of the material at their disposition, and, being unaware of its importance, fail to secure the services of a qualified person to superintend the arrangements. The consequence is that a few of the early birds secure the most advantageous points for exhibiting their products, to the detriment of those who, through no fault of their own, arrive later; and frequently unsuccessful squabbles ensue, resulting in waste of time, dissatisfaction, and an unsuccessful show, so far as an effective display is concerned. But, if the most is made of the time, and a small, but well organised, staff of men be employed under an able superintendant, promoters, exhibitors and visitors alike are satisfied and gratified. And it is for the consideration of those who superintend the staging, whether some advantageous changes might not be made without adding too much to the labours of the usually overworked judges. It is quite unnecessary to dwell upon the blemishes in our shows, nor excluding many of those held in the metropolises. Of course so long as the plants, flowers, and fruits exhibited are limited to those in competition for prizes it is out of the question to treat them and arrange them as if they were contributed with the object of making an effective whole. But let somebody with the power and ability introduce some novelty in the hitherto almost unvarying monotony.

— In the *Botanische Zeitung*, Dr. O. DRUDE proposes a MODIFIED CLASSIFICATION OF THE PALMS, the basis of which is the separation of the New and Old World forms, based upon the facts that no species of Palm is indigenous both in America and the Old World; no genus is common to both worlds, and even the tribes are almost limited by the same areas of distribution. The arrangement is the following:—

1. *Colomaeo*.—Tropical Africa, Asia up to 30° N. lat., and the Sundia Isles and Australia to 30° S. lat.
2. *Rhaphie*.—Equatorial Africa, Madagascar, Mascarenes, and Polynesia.
3. *Mauriticeo*.—Tropical America, from 10° N. to 15° S. lat.
4. *Borassino*.—Africa, Mascarenes, Seychelles, and Western Asia to 30° N. lat.
5. *Corymbaceo*.—America, 25° N. to 23° S. lat.
6. *Areceae*.—All around the world from 90° N. to 40° S. lat.
7. *Chamedoriceo*.—America, 25° N. to 20° S. lat.; Madagascar, Mascarenes, and Seychelles.
8. *Triverteo*.—America, from 15° N. to 20° S. lat.
9. *Corymbaceo*.—Asia, to 30° N. lat.; Sundia Isles, Australia to 17° S. lat.
10. *Corymbaceo*.—All around the world from 40° N. to 35° S. lat.



Home Correspondence.

The Gardeners' Royal Benevolent Institution.—I have often considered that the circumstance that comparatively so few gardeners subscribe to this Institution must be somewhat disheartening to the many ladies and gentlemen who so kindly subscribe to its funds, and also to the lively interest in its prosperity. It may possibly be worth while to attempt to inquire into the cause or causes of this apparent lethargy on the part of those for whose special benefit the Institution was originally formed, and still continues to exist. I am perfectly aware that among gardeners generally, guineas are things by no means plentiful, but I do not think this circumstance the only or primary cause of this lukewarmness or apparent indifference on the part of gardeners. There are very few mechanics or even agricultural labourers who do not subscribe to a benefit society of some kind, and the sum subscribed seldom, if ever, falls under the amount of one guinea annually, indeed it is often considerably more; so that I can hardly think that among gardeners the inability to spare this sum can be the principal cause of preventing so many from subscribing to the funds of the Institution. I am

inclined to think that there is much in Mr. Findlay's letter at p. 147 which requires the serious consideration of all those interested in the prosperity of this excellent institution. I think it very likely that many gardeners may reason with themselves in this way, viz., "Supposing that I should subscribe to this Institution, and supposing also that at some future time I may be so unfortunate as to need its assistance, I am quite unknown to and can have no influence with any of the influential supporters of the Institution, and I should hardly have the shadow of a chance of being selected as a candidate. So I will not think of joining the Oddfellows, or the Foresters, &c., as the case may be." Therefore I feel quite inclined to think, with your correspondent, that the system of canvassing should as far as possible be discontinued, as it can be so judiciously disposed of by the selection of a portion of the candidates. Before an election takes place the secretary invariably takes care that every subscriber to the funds of the Institution is duly furnished with a list of the names of the proposed candidates, which list also states their respective ages, with the necessary particulars, as regards their circumstances, their ailments, &c., and to this me appears to be quite sufficient as a guide to subscribers who may have no personal knowledge of the candidates to enable them to make a judicious disposal of their votes. There is also another circumstance which I think may operate as a preventive to gardeners becoming subscribers, viz., the smallness of the pension itself when obtained; for if it ought to be increased from £16 or £12 per cent. to twenty-five or thirty years ago, go father towards furnishing the means of keeping body and soul together than £25 or £20 will do at the present time. For answer to this it may, of course, be said, and I am quite willing that the funds of the Institution will not admit of higher pensions being paid, unless the number of pensioners be allowed to diminish. In my opinion, however, even this very undesirable alternative would be preferable, as I cannot help thinking that it would be better that the number of pensioners should be reduced to a few, and deserving, although indigent brethren, in comparative comfort, than to keep double the number merely alive; at the same time I most sincerely trust that it may never be found necessary to have recourse to the alternative I have alluded to, viz., a reduction in the number of pensioners. And I beg to respectfully call upon my brethren of the spade, and more particularly upon my younger brethren, to show that they possess the essential *esprit de corps*, and put themselves at once in communication with Mr. Clegg, the excellent and indefatigable secretary of the Institution, who will I am sure, be pleased to receive and to acknowledge their subscriptions, which they will very likely, after all, miss less than they may now suppose. And they will tend in a great measure to enable the Institution in some degree to increase the amount of its pensions without reducing, but if needful increasing, the number of its pensioners. In conclusion I sincerely trust that every subscriber to the excellent Institution may never, in the slightest degree, require its assistance.

P. O'Brien.
I can fully indorse the remarks made by Mr. Findlay at p. 147 as to the growing evil of canvassing for votes at the election of pensioners of the Gardeners' Royal Benevolent Institution, especially as regards nurserymen. In some instances it even appears to be degenerating into a trade advertisement. I have had similar remarks to those quoted by Mr. Findlay made to me when recommending gardeners to subscribe, and know those who have withdrawn subscriptions chiefly on that ground. It certainly has become a growing evil, that requires a check. *J. A. P.*

Rainfall at Houghton Hall, Rougham, Norfolk.—I beg to hand you a report of the rainfall for this part of the county during the past year:—January, 1.95 inch; February, 2.7; March, 3.4; April, 5.17; May, 0.73; June, 1.78; July, 1.2; August, 2.38; September, 4.18; October, 0.58; November, 3.25; December, 4.34; total rainfall in the year, 32.36 inches. My rain gauge is a double cylinder, capable 3 inches in diameter made by Bryson, of Edinburgh. It is sunk 20 inches in the ground, and stands 4 inches above it. The fall in April seems to have exceeded anything I have noticed in the reports published in your columns. *J. Horvill, Bailiff, Houghton Hall, Norfolk.*

Veitch's Self-Protecting Broccoli.—This is undoubtedly one of the greatest acquisitions to gardeners that has been introduced for many years, and will be sure to find its way into every garden where a winter supply of so valuable a vegetable is desirable, as it is a most useful one when compared with other varieties. Mr. McIndoe, in his letter of recommendation at p. 83, appears surprised, as well he may be, that no mention had been made of it in your review of the fruits and vegetables of the past year, but to my mind it is very much to be regretted that it could have been deemed unworthy of the Royal

Horticultural Society's Certificate, which is of infinite more importance, because if "Royal Certificates" mean anything (which undoubtedly they do for those who obtain them), and even, for the sake of supposition, if they are valued only as an honorary award, why should their certificates have been withheld in the instance of one of those of *Tritoma Rooperi*, *Ruby Cullis*, *Dorlington*.

The Hardest Tritoma.—It is, perhaps, worthy of note that while the flower-spikes of the other species of *Tritoma* (*Uvaria media*, *Uvaria glaucescens*, and *grandiflora*) succumbed to the first frosts and drooped and withered at once, those of *Tritoma Rooperi* have borne the same low temperature uninjured, and many plants of this species, which have bloomed through the winter, are still showing flower in Messrs. Backhouse & Son's nurseries, at York. *T. Rooperi* is a dwarf species (from 14 to 2 feet high), well adapted for positions in groups or borders where the taller kinds might be considered too tall. It commences to flower later than *T. Uvaria*. *Elbor.*

Eucharis amazonica.—The plant of which I send you a photograph is in the possession of R. H. HANNEY, Esq., Poles, Wares. Much having recently been written about Eucharis, a few remarks upon its plant in question may be interesting. It was at its best on January 8, there being on it at that time forty-four flower-stems, the total number of flowers being 227. This same plant was in full flower on September 1st; it then produced thirty-six flower-stems, the number of flowers was not then recorded, but the flower-stems at that time were stronger than at the present, many of them then bearing seven and a few eight flowers. This same plant has now produced twenty-five flower stems, and in January, 1876, it produced thirty. Besides flowering three times last year, it flowered three times in 1875, and we hope to obtain similar results during the present year. Thus it will be seen this plant in January, 1876, has produced 135 spikes, each taking an average of five flowers on a stem (which is quite within the mark), gives a total of 675 flowers. One great point in the cultivation of this lovely flower is to grow each crop of leaves quickly and liberally, with an abundance of liquid manure at the root, and plenty of atmospheric moisture. *J. Hill, Poles, Wares.*

Ficus Cooperi.—A plant of this growing under glass in one of the plant-houses in the Dalkeith Nursery has produced thirty small well-set fruits. The plant, growing in an 8-inch pot, is, upon the whole, a very interesting and evergreen shrub, which I would be glad to see as I have seen it in the jungle on the Malabar coast, Goa territory, East Indies. *Charles Key, Dalkeith.*

Potatoes and Parsnips.—Believing as I do that the Colorado beetle will reach this country, and thinking of the havoc it would do to the potato in Ireland, I was pleased to see your notice in it in the *Gardeners' Chronicle* of the 3d. I hope the public will see the prudence of planting fewer Potatoes, and sowing more Carrots and Parsnips, the value of which, more especially of Parsnips, is very much underrated. *Richard Walker, Warrick Road, Upper Clapton.*

The Seasons.—In this mild and early season some of your readers may like to have their memories refreshed as to former ones, and to compare them with the present year. I see from my notes that during the last ten years those most like the present one were 1849, 1869, and 1871. In 1849 the winter was followed by a forward spring without a check. The last three weeks of January were mild and wet, February fine, March mild and wet, May magnificent; Walnuts, Spanish Chestnuts, and Ash in full leaf by the end of the month. I had a dish of Strawberries (Black Prince) fully ripe, the first of June and July were hot and dry, and the Wheat in this neighbourhood was carried by the end of July; my Hop-picking was over on September 11; a very good fruit year. I cannot recall another year without a check round the spring. In 1869 the winter was very wet, windy, and mild; by the second week in February Almond trees were in full blossom in London. [They were so at the present time in the S.W. districts, Eds.] In sheltered places near the sea many Blackthorns were in full bloom by February 10; abundance of wild Daffodils here by the 10th; on February 28 Hyacinths in flower in the open border; grass grew all the winter, and my lawn had to be mown by the middle of February. March was cold and wet, April fine and warm. In 1871 the Lilacs and Apples were in full blossom, Pears over. May a miserable cold month; much east wind, yet wet. June very cold. July a splendid month. A good year for common fruits, but hardly any wall fruit. In 1872, from the end of December to the end of February, the weather was very mild. Wild Daffodils abundant by March 4, and Ribes sanguineum by

March 8. The first half of March fine and dry, then snow. In April a good deal of cold and wet, but still a forward season. By April to abundance of Cowslips and Stellaria and some wild Hyacinths. On the 21st, by May 5 Lilacs in full flower, Laburnums, Horse Chestnuts, and Weigela coming on rapidly, and plenty of grass. May and half June wretchedly cold and wet; the weather improved on July 17, and some very hot weather in July. A very small white plant, *William Wackham, Bristled-Wick, Alton, Hants.*

— Wild flowers are following the example of their more cultivated relations, and blossoming early. For I picked in my walk on the 10th a very pretty nosegay of "wildings." The small white *Potentilla*, the pale yellow *Oxlip*, a lovely little pale blue *Veronica*, bright *Buttercups*, *Primroses*, and the catkins of the *Hazel nut*. On the 7th I saw a wasp, and on the 3rd a humble-bee enjoying the sunshine; so insects, like the birds, are evidently under the impression that spring has come. *Helix E. Watsony.*

Melanthus major.—To show the mildness of the past winter I have now a specimen of the *Melanthus major*, between 3 and 4 feet high, coming into bloom. This plant has been out several seasons, but usually dies down every winter and shoots again in the spring. This year it was kept in the greenhouse, and has had two blooms of the *Magnolia grandiflora* the middle of last month, and the trees continue to bloom now. *S. Hanbury, Bishopscote, Torquay.*

Garden Walks.—I should be much obliged to any of our readers if they would kindly tell me the best way of making garden walks. The gravel in this country is bad, full of clay, and the gravel walks consequently are covered with weeds and moss. I fear that the asphaltic walks, made of a mixture of tar and sand, would look black, and like the paths in the Black Country, which are very unsightly. Again, I have been advised to put down a lime and sand walk, made in the same manner as a cottage floor, but doubt much whether this would answer out-of-doors. I should be extremely grateful for advice from any one who has practically tried it, whether it is possible to combine tar and sand or gravel, so as to make a perfectly hard and lasting walk, and yet not present that dismal appearance which it generally has, giving also an estimate of the cost per square yard. I may mention that I have here any quantity of sea-sand of a beautiful colour. *Paulist St. Compton, Mapperton House, Beaminster.*

Fertilisation of Plants.—In Mr. Henslow's very interesting paper on the above subject, at p. 139, when alluding to *Pelargonium zonale*, he mentions the circumstance of my having influenced the colour of the flowers, as well as the foliage of *Geranium pratense* by using the pollen of various *Zonal Pelargoniums*, and says, "It would have been a desideratum to know what, if any, effect was produced by the crossing on the zones, but nothing is said about it. I can only say that, in the specimens alluded to, no indications of the transmission of zones to the leaves of the seedling *Geraniums* could be perceived, although this was anxiously watched for, and its appearance would have been regarded as an assurance that the cross had been effected." There were, however, the change of colour in the flowers of many of the plants, as well as the condition of variegation in the leaves of several of them, to lead to this belief, and although the variegation gradually disappeared as the plants grew, the plants themselves have been preserved in order to ascertain if the marking will again appear in the newly-produced foliage. I think I have already stated in a former communication on this subject, that the experiment was also reversed, that is, the *Geranium* pollen was used as fertiliser of *Zonal Pelargoniums*, and the same hopes are entertained that some change may also be induced in the colour of their flowers. Should this be found to be the case, the circumstance will in due time be made known. *F. Griseb.*

Royal Horticultural Society.—In a leading article on the fortunes of the Royal Horticultural Society, and in my paper mentioned as that of one of those who "have been with scant ceremony dismissed from their offices on account of insufficient funds," I however little cause the Society may have to applaud itself for some of its misdeeds of this kind, I think it only fair to say that conscience has nothing to accuse itself of as far as I am concerned; but, as a matter of fact, long after other sacrifices became necessary, the Council retained me in the employment of the Society, and I only abandoned it because, on receiving the appointment of Assistant Director in the Royal Gardens, I was pledged to give my whole time to the Government service, and had, therefore, no choice in the matter. I have little desire to plunge into the sterile field of horticultural politics, but I cannot refrain from saying a few words, not dissimilar to not view with regret and dismay the new

aspect which the affairs of the Horticultural Society have taken. Once again its face is turned from what is useful and honourable to what, in the opinion of sensible people, must seem useless and deplorable. I make Chiswick stand to horticulture as Kew does to scientific botany was a laudable, and in the present state of horticultural activity a perfectly feasible programme that that a great society in its last stage of decay should be so unwise as to attempt to attempt to maintain a stately but uninteresting garden as the summer lounge of a fashionable quarter, and should be complacently satisfied with the imperfect achievement of its undignified task, is most deplorable. *W. T. A. Dyer.*

As a lover of horticulture, and a twenty-guinea compeer, I feel a great interest in the future of our Society, and attended the annual meeting on Tuesday. I was much surprised at the very limited attendance of the Fellows, and the utter absence of any practical suggestions by those present. I appeared to me, from the address of the noble Lord in the chair, that the main obstacle to the resuscitation of the Society consists in the claims of the debenture-holders and the vacillation of the Council as to the recognition or otherwise of their claims. Now, as regards debenture holders either have a legal claim or they have not. If they have, the courts of law are as open to them as to any other class of Her Majesty's subjects who may happen to have made unprofitable investments; while if their claims are a moral or sentimental matter, and they are in distressed circumstances, doubtless subscription among their many wealthy friends in the neighbourhood might be inaugurated. But I protest loudly against the future welfare, or perhaps the very existence of our Society, being in any longer in the hands of a hesitating policy of Council, who sympathise with the unfortunate debenture-holders appears to culminate in the hope that somebody else will relieve them. *A Twenty-Guinea Fellow.*

My attention having been called to the paragraph in the *Gardener's Chronicle* of January 17, "dismissed with scant ceremony," by the Royal Horticultural Society, of Professor Dyer, Rev. M. J. Berkeley, and others, I cannot refrain from expressing my astonishment at your giving circulation to a statement which, as regards the first-named gentleman, is absolutely the reverse of the fact. As regards Mr. Berkeley the simple fact is the Council were most reluctantly, and, with his full concurrence in the necessity of the measure, compelled to deprive the Society of his services. The same reasons which forced the Council to do so, may be supposed to have led to reductions in the establishment, and nothing was or could be further from their intention in doing so than to act with any want of courtesy towards those with whose services they were obliged to dispense. *Robert Hoop, Secretary, Royal Horticultural Society, [W.]*

As regards the "scant ceremony" with which Professor Dyer. As to the "scant ceremony" in the other cases no doubt it was unintentional, but it was none the less unfortunate. [Eds.]

Currieria Wallisii, Mast.—I was much pleased to find in the *Gardener's Chronicle* of January 27 a figure and description of this fine new foliage plant, of which Mr. Wallis spoke very highly in his letters to me, specially pointing out the fine variegation and the neat dwarf and compact habit, which made it far superior to *C. Roezlii*. The dried specimens he sent me I handed over to Dr. Regel, who described them in the *Gartenflora*, October, 1876, under the name of *Homalomena Wallisii*. Dr. Regel does not recognise *Currieria* as a good genus, not being sufficiently distinct from *Homalomena* in his opinion. Dr. Masters, in describing the same plant, was without doubt not aware of this fact. *E. Ortleib, Botanischer Garten, Zurich.* [We are greatly obliged to our correspondent for indicating the prior publication of *Currieria Wallisii*, of which we were, of course, unaware; but the name of *Currieria* was not mentioned in the *Gartenflora*—not, as usually written, *Homalomena*—of which latter we intend to give a figure shortly. [Eds.]

The Clive House Seedling Grape.—I should not have been the least notice of the above, had my name been taken in amongst the contributors of Mr. Bell in the *Gardener's Chronicle* of last week. I can only say that I corroborate every word that my friend Mr. Bowie said about this Grape in your issue of January 20. Mr. Bowie knew the Grape for years before I ever saw it; and if seedling Vines ever were brought to this place, they were never seen or heard of by any one here as far back as I can trace. I have ample proofs that the Grape was raised by Mr. William Caseley in this garden some twenty years ago, and it has been grown and fruited here ever since. Mr. Bowie's mistake was to be a new Grape and a Clive House Seedling are problems I leave for the horticultural public to solve. The other Grape alluded to by Mr. Bell did not secure the same honours that his adopted child did from the Fruit Committee of the Royal Horticultural Society, simply because it was thought by some of the com-

mittee that the flavour came too near the Muscat flavour of that excellent Grape, Mr. Pinco's Black Muscat, to be distinct. As Mr. Bowie has not explained facts connected with this valuable late Grape, I shall take no further notice of the subject, whatever other fallacious statements may appear. *Alexander Ingram, The Gardens, Alwrick Castle.*

So thoroughly convincing was the truth of what I previously stated in the *Gardener's Chronicle* about this Grape, that I reiterated it without fear, having no interest to serve in this matter further than I there mentioned. For somewhat more than forty years I have been in the habit of paying a visit to the gardens at Alwrick Castle more than once every season, and by the different gardeners employed there during that time I have had every facility afforded me for seeing all that was considered worthy of notice. I distinctly remember having the seedling Grapes, which at that time were in reality all of which that in question is one), pointed out to me. I afterwards frequently examined them, and when they began producing fruit I had much pleasure in tasting and comparing it with that of other Vines. Nor, so far as I remember, have I ever heard the Grape called by any name but that of the Earl of Arundel, and that not only during the last summer, as Mr. Bell asserts, but for many years previously. Mr. Bell knows the conditions with which he promised to comply when he obtained the Grape from Alwrick Castle, but which at that time were in reality all of which that poor old Mr. Baillie should in his declining years have allowed himself to be made the scapegoat of Mr. Bell in this transaction. *Robert Bowie, The Gardens, Chillingham Castle.* [As the Fruit Committee of the Royal Horticultural Society, and I am, moreover, cancelled the name, it would serve no useful purpose to continue this discussion. [Eds.]

Effects of the Mild Weather.—Will you allow me to say that I have for many years taken great pains to note the difference between a mild winter and a severe one. All my experience goes to show that mild winters are generally followed by late springs, and often by fruitful seasons. Although we have in our hedgerows *Elder*, *Honeysuckle*, and a few other plants, showing signs of forward vegetation, yet this does not necessarily foretell an early spring, for these very early signs are generally common to a winter which, especially when we have had an early hard winter, followed by a mild February, such as we are having at present. The fact is, tree vegetation is much behind what it was in this time last year, and the Pear blossom-buds are more behind their usual state of development. The Angora Pear is the earliest leaving tree that I know, after the *Elder* and *Honeysuckle*, and it was in full leaf in February last year. I have examined it to-day, and see no appearance of its foliage being put forth. The heads of Elm and other trees are beginning to show, and about now, but this is always the case early in the season. Tree vegetation generally begins about the middle of December, before the sun has entered Aquarius; consequently their buds have made considerable progress before the winter sets in. I have already mentioned this early development to show that it has nothing to do with the mildness of the season, but is an effect of a change in the magnetical current, which appears to me to take place prior to the sun's return to perihelion on December 31. But I am not philosopher enough to be able to give a reason why the magnetical current should precede the sun, supposing it does so, as indicated by the growth of trees commencing, as I said above, early in December, or at least about the middle of it. Some of your correspondents have been very anxious to elucidate this interesting matter. *John Scott, Merriott.*

Scott's Wasp Destroyer.—I have seen nothing so effectual for destroying wasps as this mixture, which is also the best thing for destroying their nests that I have ever used. We have four large vineries here, and last summer the wasps were very troublesome in the garden, but by applying this mixture to the destroying mixture two or three times our Grapes were not in the least hurt. It is a boon to gardeners, and no one who has Grapes to grow should be without a bottle of it. It is very simple, and may be used by a boy or a gardener, and is as safe as the gardener. *Ed. Farr, Foreman, Sutton Park.*

The Colorado Abies Menziesii.—This tree, which was mentioned in your columns at p. 48 on one of the most charming of all the Spruces, and especially remarkable for the bright blue glaucous hue of the entire plant, is without any doubt, the same as one of the seeds which Mr. Roezli sent me in the autumn of 1874, together with seeds of the most beautiful *Picea concolor*, *Picea bicolor*, *Pinus aristata*, &c. Mr. Roezli spoke very highly of the decorative value of this Spruce, the foliage glittering in the sun, and the tree being called "Silver Spruce" and when once fairly known would be a great favourite.

He also took it for a variety of *Abies Menziesii*, but said that it never made such tall trees, and had a much better, much more compact habit. With the seeds he sent me also branches and cones; on comparison I found it to be the *Abies commutata* of Prof. Parlatore (*Abies Engelmanni*, Parry), and therefore adopted this name in distributing these seeds, which were of excellent quality. No doubt there must be now a great quantity of 2-year seedlings in the principal nurseries on the Continent and in England, where Messrs. F. Sander & Co. were entrusted with their sale. Those nurserymen who bought of these seeds will be glad to learn no doubt that their stock of small *Abies commutata* is the very same thing as the new Fir in the garden of Professor C. S. Sargent, at Brookline, near Boston, and will take all the better care of their little seedlings. *E. Ortgies, Botanic Garden, Zurich.*

Ancient Resuscitated Yew at Bettws Newydd.—The gigantic old Yew, of which the base here illustrated (fig. 36), is one of two now growing in the churchyard of Bettws Newydd, between Abergavenny and Usk in Monmouthshire. The original sketch was made by the writer last autumn during the meeting of the Cambrian Association in Monmouth-

the name the Government of Chili employed at the Vienna Exhibition to describe this gum. From the seed sent to India, Ceylon, and Australia, I hope soon to hear of a good result, although it is a difficult shrub to propagate. If any of your readers can assist in getting a further supply of this seed, it will be gladly welcomed, as my small stock of a few pounds is exhausted. *Thos. Christy, Jun.*

Mushroom Culture.—In your issue of Jan. 27 you give an account of a Mushroom-bed producing an extraordinary crop of very fine Mushrooms, as exhibited at South Kensington, and for the benefit of the readers of the *Gardeners' Chronicle* you also give Mr. Hopper's method of making, spawning, and subsequent working of the bed. A confessor I am somewhat alarmed, and most certainly should hesitate before adopting the treatment set forth at p. 115. Apart from having serious doubts as to the moasure getting a great deal too hot, and in a measure destroying the spawn, what strikes me most forcibly with fear is the very high temperature (90°) which is maintained in the house for a period of "three weeks." I certainly never heard of a Mushroom-house being kept at such a high temperature before, and I can well imagine what the Mushrooms would be like in No. 1 bed

been an object of admiration to every one who has seen it. Should Mr. Shrivess (p. 251) like to try it, I shall have great pleasure in sending him a batch of cuttings. *P. Davidson, Stanmore Park, Great Stanmore.*

—No bedding *Lobelia* of recent introduction has proved more useful and permanent in character than the semi-pamila *Blue Beauty*. This variety has flowers the size and colour of *speciosa*—not a purple tint, but the bluest of blue *Lobelias*—allied to the habit of *pamila*, but of a more robust growth. The plant forms an almost flat head of flower from the first, and maintains this desirable habit all through the season. It is a first favourite at the Crystal Palace, the Royal Horticultural Gardens, and at Heckfield, and in many other of the best flower gardens. I believe that *Blue Beauty* has not yet received the honour of a First-class Certificate at South Kensington, but that can scarcely derogate from its value, as some *Lobelias* that have recently received that honour there have never been seen in such good form since. The *Lobelia* is so entirely a bedding plant that it is somewhat strange the Floral Committee should grant certificates to any kind until they have been tested as bedding-out plants at Chiswick for a season; *Violas* and *Fansies* have to undergo that ordeal, and why not

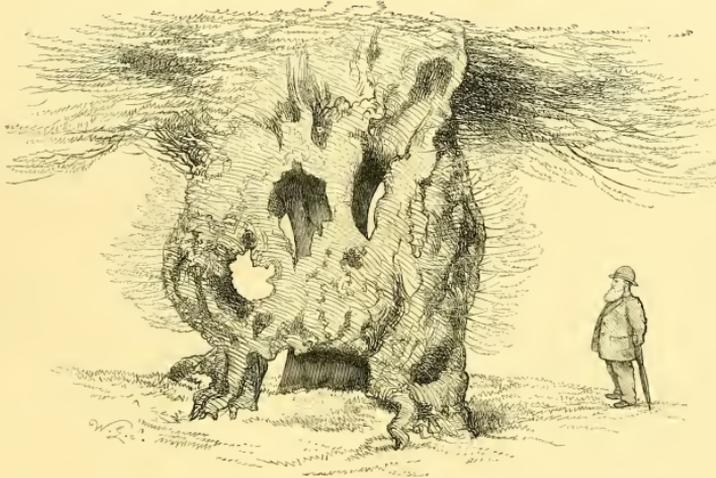


FIG. 36.—ANCIENT RESUSCITATED YEW AT BETTWS NEWYDD.

shire. The two great Yews at Bettws Newydd are considered remarkably large even in this district, where Yews of great size are common. The tree illustrated is 39 feet 6 inches in circumference at 5 feet from the ground, and is not only remarkable on account of its great size, but for its singular regrowth or resuscitation from within. The internal stem was probably at first an adventurous descending root, now it is a columnar stem of great size, which serves to support and feed the battered and time-riven old shell. Many descriptions of resuscitated trees will be found in the back volumes of the *Gardeners' Chronicle*, one of the best being by the late Mr. J. T. Moggridge, in the volume for 1870, p. 1248. *W. G. S.*

Cæsalpinia brevifolia.—Will you allow me to reply to your remarks at p. 151, on the native names for the *Cæsalpinia brevifolia*, or *Balsamocarpon*, *Algaroba*, &c. I had a drawing of the plant made, and sent copies of it to many parts of South America. From the gentlemen who replied and forwarded the real pods with the native names, I selected for my pamphlet the two most frequently employed. I might have given many others, but although I described what was wanted, I had pods sent me home of other plants which weighed 4 or 5 oz. each. These were also known as *Algaroba*. The best known *Algaroba* is the *Ceratonia Siliqua*, or *Locust Bean*, on which the Spaniards feed their cattle. *Balsamocarpon* is

when No. 2 was put to work, in fact I should decidedly say there would not be any. What with cutting *Asparagus* in three days after the placing of the crows in heat, and growing Mushrooms in a temperature of 90°, 1877 certainly, so far, abounds in horticultural wonders. I had the privilege a short time since of seeing a remarkably fine crop of Mushrooms in the garden of H. Bramwell, Esq., Crown East Court, Worcester, which far surpasses anything I ever saw before; these were grown in an arched cellar underneath a range of early and forced vineries. There is no piping or flue in the place, and Mr. Helman, the head gardener, informed me it was not necessary, the temperature of the house being very steady at about 58°. The beds were of the usual form, and made on the paved floor, corresponding in depth with those usually seen, but the Mushrooms were decidedly the best I ever saw. The spawn, I was told, was supplied by Messrs. Francis & Arthur Dickson & Sons, 106, Eastgate Street, Chester, and they have just cause to be proud of its excellent quality. *W. C.*

Bedding *Lobelias*.—I am in possession of a variety named *Emperor William*, which for brilliancy of colour and compactness of habit surpasses any that I have ever grown or even seen. I am unable to give its history beyond the fact that it was raised by a Harrow gardener, and three years ago obtained a First-class Certificate. I have grown it two years, and it has

Lobelias? For the past year or two the beds there have been too unreservedly placed at the disposal of the Felargonium Society as a trial garden for the seedlings of its members, but all the *Felows* are not affected with the scarlet fever, and therefore may well be desirous to see some space given to other plants quite as useful and not less meritorious than bedding *Felargoniums*. It should be the aim of the Council to make the Chiswick garden as practical as possible, relegating the mere decorative element to its proper place. *A.*

Polyanthus Sports.—Were it not for the facility you have of visiting Covent Garden, and seeing everything interesting from all parts of the world, I should pity your town life very much at this the most interesting season of the year. The winter is rapidly passing away, but except a rather sharp frost early in November we have had no winter weather, with the exception of wind and rain, of which we have had our share. Only in the delay of work does the rain inconvenience us in this county, where the subsoil is mostly like a riddle, and the uneven surface of ground at once throws off all superfluous. Vegetation is much too far in advance. The Gooseberries are in flower, and the generality of fruit buds rapidly expanding. *Primroses*, *Polyanthuses*, *Cyclamens*, &c., have been flowering all winter, and are now quite gay, as you will see by the few I enclose.

My principal object in sending it to call your attention to some singular strays derived from one or two varieties, show you to what extent they perpetuate themselves, and throw off others even more grotesque than themselves; and, still more strange, to sport back, not only to the normal form, but to produce some really new and older bracteate forms of Polyanthus, such as the old blue Polyanthus, which equally produces single or compound flowers. I also send you the nearest approach to a double Cyclamen I have seen; this variety of *Ibericum* is quite constant, but I have not yet been able to identify it with *Ziermayeri*, *Tregoneyi*, *Cornwalli*, *Fibryi*. (The rich and varied bouquet above referred to included—1. Two fine varieties of white Primrose, found wild in the woods near Tregoney, and which usually flower some weeks before the common sort. 2. Seeds of flowers for the first time, and likely to be useful for spring decoration; a maroon-crimson variety is very rich. 3. Seedlings from bracteate varieties, showing how greatly they vary; later on they will be more interesting; quite one-half of those I have not had in the monochrome form from seedling-bred Polyanthus, which invariably produces solitary flowers, like the Primrose. 5. A double-flowered Cyclamen *Ibericum*; this, being a short-petalled species, looks much better in the duplicated form than does C. persicum. ERS.)

Skimmia japonica.—The above plant, when well grown in large pots or tubs, is one of the most hardy and ornamental berried shrubs in cultivation. From its low-spreading habit it can be trained into a nice bushy form, and in the winter months, when covered with coral berries, it is not a less attractive sight than the more popular *Holly*. Owing to the scarcity of *Holly* berries last year my plants of the *Skimmia* in pots have been much noticed this winter, and I have had no end of applications for sprigs of them covered with berries, and some for berries for sowing. I find that the tree will bear a heavy crop of berries in a light loamy soil, mixed with a little peat or leaf soil, and as it flowers early in the spring, a little protection is required in severe spring frosts to insure a full crop of berries. *William Tillyer*.

An Early-blooming Ornithogalum.—During the past week I have noticed some plants of a very dwarf species of Ornithogalum in bloom in the nurseries of Messrs. Backhouse & Son, at York. It appears to be a stemless species, the umbel of flowers springing from amid the leaves, and rising to a height of about 1 inch. The flowers are generally only 2 inches across, with very narrow petals. I understand it was received under the name of *O. sororum*, but I have not been able to ascertain anything about its origin. *Ebor*.

Mr. R. S. Yates' Nursery at Sale, Cheshire.—All lovers of plants who have paid Mr. Yates a visit during the last twenty years (and their name is legion) will remember the grand plants of *Coleogyne cristata* in the houses at Sale. I have seen them on several occasions, but never saw them in such fine condition as they are at present. They are the finest of culture, and in a most perfect state of health. There can be no doubt that this is the most beautiful and useful of the genus; and the reason why all who grow the plant are not so successful as Mr. Yates is because they do not adopt the same simple method as ought to be remembered that there are *Coleogyne* and *Coleogyne*s. For instance, C. *Gardneriana* is found on trees in moist, shady woods—its favourite locality is in the immediate vicinity of a waterfall, whilst C. *cristata* is found growing on rocks exposed to the full glare of the sun (and, if you can) large masses of this plant, 4 or 5 feet in diameter, with 150 spikes of large blossoms, pure white, with the exception of the centre of the labellum, which has bright yellow fringes and plaits, the blossoms 4 inches in diameter, and four or five flowers on a spike. This is what I saw at the above gardens the other day; and there is also in the same house a large quantity of another equally charming flower, about 200 spikes of bloom being open. I refer to the lovely *Lelia anceps*, which has royal blue flowers, and is really splendid, and, if you grow of no two winter flowering *Orchids* more beautiful than these; and I feel sure that Mr. Yates' collection of these two gems are the finest to be seen in the country. There are hosts of other things one might mention, but I must draw attention to the above-named, inasmuch as I consider the quantity and quality extraordinary. *Bruce Lindley*.

Omphalodes verna.—*Arceps* of the association of *Omphalodes verna* with double white Primrose, alluded to at p. 50, permit me to send you a drawing similar which I have observed on one of the banks flanking the noble rockwork of Messrs. Backhouse & Son, York. The upper part of this bank is covered with *Omphalodes verna*, which has spread itself, in wild fashion, over an area of some yards in extent, and,

in the course of the spring, when the plants are well in flower, and the entire surface is one sheet of brilliant blue, numerous random plants of the common Wood Anemone (*A. nemorosa*) crop up in bloom here and there through the carpet of *Omphalodes*, with charming effect, the pure white of the Anemones coming out strongly in the deep blue of the *Omphalodes*. In addition to this, on the brow of the bank, immediately under the expanse of *Omphalodes*, are broad patches of *Myosotis dissitiflora*, while, lower down still, the base of the bank is covered with a yellow of *Thysanopetalum alterniflorum*, which, by its yellow flowers, which lay close down upon, and contrasted with its dark green foliage, when seen in mass have a peculiarly rich appearance. When these plants are all in bloom together, the effect is indescribably fine; and, although it is simply the result of the natural growth and grading of the plants for some years, I do not remember to have seen anything to be at all compared to it, in the most elaborate attempts at "bedding" or premeditated arrangement which have come under my notice. *Ebor*.

West's Patent Trellis.—Whether the above is a patent or not, I beg to state that a trellis in every respect similar, according to your description and illustration, except that it was lowered by means of chains, instead of by "turning a handle," was erected here about fourteen years ago, in two years before I took charge; but its use was discontinued after the first trial. The worst objection to it, however, was that to let the trellis down to within reach of a man 6 feet high it required to be some 2 or 3 feet shorter than the rafters, thereby entailing a loss of training space equal to about 150 square feet in our lean to vinery 50 feet long, or nearly 1 cwt. of Grapes in the season, which we thought would more than compensate for the extra trouble of using ladders at thinning time, if that can be reckoned of any account. It will be seen by the drawing in last week's *Gardener's Chronicle* that the trellis has to be shortened half the length of the "hip-rafter" at the back in order to leave room for it to descend. Another objection to it, especially in the case of stove climbers, is that the trellis lay hold of the permanent fixtures of the roof if the plants are left untrussed for a short time, and then the trellis won't work. A Vine tendril, once it gets woody, will carry a stone weight. The vinery in question here was designed by Ormson, of London, if I remember rightly, but was erected by the old crew joiners, J. Simpson, Woolley Hall, Salford.

Reports of Societies.

Royal Horticultural.—Last Tuesday the annual general meeting of this Society was held in the Council-room, South Kensington, under the chairmanship of Mr. J. G. Repton, F.R.S., and the following were present by the following members—Lord Alfred S. Churchill, Major Mason, Dr. Denny, Mr. Henry Webb (Treasurer), Dr. R. Hogg (Secretary), Mr. William Haughton, Mr. Kellock, and Mr. Campion. Amongst other business to be transacted in the evening were the names of Messrs. C. B., Dr. Masters, D. Wooster, Gueldra, Shirley Hibberd, De Castro, Godson, sen., G. F. Wilson, J. Lee, A. Grote, B. S. Williams, Maurice Young, H. J. Elwes, H. Veitch, Liggins, G. T. Saul, J. Fraser, Tweedy, &c.

The meetings of the Secretary, Mr. Dick, having read the minutes of the last meetings, which were confirmed, and scrutineers for the ballot of the Council and officers having been appointed in the persons of Messrs. Veitch and Lee, the report, as follows, was taken as read:—

REPORT OF THE COUNCIL TO THE ANNUAL GENERAL MEETING, ON FEBRUARY 13, 1877.

Notwithstanding the many disadvantages with which it has to contend, the Society has, by the satisfaction of congratulating the Society on the progress that has been made during the past year in the advancement of scientific and practical horticulture.

The Secretary of the Society has greater interest been manifested in this pursuit, both commercially and as an intellectual recreation; and the operations of the Society have been directed not only to promote and encourage horticulture, but to assist in the progress of horticulture by all the means it has at command.

The Scientific, the Fruit and the Floral Committees have met during the year without intermission, and worked assiduously at their respective duties, and under their superintendence and direction much valuable work has been done in the garden at Chiswick as well as at the meetings at South Kensington.

The meetings of the Scientific Committee have been well attended. Many most interesting facts in the morphology and physiology of plants, as well as in the branches of teratology and pathology, have from time to time been brought before the Society, and the investigations of the entomological department, with reference to the injuries produced by insects on plants, have been of great importance. Mr. G. S. Burdett, in connection with the meeting-spores of the *Peronospora*, referred to in last year's report, were on several occasions fully confirmed, while the facts afforded by the late lamented Mr.

Snee's very numerous microscopical preparations of the aphides which attack Potatoes, and which were found to be infested by the *Peronospora*, actually producing *coopersii* *in situ*, tended greatly to confirm the accuracy of Mr. Snee's conclusions. Some hundreds of mouldy spores in the *Fusisporium Solani*, a fungus which is sometimes almost as destructive as the *Peronospora*, demands especial attention. Amongst other matters, the grafting of plants with the *Peronospora* of Artichoke, and that of different species of Solanum one on another, as effected by Mr. Maule, of Bristol, though requiring confirmation, were of high interest; while Dr. Hogg's attempt to classify the *Peronospora* of Artichoke before the committee and thoroughly discussed, its secretary bearing ample testimony to its usefulness, and the experiments that are already published there are others in the Horticultural Society.

The Fruit Committee has also been engaged in doing good work in its department, and the reports of the experiments that were conducted at Chiswick under its superintendence will be found in the part of the Society's Journal which has recently been issued. These consist of elaborate trials of 243 varieties of vegetables. Besides the reports that are already published there are others in preparation which will treat on 150 varieties of Strawberries.

The large collection of garden-trained Cherry trees, covering the west wall of the conservatory at Chiswick, last season for the first time, and of these many notes were taken, which will furnish matter for a special report. This is the most complete collection of Cherries that can be obtained in the country, and some hundreds of varieties, all of which will be proved as to their adaptability to the climate and their uses in this country. The cord-trained Peaches on the south wall show a great promise of fruit, and the notes taken by the members of the Committee to compare them with one another, to ascertain their merits and to settle their synonyms. The crop of Peaches in the large orchard-house was most satisfactory, as well as that of the ones in the large conservatory.

The distributions among the Fellows in this department were 357 packets of seeds and plants.

It would be well if the floral department had been by no means unimportant from a practical point of view. The most useful of the observations made during the past year have been those relating to the new class of flowered Zonal Pelargoniums—a class which had rapidly increased in numbers, and of which it was highly desirable that a knowledge of the best sorts should be obtained. This has not been a great measure, being secured, as will be seen by a reference to the report in the recently issued number of the Journal of the Society.

Some modification has also been made in the mode of testing the merits of the new varieties of Zonal Pelargoniums, of which an extensive series has, thanks to the raisers and growers of these plants, been annually brought together at Chiswick for some considerable period. It is to be regretted that the number of plants of this year, as has hitherto been done, the Floral Committee thought it would be more desirable to grow the new sorts for the first year under glass, in order to test their suitability for being proposed to the second year, when better established plants would as a rule be attainable, in the open air, in order to ascertain their adaptability for being proposed. This has accordingly been done, and will be proposed to follow the same plan in future.

The actual trial collections consisted of 165 varieties of double Pelargoniums, 150 of single Pelargoniums, and 150 sorts of new Zonal Pelargoniums. For the opportunity of procuring these very complete collections of Pelargoniums, the Council were indebted to the Pelargonium Society.

The distributions in this department to Fellows have been 2500 plants of various kinds, 1500 packets of cuttings, and 20,000 packets of seeds. It has been found that the mode of proposing to the second year, which was better established plants would as a rule be attainable, in the open air, in order to ascertain their adaptability for being proposed. This has accordingly been done, and will be proposed to follow the same plan in future.

A valuable mixed collection of ornamental hardy herbaceous plants, by the new varieties of Zonal Pelargoniums, has been made for making beds of the popular old florist's flowers, such as *Ranunculus*, *Anemones*, *Carnations*, *Pioteles*, *Anthriscus*, &c.

The collection of plants that was supplied from Chiswick for the decoration of the conservatory and gardens at South Kensington was 47,872 up to July 18, when the supply was discontinued; and the estimated value of this collection was £1,000.

The state of the subscription list has not as yet been such as to justify the Council in issuing the usual schedules of flower shows, but they hope that it will ere long enable them to do so. The Council has greater interest in the Society. Although the great shows are, except under unusually favourable circumstances, attended with considerable loss, the Council, having regard to the general feeling of the horticulturists of the country, and to the practical use in popularising horticulture, have decided to continue them in as efficient a manner as the funds at their command will permit. The provincial shows stand on a more favourable footing, and the Council have determined under consideration where and when the next shall be held.

The Council will continue to encourage the fortnightly meetings which form so great an attraction to all lovers of flowers, fruit and horticulture generally. At these meetings may be seen all the novelties that have been collected and commenced privately by the horticulturist part of the world, and also many of not less interest which art has produced in our gardens at home. The large attendances of Fellows and their friends that are usually seen at these meetings, and the interest that is taken in this part of the Society's work. To make these meetings even more attractive it is

intended to try the experiment of holding them in the Conservatory, and to have a military band in attendance.

Through the liberality of many of the exhibitors and some of the horticulturists, a small number of exhibitors who have from a spirit of devotion to horticultural science supported it at great personal expense, the Council were enabled in July and November of last year to present two as grand exhibitions as ever have been seen in the gardens at South Kensington, and they have reason to believe that it is in contemplation to act in the same liberal manner some time during the present season.

The agreement entered into with Her Majesty's Commissioners in April last authorised the Royal Horticultural Society to borrow upon the security of the establishment, in case they assumed possession of the gardens. The Council have borrowed upon this security £5000, which enabled them to pay outstanding liabilities, prizes and awards, so that on December 31st the Society had a balance in hand more than sufficient to pay all their outstanding liabilities. The Society may be said to have commenced this year without debt or liability, except the attaching to surplus income in respect of debentures, which has not been the case for very many years past.

On the other hand, the Council have to regret that the result of the gardens had not proved sufficient to pay the interest on the debentures.

The strictest economy has been exercised—salaries and outgoings have been reduced by about £1000 a year, and towards the close of the season it was thought desirable to reduce the expenditure still further, by closing the entrance on the west side of the gardens. This has, however, been re-opened, and will go on as long as the funds permit.

The Council have, in their circular of December 31st, 1876, so recently addressed the Fellows on their position with reference both to Her Majesty's Commissioners and the South Kensington Gardens, that it appears unnecessary to return to the subject, more especially as that position remains unchanged. They content themselves with reminding the Fellows that, while their connection with the Kensington Gardens, the Commissioners remain together unpaid, but the Council were obliged, by a necessary regard for economy, to make an inadequate provision for the maintenance of the gardens and their enjoyment by the public, it appears to them that they and they trust that in this view they will be supported by the Society, that, unless sufficient funds are forthcoming for the fulfilment of their obligations, a proper regard to the interests of the Society, dictates the earliest possible retreat from a connection which was entered into with so much hopefulness and with such fair prospects of enlarged utility.

The President said no doubt they had all read with satisfaction the report of the result of the actual work done towards the advancement of the science of horticulture, and he drew special attention to that because the Council, like the rest of the Fellows, had read the disparaging remarks which had appeared from time to time as to the management of the Society. No doubt the unfortunate circumstances which had been the subject of so much conversation in that room had had to some extent a prejudicial effect upon the working of the Society. It was undoubtedly true that a large portion of the funds which might have been devoted to the advancement of horticultural science had been necessarily applied to the maintenance of the gardens at South Kensington. It was also true that the *Journal* of the proceedings of the Society, which had been read in the usual public meetings, had been attached to horticultural science, had been discontinued. There was no question that the connection of the Society with the South Kensington Gardens under the modern phase which had unfortunately existed for some time past, was to some extent prejudicial to the interests of the Society. The subject had been made the matter of very unjust comment in consequence of that union with South Kensington. It was not for him to defend it; it had been proposed by the Council that management should be taken by him on the one hand, and by Dr. Lindley and the most earnest supporters of the Society on the other. There had been then a hope that the effect of this union would be to popularise science to a very great extent, that he could not say in his opinion, this anticipation had been realised, and he doubted whether the anticipations entertained at that time were even realised at the time when the Society was most prosperous, because their prosperity meant the enrolling of a large number of members from South Kensington to enjoy the pleasure and advantages of these gardens. But when they read that 47,000 plants a year had been brought from Chiswick to these gardens (and he might have added the published reports of experimental trials) he could not say that the attention which had been given to the work had been neglected. Well, they must all feel that having entered into this union it was not possible lightly or easily to withdraw from it. In the first

place it was absolutely necessary that, as its men of honour and principle, should do their utmost to give effect to the intentions of those who brought about that union. Even supposing there was a failure of the object which had been in view, they had still a sense of honour left towards those who had advanced large sums of money in the hope of the project becoming prosperous. There were some persons who had advanced a sum, in round numbers, of £50,000, and there were also the holders of life tickets, who had paid down their money on the faith of the undertaking; so that while there was a vestige of hope left it was the duty of the Council to do their best to advance the prospects of the Society, and to secure for the interests of the debenture-holders and the holders of life tickets. Well, they were all aware of the results of all that had been done. They were under a special interposed lease for three years, during which time the Royal Horticultural Society could not be extinguished. It was the end of the three years that the annual sum in subscriptions of £10,000 were not realised, the Commissioners would be in a position to extinguish the Society.

Mr. Wm. HAUGHTON (Council), interposing, said that the condition was, that if the amount for one year was not realised, the Society should be dissolved.

The PRESIDENT: In any case we must show that we have brought up the subscriptions to £10,000. All that we received from all sources during last year was £5800, and therefore you can judge for yourselves what an amount of effort must be made to secure the sum which it is proposed we must raise. No doubt it may be that the attempting the absorption of the gardens by the Commissioners may lead to increased efforts, and may lead, as we and all the Fellows desire, to the promotion of real benefit both to the horticulturist and the Kensington public. But, so you must see that it is utterly impossible for the Society to go on in its present position. I ask, can we remain as tenants, bound to pay £2500 a year rent which we cannot pay? Again, of what use is it for us, who have a balance-sheet in our hands, which shows that we owe the debenture-holders, to remain here, when during the past year we were equally unable to keep up the gardens in proper condition, and when we were obliged to close all the entrances but one? I think you will feel with me and with the Council that it is not a fitting position for this Society to occupy. You will agree with me that it is not right that this Society should be constantly exposed to the charge that they are endeavouring to keep up a position which they are unable to maintain, and that in an ordinary life that he is spending more than his income, it is his duty to make his income and expenditure balance, and to give up every source of unnecessary expenditure. It is equally the duty of this Society to endeavour to square its expenditure with its income, by trying to support gardens like these, for which an adequate income is not provided. Ladies and gentlemen, I have stated before, and I am glad to state it again, that having by the assistance of the Commissioners rescued the Society from a state of bankruptcy, I think it my duty to do my best to keep from incurring fresh debt. You will bear in mind that during the next two years we shall not be, I am sorry to say, able to keep up the present gardens in their former condition; we shall be obliged, I am sorry to say, to refrain from doing many things we should much like to do for the extension of horticulture; but I think one great object we should keep in view during the two years is, that your Society should not suffer any disability by entering into pecuniary commitments which it cannot meet.

I think you understand distinctly that only for the Commissioners we should be involved in debt; the sum of £5000 which was advanced by Mr. Freake was applied to the payment of debts. I say again, that it is the duty of the Society to pay its debts, and in liabilities it has not the prospect of clearing, and especially as it has no likelihood of getting assistance from Her Majesty's Commissioners. I tell you candidly that my view of the question is this, that the horticulturists, and the public generally, and those of this neighbourhood, exert themselves to raise the annual sum of £10,000, it is not possible for us to meet our ordinary obligations, and I think the union between South Kensington and Chiswick ought to be dissolved. I think that if the terms of the lease, a fair notice, and ought to be clearly understood; and I am glad to find in the report of the Council that their concluding sentence puts their position in very clear, unmistakable language. With these observations I beg to move the adoption of the report.

Mr. HIBBERD called attention to the balance-sheet, and contended that the Fellows had a right to have in their hands a fuller and more complete statement of accounts than that which they had been furnished. This statement did not include the £5000 lent by Mr. Freake, and he contended that it was a statement of £18000 of which there was no mention. He should like to ask Mr. Webb, the Treasurer, how it was he had put in the hands of the Fellows such a statement of accounts as rendered it almost impossible

for them to go on with the business? The noble Chairman would permit him to say that some few years ago it was determined to hold an exhibition in the provinces, and a Finance Committee representing the Royal Commissioners and also the Council of the Society determined that the funds of the Society could not be made in any way responsible for an exhibition in the provinces. Upon that, finding themselves in a difficult position, the Fellow of the Society provided a fund of their own, portions of which came out of private pockets, sometimes in the shape of guarantees, and sometimes in the shape of earnings from distant places. The last exhibition in Bath left the Society in possession of £2000, and it is a profit of £1000, and to be devoted to exhibitions in the provinces. He was reminded by the circular issued by the Council that it was announced that the provincial exhibitions would be resumed. Now, however, they had no money to carry them on. He asked the attention of the meeting to the fact that in the year 1873, when Viscount Bury was chairman of the Council, a sum of £1800 was borrowed from the provincial, and transferred to the general funds of the Society in the very same year a sum of £1900 interest on debentures was paid, so that what was intended for the provision of provincial exhibitions was turned to account by expending it on payment of interest on the debentures, which should have been applied to the redemption of the Society. He contended that the Society had no business to touch that money, because it was solely for the use of provincial business, and he would ask the Treasurer to tell the meeting what he knew about this. He said that he had not at that time it ought to have been paid back into the horticultural fund, so as to enable horticulturists to promote some provincial shows with the same prospect of success as they had had before the money was abstracted. He wanted to know the money was, and to whom it was to look for it.

Mr. WEBB, the Treasurer of the Society, said he thought Mr. Hibberd had answered the question as to the £1900, because he had told the meeting it was spent. He quite admitted the money was improperly taken from the particular fund to which it belonged, but that was done before he was Treasurer. There was also a large sum resulting from life-compositions taken, and he regretted it was so, and if it had not been done the Society would have been able to go on without borrowing money from Mr. Freake. According to the charter, they were bound to let that money appear from year to year in the balance-sheets, which rendered them to that extent inaccurate and misleading. There was really no such fund now, although it was brought into the account, and one-fifth-part of that sum for the year was brought into revenue. It appeared on the face of the accounts that they had a larger sum in revenue than they actually possessed. He much regretted that the balance-sheet had not been made out until he might say, the present moment, but a fresh statement of accounts would be placed in the hands of the Fellows.

Mr. HIBBERD asked the Secretary if he could furnish the meeting with a copy of the minute which authorised the transfer of the money in question.

The PRESIDENT: You will bear in mind that all these proceedings took place before the existence of the present Council, and they appeared in the accounts. It was, no doubt, a subject of animadversion, but I really cannot see what advantage can arise from this. I think the balance-sheet of accounts which has already appeared. I think Mr. Hibberd has received a very clear and full answer as to this unfortunate sum of money. Certainly no advantage can arise from reopening a question which has so long been at rest.

Mr. GUEBALLA was quite of opinion with Mr. Hibberd, that the accounts should have been better kept.

The PRESIDENT felt that a fuller account ought to be furnished to the members of the Society.

Mr. GUEBALLA: We should have a printed statement of accounts. I should like to know how the subscriptions are coming in, as there are many reports on the subject flying about.

The PRESIDENT: In reply to that, I am happy to be able to announce to you that we shall be in the course of the day's proceedings, elect thirty-nine new Fellows.

The TREASURER: And I may add that a great many of those who withdrew from the Society are coming back to us again.

Mr. GUEBALLA said he felt convinced that the course laid down by the noble Lord in the chair was the only one for the Council to pursue, and he should, therefore, gladly second the motion for the adoption of the resolution of the meeting.

Mr. GOUDON, Sen., asked the Chairman what arrangements had been made with the Commissioners in the event of the £10,000 being raised?

The PRESIDENT: I am very glad you have asked the question, because it is a very important one, and

the precise answer to it ought to be comprehended by every person present. Supposing the conditions of lease are fulfilled by our raising the revenue of the Society to £20,000 a year, by paying our interest rent, it will be impossible for Her Majesty's Commissioners to put an end to the lease, and it will be our duty to continue our connection with them, and, among others, for this reason, that that is the only chance of debenture-holders having of raising on their £50,000. So long as the Society receives money over and above the cost of maintaining the gardens, that sum should be paid to the debenture-holders; and that is their sole right. The only legal right to the payment of capital rises from the source. One of the explanations of the lease in 1891 the Society fulfils all the conditions of the lease, and the Commissioners then choose to extinguish the debt, the Commissioners will be bound to pay half the debenture debt. Well now, that is the one half; the other half is to be obtained by putting aside excess of receipts over the expenditure to be applied to the payment of the interest due to the debenture-holders during the continuance of the lease. A part of this excess is put aside to redeem the interest of the debenture-holders, and that is the second part of the explanation I have given will give very much comfort to the minds of the debenture-holders; but if we raise this sum of £10,000, it will be our duty as honest men to keep alive the security of the debenture-holders.

MR. GODSON : I should like to know, supposing that £10,000 is not raised after the three years, what will be our position then?

MR. WM. HAUGHTON : It will be from Christmas next to Christmas following. If the income for that period is what is stated, the gardens will be continued.

MR. GODSON : But there is still one thing which regards the position in which we stand. Supposing that £10,000 is not raised, what will be the result as to our property? Have we to wait for three years or for two years?

THE PRESIDENT : Of course that will depend upon the action of the Commissioners.

MR. GODSON : That is just what I want to know.

THE PRESIDENT : It, at the end of that time, we have not raised the amount of revenue, and that we are, therefore, not in a position to pay our rent, the Commissioners, just as any other landlords, would be in a position to terminate the lease.

MR. GODSON : I think, in that case, then, we are at their mercy, whatever they like to do?

THE PRESIDENT : Yes.

MR. GODSON : Well, then, I say that this is the most extraordinary report which has ever been brought before a meeting. Why, here you start by saying that you borrowed £50,000.

THE PRESIDENT : Let me remind you that that is a liability of the Commissioners, and not of the Society.

MR. GODSON : I must say I am very glad to have that explanation from your Lordship.

MR. TREWEDY said it appeared to him that the Chiswick garden had been the subject of a long discussion in the Society. What he should suggest was, that the Society should sell the Chiswick Gardens. He should very much rather that those gardens should be sold, and the sum of money realised applied to the payment of their debts, than that the gardens should be carried on at an enormous expense. He did not see the use in keeping up these gardens at the expense of the whole establishment.

THE PRESIDENT : My old friend proposes to give up these gardens. I would remind him that 47,000 plants have been brought from them in these gardens. He would be taking away the only plants which we have, when, during some few years, it was a fashionable resort, and when there was a beautiful wood adjoining them, which is now simply a garden devoted to scientific experiments. No doubt a large amount of expense was incurred in the applying plants to these gardens. I entirely disagree with my friend as to the sale or the parting with the gardens. I do not know whether my friend saw the undignified entry of the President of this Society into this room, and the look on the face of the present position of the Society. The leg which was firm and stout I conceive to be, or to represent, the Chiswick Gardens, while the weak and tottering one makes a respectable resemblance of the South Kensington Gardens. The crutches alluding to his Lordship's assistance in commercial view, or combined it with the South Kensington view, they ought to place the Society on a firm basis. From letters which he had received from every part of the country, it appeared that that was the view that was taken.

MR. TREVEDY, who said he was a life member, mentioned that he had been told the Society had always been in difficulties. Now, supposing the state of things which his Lordship had sketched out became an accomplished fact, and that Her Majesty's Commissioners distrained upon the gardens and turned the Society out of them, what position would they then be likely to be, because, from all the facts he had

back to Chiswick Gardens would be more detrimental to their interests than anything which they could possibly do. He had been always one of those who thought that the best course for going back for London and South Kensington, not so much because they were gardens, as because the connection would give the Society the means of employing a large income. These gardens were in the midst of London, and were for the benefit of those who cared for nothing but for London and its pleasures, which were far more desirable to them than the pursuit of horticulture. However, it was only by the union of the two concerns that the Society could be made a paying one. He hoped some means might be taken to raise the income of the Society, and to enable them to continue their connection with the Royal Commissioners.

MR. D. WOOSTER said he regretted the stormy crisis through which the Society had passed. He knew that unfortunately the Society was suffering in reputation by the impression which had spread abroad that there existed no security for either capital or interest due to the debenture-holders.

THE PRESIDENT : Would Mr. Wooster suggest what possible security this Society can offer for £50,000.

MR. WOOSTER said there was in the agreement with the Commissioners a clause touching the funding of a certain proportion of the amount paid for life Fellowships for the purpose of promoting scientific objects connected with horticulture, and always providing that the surplus should be in the nature of a grant. He only wished to remind his Lordship of the fact that the Fellowships were not intended to submit to his Lordship and the meeting that the impression to which he had referred was acting very seriously upon the future prospects of the Society. The original interest payable to the debenture-holders was 5 per cent., but after the expiration of a year the rate was thought to be too much, and then under a letter dated July 21, 1861, a proposition was made to reduce the interest by 1 per cent.; the debenture-holders agreed to that proposition, and he really thought that all these things showed that there was a legal debt due to the debenture-holders by the Society which the Society ought to feel itself bound to pay.

THE PRESIDENT : What property have we in our possession for the payment of this debt?

MR. WOOSTER : I am only saying that the unfortunate impression which is abroad is keeping back the public from joining the Society.

THE PRESIDENT : The practical solution of the whole matter would be for new Fellows to come in and pay the debenture-holders out of the increased subscriptions. That is the practical solution. What other solution can there be?

MR. WOOSTER would only observe that in the report there was no mention of the non-fulfilment of the circular issued on March 7, 1876, touching a certain series of lectures which were to have been given by the Society.

THE PRESIDENT : My answer to that last remark is that the circular was sent to all the various Fellows, and that the circular was got one answer. We therefore, thought it not right to establish lectures for one auditor.

MR. GUEDELLA thought that the Council ought to disavow the action taken by Mr. Wilson. Some gentleman sitting at the Council board ought to take notice of this.

MR. WILSON rose to say that he thought they had considered the subject before them almost exclusively from the South Kensington point of view. They were told that the hopes of the Society rested upon the collection in that neighbourhood of £10,000 for one year.

THE PRESIDENT : I said that the hopes of the continuance of the Society depended upon that sum being raised.

MR. WILSON reminded his Lordship that the letter in the *Chronicle* was not perfectly conclusive. They had always this fact before them, that every society more or less prospered except the Royal Horticultural Society. He did not believe in the old plan of trusting to the neighbourhood of South Kensington to propose the plan of appealing at once to the great body of horticulturists throughout the country. If there were 5000 country horticulturists, or horticulturists generally throughout the town and country who would come forward, the Society would be well supported. Whether they took a horticultural view, or combined it with the South Kensington view, they ought to place the Society on a firm basis. From letters which he had received from every part of the country, it appeared that that was the view that was taken.

MR. TREVEDY, who said he was a life member, mentioned that he had been told the Society had always been in difficulties. Now, supposing the state of things which his Lordship had sketched out became an accomplished fact, and that Her Majesty's Commissioners distrained upon the gardens and turned the Society out of them, what position would they then be likely to be, because, from all the facts he had

ascertained, they would have to go back to Chiswick—to the old condition of debt and difficulty.

THE PRESIDENT : I quite recognise the fact that the Society has no more genuine friend to it than Mr. Wilson. I would not wish to see any man want to extend the usefulness of the Society. I think that if the Society were simply a scientific society and unconnected with South Kensington, we should get a great deal of independent support on that ground; but have been misled on that point by people who do not join these gardens, and for that I think I would be bound hand and foot to South Kensington, and that the whole object here is to keep up the gardens in a magnificent state. That impression I am told is very strong, and it cannot be removed without disturbing the two establishments. I would do nothing to disunite the two, but endeavour to preserve union between them; yet I will say certainly that if disunion did take place a large number of horticulturists would be induced to come forward and join the Society. We must recollect that the case of Chiswick, that it had a large debt—some £10,000—in its own many sacrifices. A large scheme was set on foot in 1860, and a great amount of money was spent in scientific proceedings, whilst our debt at South Kensington was increasing. I have not the opportunity of scientific research. I am told that for some years past they had at Chiswick beautiful weather—fine summers, and hence large gatherings, therefore the receipts at the Chiswick gardens were very good. Then came three or four successive years of bad weather, with very large expenditure and next to no receipts, during which a large portion of the debts were incurred. Since these days horticulture has spread enormously. I should not be surprised that there would be 5000 men ready and willing to give £5000 for the purpose of realising the debt of the Society. I think it much more likely to be got from members of the Society where there is a scientific society united for social purposes with South Kensington.

LORD ALFRED CHURCHILL said that, in proposing his scheme, MR. WILSON would recollect that the Society was first made up, and that these gardens until two years expired, or until they had raised the money to a certain amount. He could hardly agree that they were once freed of these gardens they would get a large amount of horticultural support from the country. He had lately returned from Dublin, and there they maladjusted the horticultural Society in a most flourishing condition. They had their scientific meetings, they gave away prizes, and did all the scientific work which a horticultural society ought to do. He said to a friend the other day in Dublin that he should like to see Mr. Wilson's gardens. "Oh," said his friend, "we have got our gardens." They worked on without gardens, and subscribed together for a common purpose. Therefore, if it answered in Dublin it ought to answer in London; but in addition, it had got the Chiswick Gardens, which were considerably reduced in value through our money being spent so prodigally, so that they could maintain the gardens at a reduced cost. If they once got rid of these gardens at South Kensington their expenses would be reduced considerably, and they could keep up other objects of horticultural purposes. If they could get rid of the incumbrance of these gardens, Mr. Wilson's scheme might work well. At any rate, under present circumstances they must do the best they could, and in view of that they had proposed various modifications in the grades of subscriptions of Fellows.

MR. H. VEITCH wished to say that his name unfortunately appeared as one of those who gave their sanction to Mr. Wilson's scheme; but he was not prepared to go the length to which Mr. Wilson had gone. He had given his name to the Press in the way he had done, because it seemed to him (Mr. Veitch) that Mr. Wilson was trying to coerce the Society into adopting a policy which would be very dangerous to it. He wished to add to that to disavow his intention to adopt Mr. Wilson's plan. Mr. Wilson's scheme was that a great body of people would come from the country to subscribe to the Society, but in the list which Mr. Wilson had recently circulated—that of January 5 last—he found that the whole number of people who had given their names was only 372. A very large number considering the circulation the scheme had had; and out of these 373 he should think about one-third of them were already members or Fellows of the Society. Now, that would reduce Mr. Wilson's list very considerably. With regard to the Society itself, it seemed to him that neither the horticulturists pure and simple nor the horticulturists of South Kensington could only by themselves keep the Society going. It could only be kept up by all working together. They would have to do more than go to the meetings and to the buildings at South Kensington, to make want them. They must bring their fruits and flowers there to be exhibited, for it was their interest to do so. As regarded the gardens themselves they did not actually want them, and they wanted a place for their meetings and for their Council, and for their all connected with. On the other hand, if the South Kensingtonians would

come forward and generously support the institution, he thought it would be the best thing for the country to come up to the gardens, and that they could be enjoyed. If the people would only come next day (Wednesday) afternoon from the country, he could promise them a very beautiful show, and that they would find, not only a horticultural treat, but a band of music playing for their recreation and enjoyment. That was what he called a very proper amalgamation. There was one point on which he should like to ask a question. On page 3 of the report, in the last paragraph, it is stated: "The provisions now made for the more general footings at the Council have been under consideration where and when the next shall be held." He should be sorry to hear that nothing was to be done as to provincial shows. It did seem hard that when the meeting had been fairly earned the first fruits of the provincial shows should have been forcibly taken away for other purposes. If they had the money in hand these provincial shows would be held, and, judging by the results of former shows, would be a band of music playing for their recreation and enjoyment. He should like to know what steps had been taken towards holding provincial shows this year—on what footing they were to be, and what amount of consideration the Council had given to the subject, which was an important one.

The PRESIDENT said: I am hardly in a position to give a distinct answer to the question which I can give, as we are in communication with one of the principal cities of England, and have a very strong hope that we shall be able to do something successfully, and lay perhaps the foundation of a new future for the Society. I have no doubt, if we are successful, we will be able to have a guarantee fund which will put us out of all difficulties of a financial character. If some surplus remained, we would have the nucleus of a capital sum, which should enable the Society to have a show—a provincial show—annually. I can give you an instance of the intention of the Council to invest in trustees any surplus they receive. Let me correct a mistake I involuntarily fell into. I said that at the time the Society joined South Kensington they had a debt of £10,000. Dr. Hogg, who knows much more about the matter than I do, tells me that though the original debt was £10,000, it had been reduced by the sale of the house in Regent Street, and the actual amount of debt remaining was £5,000. But, whether it was £5,000 or £10,000, it shows the method of dealing with the debt to be successful. I can give you an instance of the management of a kingdom, as is necessary to a society. I am of opinion that all this indirect and unnecessary expenditure ought to be abolished. It is through our financial management, from Mr. H. Veitch and others, that we have been enabled to have our exhibitions, and I am sure the Society cannot be too thankful for the assistance received from Mr. Veitch and other gentlemen.

Mr. ELWES thought there was no reason whatever why they should not have a perfectly fair union between the South Kensington and the horticultural Fellows; and the South Kensington Fellows should remember that, after all, the Society being a horticultural one, horticultural objects must be the first objects of the Society. By the action of the Zoological Society was evident such a union was perfectly possible. No Society was more popular, and although some of the members worked in a purely scientific groove, matters were so arranged that the Society has attracted three-fourths of their members who did not care a straw about zoology, but who joined the Society for the purpose of attending the gardens on Sunday. They also opened the gardens at a low figure on Whit Monday and other days, and so attracted a large number of the people to the gardens. Although it is impossible for the Horticultural Gardens to have so much general attraction as the Zoological Gardens, if the South Kensingtonians wished them to be kept up they could do it by contributing their fair share, which would enable the Fellows to have a garden to carry on the gardens as they ought to be carried on, but also to do good horticultural work.

The PRESIDENT then put the motion that the report be adopted, and it was carried with only one dissenting vote. Thirty-nine new Fellows were elected. The President announced the result of the ballot. Those recommended by the Council were declared elected, as follows:—Members of the Council: Sir Charles Strickland, Mr. H. J. Elwes, and Mr. T. M. Shuttleworth. Office Bearers: President, Lord Abercrombie; Treasurer, Mr. G. Webb; Secretary, Dr. Robert Hogg; Expenses Committee—Men, Mr. H. Champion, Mr. Henry Webb, and Mr. William Houghton; Auditors, Mr. J. Lee, Mr. Henry Little, and Mr. James West.

ALTERATION OF BYE-LAWS.

The PRESIDENT then said the Council had made a last effort to conciliate the inhabitants of the neighbourhood, and that they had failed. He expressed the expression of feeling the proposed alteration of the bye-laws would have a good result. They had just elected the good number of thirty-nine Fellows, and

in addition to that fact they had a great many of those who had left the Society returning to it. In that respect the affairs of the Society looked more promising. He thought they should unanimously adopt the new bye-laws, which could not fail to be beneficial in their operation.

Dr. HOGG explained that it was proposed to suspend the payment of the entrance fee, which was provided for by the 14th bye-law. The 19th bye-law provided that no Fellow whose entrance fee was not paid should be entitled to vote at meetings of the Society: it was now proposed to strike out the words "whose entrance fee has not been paid," as a matter of course following on the alteration of the 14th bye-law.

The CHAIRMAN, replying to Mr. Veitch, who asked information respecting the guinea membership, said he had not been able to attend the Council meetings lately, and was therefore unable to say what attention had been given to that subject. He took the view of Lord Alfred Churchill on the matter, that it would be an excellent plan, if this were simply a horticultural society, to have a guinea membership.

Lord ALFRED S. CHURCHILL said the guinea members should have all the privileges of Fellows, except that of voting at the meetings of the Society. It had been felt that it would be open to any person who was not a Fellow to object to the Council or to the policy of the Society, to induce people to become guinea members in order to control the action of the other Fellows. The Council thought they should give to guinea members all the privileges of personal admission to the gardens, and shows, exhibitions, &c.; in fact, all the existing privileges, with the right of voting at the general meeting. He was glad to say two members had been elected according to this plan, and no doubt others would come in.

Lord A. S. CHURCHILL said, in reply to Mr. Gordon, that the guinea ticket was not transferable. Any guinea Fellow who desired to exercise his voice in the management of the Society could do so by paying an additional guinea.

The alterations in the bye-laws were then agreed to unanimously. The CHAIRMAN said that he thought in the present position of the Society the entrance fee would operate in preventing people from joining, and that it was wise therefore to exercise the power of doing away with any entrance fee.

Lord ALFRED S. CHURCHILL spoke of an additional source of income to which they looked forward with hopeful anticipations. Throughout the whole country there was a large number of local horticultural societies, and the Council were desirous of affiliating these with the local Horticultural Society. A large number of them had been affiliated to the Society for years, and were put in the position of individual subscribers. The Council proposed to give gold or silver medals for distribution in the local shows. That would enable the local societies to distribute as many for merit at their shows the medals of the Royal Horticultural Society. He hoped the result of the proposition would be, as he did not doubt it would, to bring to them a large number of the local horticultural societies scattered all over the country, which was most desirable.

Dr. DENNY explained, with reference to refunding the money which was taken, that the Council could not refund it out of the money which was lent them.

Mr. GORDON asked if the Council did not apply that money to pay the rent?

The CHAIRMAN: No; we did not.

Dr. DENNY said the Finance Committee, consisting of three of Her Majesty's Commissioners, objected to any money being spent on provincial shows. He could not give the reasons, but that it had been properly put before the Finance Committee the money might have been raised by guarantee; but he did not believe the committee would allow them to refund the money.

The TREASURER: I may say this, that if I ever get any provincial show money again it shall be properly invested, and not at the dictation of President, Vice-President, or anybody else.

Mr. H. VEITCH: I can promise you that if you get up another provincial show you will have money to invest.

The proceedings were brought to a close by a vote of thanks to Lord Aberdeen.

COMMITTEE MEETINGS.

Feb. 14.—The committee meetings were held today in the large conservatory, and the contributions sent in by Messrs. Veitch & Sons, Mr. William Bull, Mr. S. S. Williams, Messrs. Osborn & Sons, W. H. Michael, Esq., Mr. James, got to W. F. Watson, Esq., and Mr. Veitch, were very nice. The plants were staged on a temporary structure running the entire length of the garden side of the conservatory, and the effect produced was certainly a pleasing improvement on the dingy Council-room. It had not been long since the conservatory had been in neighbourhood, so scanty was the attendance of visitors. There was no meeting of Fellows in the afternoon.

SCIENTIFIC COMMITTEE.—Dr. Hooker, Pres. R.S., C.B., in the chair.

Australian Insects (see p. 85).—Mr. McLachlan stated that he had determined the insect which attacks certain trees at the Cape to be a species of *Coccas*.

Oaks from Finna.—Rev. M. J. Berkeley exhibited a number of specimens which he collected with an *Acacia*, also specimens of Beech attacked by *Cecidomya* fagi, specimens of *Pyrola uniflora* with *Aecidium* on the leaves, and with unusually prominent styles. The same gentleman also showed a species of *Boletus* from Ireland which he collected with water and used during Lent as a substitute for meat.

Embrya.—Mr. McLachlan stated that he had seen the Embrya in the pupa stage, and that the specimen from which the figure in the *Gardener's Chronicle*, p. 845, vol. vi., was taken had lost its anterior wings.

Crocus.—Col. Trevor Clarke exhibited a series of specimens, and communicated the following notes thereon:—

"No. 1, varieties of Herbert's group *Anniæ*. All, I think, to be found in the *Synopsis*, Vol. II., the old sterile *Steno*, *Crocus biflorus*, *Steno*; another white, or nearly white form, perhaps *argenteus* proper; the Barton Park form, once called *minimus*; another blue tinted kind, which I have named *Steno*, and which, with rich purple sepals outside; and the two sorts mentioned by Herbert as *purpurascens* (one nearly white), known sometimes under the name of *Weldeni*.

"No. 2, *Crocus* *insularis*.—Herbert's name, proposed by Herbert, under the names of *insularis*, with its variety *medius* and variety *minimus*, *minimus* having been De Candolle's name for the smaller form.

"No. 3, *Crocus* *luteus*.—Herbert's common yellow; aureus, with its remarkable variety; *luteus concolor*, also a sort received from M. Chappelin, under the name of *synicus*. This appears identical with the old sterile *salvatoris stratus*, perhaps *stellatus*.

"No. 4, *Crocus* *nivalis* (Sieberii of Herbert), and a veral *Crocus* unknown to me."

Action of Pollen on the Seed.—Colonel Clarke exhibited a pod of Woodford Marrow *Fava*, the flower which was fertilised by pollen from the white-seeded *Auvergne*. In the centre of the pod were two pure white seeds, those on either side being blue like the pure Woodford. Mr. Laxton has not observed this, and Knight's observations on this subject are obviously erroneous. Colonel Clarke said he knew of but one other instance, that of Matthioli's paper, which he read a paper at the Botanic Congress in 1866.

Dr. Masters called attention to Maximowicz's paper translated by Professor Dyer in the *Journal of the Society*, 1874, p. 161.

Oenothera lutea.—Mr. Young, Milford Nurseries, sent a plant of this, figured and described at p. 113, vol. i.

Homolomena pilata.—Mr. Bull contributed leaves and flowers of a new species of this Aroidaceous genus, which is of a very handsome and remarkable character. We intend shortly to publish a figure and description of this species.

Coleurad Barley.—Dr. Voelcker exhibited seeds of Barley with a more or less blue tint pervading them, from Nowshera, India. It had been suggested that the disease of horses, known as "kankur" in India, was due to their eating unwholesome Barley, but this was refuted by Mr. Grote, who explained that in Bengal, where the disease is equally prevalent, horses are fed upon grain or pulse. Dr. Masters had not been able to find grains mycelium in the grain, but suggested that the grains might have been steeped in some salt of copper, but Dr. Voelcker explained that the colouring was organic, and that no trace of copper was to be found. The specimens were referred to Mr. Berkeley for further examination.

Frickly Pear as Forage.—Mr. Grote stated that in some parts of India the *Opatunia* were used as fodder for cattle, the spines being previously rasped off.

FLORAL COMMITTEE.—Mr. B. S. Williams in the chair. First-class Certificates were awarded to Messrs. Veitch & Sons for *Masdevallia Chimeræ*, figured and described in our columns at p. 41, vol. iii.; for *Amaryllis Flores-de-Teck*, a large smooth flower of a rich glowing crimson colour; and for *Cyclonia (Fyrus) japonica* fire-plant, an improvement as shown on the old form in cultivation, by reason of its larger and purer white flowers. To Mr. William Bull for a very handsome *Cycad*—*Cycas media latissima*; and for Croton *fratilis*, both distinct from those previously, handsomely marked with gold. To Mr. Spyers, Orchid grower to Sir Trevor Lawrence, Bart., M.P., for *Calanthe vestita rubra oculata gigantea*, a very fine spike of which was shown; and for *Odontoglossum Cervantesii decorum*, a great improvement on the old *Cervantesii*, both in size of flower, dense markings, and brighter colour. To Mr. C. Edmunds, Hayes, for *Claytonia persicum compactum magnificum*, a large and very fine white flower, the petals of which are broader and smoother at the tips than those yet seen. To Mr. Spyers, gardener to Sir Trevor Lawrence, for *Claytonia persicum compactum magnificum*; and for *Sparganium Lobbia*, a species with bright

straw-coloured flowers; and for *Catsnap scura*, a very curious plant, with white wax-like flowers, the one in which the petals are like those of *Denning*, gr. to Lord Londesborough, also shown in a freely-flowered condition the plant of the Cobweb Dendrobium—*Dendrobium teretifolium*—for which he gained a First-class Certificate last year. It is the only plant in Europe of the kind, and a Cultural Commendation was awarded. A silver-gilt Davis Medal was awarded to Messrs. James Veitch & Sons for a very showy group of plants, which consisted principally of Orchids and hybrid *Arcas*. Old flowers were very well-developed examples of *Cypripedium pubescens*, *Lycaste Skinneri* and *L. Skinneri alba*, *Laelia Polgaueriana alba*, *Odontoglossum gloriosum*, *Angreum sesquipedale*, with five flowers, *Odontoglossum histioneum*, *Cypripedium Harrisonianum*, *Dendrobium Boxallii*, *Mastoveilla polystachya*, *Denhamium plumbeum*, *Arides Huttoni*, *Cattleya Trianae*, and its pretty variety *Penelope*, &c. The fine white *Euryclis australis* was well represented by some half-dozen or more plants. The large group of hybrid *Amyclis* included of course many flowers which show no improvement on varieties already in cultivation, but it included capital examples of the following named sorts:—*Phoebe* and *Agatha*, both certificated last year; *Leopoldi*, Princess of Wales, *Charles Main*, *Agnes Phoenix*, *Victoria*, *Arthur Potts*, *Aglaia*, and *Calliope*. The same firm also sent *Cyclamen*, *Lily of the Valley*, cut *Camellias*, and forced specimens of the showy *Rhododendron Early Gem*. A silver Davis Medal was also voted to Mr. Bell, for a fine group of ornamental leaved and flowering plants, the best including principally *Palms*, *Crotons*, and *Cycads*, and the latter specimens of *Coleogyne fasciata*, *Dendrobium speciosum*, *Odontoglossum cirrhosum*, *Uropodium pictum*, *Lycaste Skinneri rubella*, very fine in size, and richly coloured. A silver Davis Medal was also voted to Mr. Newman, gr. to W. H. Michael, Esq., for a very attractive group of Orchids, which included several freely flowered pieces of *Phalaenopsis amabilis*, *grandiflora*, and *Schilleriana*, *Celaenoglossum Odontoglossum Roscii*, *Zygopetalum crinitum*, *Dendrobium Wardianum* Lowii, *Vanda Cathartica*, *Dendrobium crassinode Barkerianum*, *Coleogyne cristata*, *Dendrobium chrysoyctum*, &c. Mr. B. S. Williams received a vote of thanks for a group of plants, which included some capital *Cyclamens*, *Lilies*, *Camellias*, *Calliope*, *Dendrobium Wardianum*, *Cypripedium villosum*, *Lycaste Skinneri*, &c., and examples of *Primula sinensis fimbriata alba*, a very pure silver *Davis Medal* was voted to Mr. James, gr. to Mr. F. Watson, Esq., Earl Leith, for a splendid group of *Cyclamens* and *Cinerarias*, the former being very good indeed, and the latter—well, the finest that have ever come under our notice. Votes of thanks were accorded to Mr. Turner for a group of *Camellias*, *Ivies*, &c.; to Mr. Wills, for a showy miscellaneous group; to Messrs. Osborn & Sons, for a small group of *Palms*; to Mr. Aldous, for a small group of plants; to Mr. R. Dean, for a collection of hardy *Primroses*; to Mr. Roberts for a group of *Tulips*; and Mr. St. John (gr. to Henry Peck), for small groups of Orchids; and to Mr. Clarke, Twickenham, for a collection of *Cyclamens*. Mr. Overhead was the winner of the 1st prize offered by Messrs. Veitch & Sons for an example, cut or otherwise, of *Poinsettia pulcherrima plenisima*, and which was of very good quality.

FRUIT COMMITTEE.—Henry Webb, Esq., in the chair. The most interesting subject that came under the notice of the committee on this evening was a very fine collection of Apples and Pears, staged by Mr. Sydney Ford, gr. to W. E. Hubbard, Esq., Leonardslane, Horsham, and which included five sorts of Pears and thirty-four of Apples, including all the best and most valuable varieties in the world, of colour, and in a fine state of preservation. The committee recommended the collection to the Council for the award of a bronze Davis Medal. From Sir W. C. Trevelyan came some fruits of the Lime, *Citrus acida*, grown in his hot-house at Netcot, Somerset; and from Mr. Harrison Weir, Weirleigh, Kent, came a bunch of Mrs. Pince's Black Muscat Grape. Two very good bunches of Black Alicante Grapes were shown by Mr. Atkins, gr. to Colonel Lloyd Lindsay, Longs Park, Wantage, and Mr. Stevens, gr. to the Duke of Sutherland, Trentham, showed a tree in a pot of the Calville Blanche Apple, on which some ten fine fruits were still hanging. Messrs. Stuart & Mein, Kelso, sent forced examples of the *Lily-white* *St. Michael* Apple. Mr. Batters, gr. to Mrs. Willis Fleming, Chilworth Manor, Romsey, sent a good dish of Mushrooms, and another of new Potatoes grown in pots—the variety being Snowflake. Some examples of the old *Old* Apple were brought up by Mr. Aaron, from Chiswick. The committee also had under their consideration the recent correspondence in reference to the Grape exhibited before them on December 6, 1876, by Mr. Bell, of Clive House, Alnwick, and the members

expressed a desire to place on record their regret that Mr. Bell should have withheld the facts as to the origin of the Grape, and more particularly to draw attention to the circumstance that in his letter to the committee, which accompanied the Grapes, he stated that the parentage was "a cross with Black Morocco and a seedling raised, I understand, at Wortley," which in his letter of January 25, 1877, in the *Journal of Horticulture*, and in our own columns last week, he affirmed "it is a founding, the parentage and connection of which none can vouch." On these grounds it was determined that had the committee known, at the time of making the award, the whole facts of the case, they would not have recognised the name of the Clive House Seedling, and which they now cancelled.



TULIP LORE.—When giving some account of the process of raising Tulips from seed on p. 596 of our last volume, such terms were used as "breeder," "breaking," "character," &c., and it has been suggested to me that, though any Tulip grown can follow the rules, and comprehend the terms readily enough, yet the "readers of poor Tulip seed" might be at a loss to understand these terms in their full significance. What is implied in these terms is fully known to Tulip growers; it has lived traditionally among them, and is an example of one of those small facts supposed to be too well known to mention, because so well known among florists, and yet one which really is not known to floriculturists at large.

Except in rare instances, when they shine out in full character at the first time of blooming, seedling Tulips take on a self, or what the Tulip growers term the breeder form. This is but a temporary self-coloured existence, and in course of time they recede or break into character, some in two, and others at varying times up to the seventh year, or even longer. There is no known principle in vegetable physiology to govern the breaking of breeder Tulips. The late Mr. John Edwards once termed the breaking of Tulips "a splendid mystery," and he was correct in giving it this designation. There are wonders in the physiology of the Tulip not dreamed of in the philosophy of other flowers; and, indeed, it would be difficult to name another plant more suggestive of this than our "glorious florists' Tulip."

The future character of the Tulip is, to a great extent, decided for it in the breeder state; that is, whether it will be a bizarre, byblomen, or rose—the three classes into which Tulips are divided. A bizarre Tulip, when it has broken into character, has a yellow ground colour, and is either feathered, *i.e.*, the colour pencilled round the edge alone; or flamed, *i.e.*, having a beam of rich colour dashing up the petal centre, and striking the feather at the edge in bold flashes, or being feathered and flamed both, with some colour graduating between black, brown and red. Thus a flower may be feathered only, or feathered and flamed both. A byblomen Tulip has a white ground colour, and is either feathered or feathered and flamed with some colour graduating between black, purple, and red. A rose Tulip has a white ground also, and is either feathered only or feathered and flamed with some colour graduating between crimson, red, scarlet and carmine. In the case of the breeder or self-form, the bizarre has a yellow base and stamens, and petals clouded with a combination of the colours peculiar to it; and the byblomen and rose breeders white grounds and stamens, and the petals also clouded with their peculiar colours; but the difference between the two consists in the absence of a purple tint in the breeder colour of the rose. So much then for the differences of the Tulip in the breeder and in the broken states.

The raising of seedling Tulips and their cultivation having raised many most interesting facts, some of which may be set forth for the information of those who have had little or no experience of the Tulip. And in regard to seedlings it may be stated that in the case of seed taken from the rose Tulip, for instance, say a Tulip that had been carefully crossed with another rose, will give a majority of rose breeders, but there will probably be some twenty per cent. of byblomen breeders and a few bizarres. This is in illustration of the fact that a Tulip, if carefully crossed

with the pollen of another variety of its own section, cannot be depended on to produce wholly flowers belonging to the section. It may also produce a few "selfs." As the term "self" as here employed means a type of flower distinct from the uncorrected breeder, a few words of explanation are necessary in respect to it.

There are two classes of selfs among the florists' Tulips; the white and the yellow. The white self represents the ground colour of the byblomen and the rose, but with the entire absence of any tint of the colours peculiar to them. The yellow self represents in the same manner the ground colour of the bizarre class. The selfs are very seldom raised, but they occasionally come among the seedlings. The late Mr. William Willison, of Whitby, a noted raiser of Tulips, raised several selfs, notably White Perfection; and a very nice yellow also, the name of which I am unable to give. In the old Tulip shows prizes used to be offered for self Tulips, there being classes for the best white and the best yellow self; but the practice is now almost wholly discontinued. David Jackson, of Middleton, an old florist whose floral enthusiasm does not appear to slacken as he increases in age, raised some seedling selfs, among them some very good flowers, using as a seed-parent the old rose *Aglaia*, well crossed, and he had more than a dozen self yellows among the progeny. I am informed by Mr. Samuel Barlow, of Stake Hill House, Chadderton, Manchester, to whom I am indebted for much useful knowledge in relation to the Tulip, that the white of *Aglaia* is very yellow on opening, and needs a week's bleaching to get it pure. He is of opinion that there exists a taint of the bizarre parentage in the ancestry of *Aglaia*.

In selecting rose Tulips to breed from, the parents should both be bright in colour, or a large proportion of byblomen will follow; and the same remark holds good with respect to byblomen—the colour of the parents should be as near black as possible, or of a bluish purple colour. Parents having tints of red in the purple are very apt to give reddish purple breeders, and they seldom break into good distinct forms of either byblomen or roses.

I recently inquired of Mr. Barlow if he had ever crossed a bizarre Tulip with a rose or a byblomen, and his reply was in the negative; but, he added, "from chance seed I have seen some very 'foxy' flowers." By "foxy" flowers Mr. Barlow means those of a stained, intermediate, or nondescript character, which the most comprehensive-minded florist would scarcely care to admit to his collection. Mr. Barlow added, "I should never try such crosses as one has to wait from five to eight years to get blooms from seed, and the results would certainly not repay the labour, time, and patience necessary to get them."

Seedlings from feathered or feathered and flamed flowers will produce both feathered and flamed flowers. Let me here remark that the Tulip grower speaks of a feathered and flamed flower as a flamed flower, even though the feather is present also. And there is another singular fact in connection with the physiology of the Tulip, that it is not uncommon for bulbs to flower one year flamed and another year feathered only. The variety which shows this appearance is an instance. A Tulip grower may possess a fine strain of a variety which has bloomed in, say, a fathered state for years; and then, without any note of warning, there comes a season when most, if not all the flowers are flamed. I remember Mr. Barlow telling me that Martin's 101 feathered byblomen bloomed with him for eight or ten years, always perfectly feathered; but two years ago every bloom came finely flamed! Last year at blooming time the flowers were found to have nearly lost their beam; and in a year or two Mr. Barlow quite expects they will all get back to the feathered. On what principle can this extraordinary phenomenon be explained? Mr. Barlow further mentioned that George Hayward bizarre had "served him in the same way," for this beautiful feathered flower, always so much admired for its perfection, after keeping the feathered character for five or six years in succession, was last year all flamed. "Emperor Nicholas, nine years perfectly feathered, last year bloomed perfectly flamed. Hundreds of instances can be given *vice versa*. I have had many flamed flowers which have turned to feather, but they are not so numerous as those which change from feather to flamed." It is impossible to predict of a breeder Tulip that it will break into a

feathered or flamed flower. If a grower has a stock of any particular breeder, most probably some will break feathered and some flamed. And these again are subject to the changes just stated.

I have already remarked, "There is no known principle in vegetable physiology to govern the breaking of Tulips." The act of breaking may be hastened by growing the bulbs for a year under changed conditions of soil and atmosphere, and then bringing them back and growing them in their original situation. A check in the growth of the plants also serves to promote the breaking of breeders. In 1875, through some hitherto unexplained cause, the beds of Tulips at Mr. Darlow's residence at Chadderton almost entirely failed, and fully three-fourths of his breeders did not bloom, and the bulbs at taking-up time were small, and many of them rootless. During last summer the number of breaks among the breeders was something extraordinary, nearly one-third of those most severely punished the preceding year broke into character. In Mr. Barlow's opinion "the cause of the rectification is connected with the growth of the season in which the flower bloomed for the last time as a breeder," but nothing in the appearance of the flower will indicate that next year it will bloom a feathered or a flamed flower.

I have sought for information as to instances in which the rectified flower has resorted again to the breeder character, and among other scraps of knowledge bearing on this matter Mr. Barlow states, "I have had many instances in which broken flowers have returned again to the breeder state; but these cases are comparatively rare, and the breeder will probably bloom again rectified the following season. I bought *Hepworth's* President of the late Dr. Hardy when in bloom as a noble flamed *bizarre*: the following year it flowered with me a perfect breeder (Dr. Hardy had only this one bulb, so you will perceive there was no chance of a mistake); the year following it bloomed with me as fine as *Lass* it is in Dr. Hardy's bed. Since then, out of some twelve or fourteen years it has flowered twice as a breeder, and the remaining years in character. Certain varieties are more liable to this eccentric vagary than others."

It is only those who are privileged to mingle with Tulip fanciers and listen to their gossip about their favourite flower, that can be made acquainted with the rich stores of information connected with it, or come to understand something of the peculiar fascination it has to those whose hearts are aglow with a great love for this gorgeous floral revelation in Nature. The Tulip is indeed "a splendid mystery," and while the men of science are found following Nature with a faithful love, and an unwavering fidelity to a great purpose—which refuses to divide its loyalty with superstition; whatever the tribe, the physiology of the Tulip yet baffles the earnest seeker in botanical science—it, "eccentric varieties," are problems as yet difficult of solution. R. D.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, FEB. 14, 1877.

Table with columns: MONTH AND DAY, BAROMETER, TEMPERATURE OF THE AIR, Hygrometric Depression, Wind, Rainfall. Rows for Feb. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.

Feb. 18.—A fine day, partially cloudy. Mild.
19.—A fine day, though very cloudy at times. Mild.
20.—A dull cloudy day. A little thin rain between 1 and 3 P.M. Dull.
21.—A fine bright day, very mild. Rain fell in early morning.

Feb. 12.—Overcast, dull, and wet till 8 P.M.; but, cloudy after. Mild.
13.—Overcast, dull, and wet. Mild.
14.—A dull, cloudy day. Mild. Heavy rain in early morning.

LONDON: Barometer.—During the week ending Saturday, February 10, in the vicinity of London the reading of the barometer at the level of the sea increased from 30 inches at the beginning of the week to 30.36 inches by the morning of the 5th, decreased to 30.12 inches by the afternoon of the 7th, increased to 30.22 inches by noon of the 8th, decreased to 29.91 inches by the morning of the 10th, and was 29.95 inches at the end of the week. The mean reading for the week at sea level was 30.16 inches, being 0.17 inch above that of the preceding week, and 0.21 inch above the average.

Temperatures.—The highest temperatures of the air ranged from 60° on the 7th to 60° on the 4th; the mean value for the week was 53°. The lowest temperatures of the air varied from 32° on the 5th to 46° on the 7th; the mean for the week being 39°. The mean daily range of temperature in the week was 12° at the beginning, in the middle of the week 10°, 5th, and the least 10° on the 4th and 6th. The mean daily temperatures of the air were as follows:— 4th, 40° 5'; 5th, 41° 2'; 6th, 48° 9'; 7th, 52° 5'; 8th, 40° 3'; 9th, 45° 5'; 10th, 45° 2'; 11th, 47° 2', 9.8, 13° 4', 7° 6', 4, and 9° 2' respectively in excess of the average. The mean temperature of the air for the week was 47.6°, being 7° 2' above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb, 20° 20' in sun, 29° 75' were 102° on the 8th, and 78° on the 4th and 7th; on the 6th the highest reading was 58°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 28° on the 5th, 20° on the 9th, and 30° on the 4th. The mean value for the week was 36°.

Wind.—The direction of the wind was W.S.W., and its strength moderate. The weather during the week was fine, but very cloudy and mild.

Rain fell on two days during the week; the amount collected was 0.66 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 60° at Blackheath, and 58° at Sunderland; at Bradford 51° was the highest temperature. The mean value from all stations was 54°. The lowest temperature of the air was 34°. The range of temperature in the week was the least at Liverpool, 14°; and the greatest at Blackheath, 28°. The mean range of temperature for the week was 20°.

The mean of the seven high day temperatures was the highest at Truro, 54°, and the lowest at Bradford, 47°; the general mean from all stations was 50°. The mean of the seven low night temperatures was the lowest at Manchester, 36°, and the highest at Truro, 45°; the mean from all stations was 40°. The mean daily range of temperature was the greatest at Manchester, 14°, and the least at Bradford and Liverpool, both 6°; the mean daily range from all stations was 10°.

The mean temperature of the air for the week from all stations was 45°, being 12° above the value for the corresponding week in 1876. The highest was 49°, at Truro, and the lowest 42°, at Wolverhampton.

Rain fell on every day in the week at Truro, and on three or four days at most other stations; at Portsmouth rain fell on only one day. The amounts collected varied from three-quarters of an inch at Manchester and Eccles to about one-tenth of an inch at Portsmouth, Blackheath, Cambridge, Norwich, Leicester, and Nottingham; the average fall from all stations was 0.39 inch.

The weather during the week was very mild, and fine but cloudy.

SCOTLAND: Temperature.—The highest temperatures of the air varied from 53°, both at Edinburgh and Leith, to 50° at Aberdeen. The mean from all stations was 52°. The lowest temperatures of the air ranged from 35° at Dundee, Paisley, and Perth, to 35° at Leith. The mean value from all stations was 38°. The mean range of temperature in the week from all stations was 18°. The mean temperature of the air for the week from all stations was 42°, being 9° above the value for the corresponding week in 1876. The highest was 44°, at both Paisley and Leith; and the lowest 40°, at Aberdeen.

Rain.—The amounts of rain measured at the several stations varied from 3 inches at Greenock to half an inch at Edinburgh, Aberdeen, and Leith. The average fall over the country was an inch and one-tenth.

DUBLIN.—The highest temperature of the air was 56°, the lowest 36°, the range 20°, the mean 47°, and the fall of rain 0.17 inch. JAMES GLAISHER.

Variorum.

THE POTATO CROP IN AMERICA.—Last year's crop appears, from the reports issued, to have been not only far below the extraordinary yield of 1875, but considerably below an average crop. Among the causes of diminished yield drought was the most widespread and effective. During the season for the formation and growth of the tubers excessively dry weather prevailed, with a few local exceptions, throughout the entire section north of the thirty-sixth parallel and east of the Rocky Mountains, since which parallel the Potato crop is mainly good. The drought was the most severe and protracted in the Middle and Eastern States, except a northern belt including the greater part of Maine. Within this designated area also the beetles east of the Mississippi, and the grasshoppers west, effected some reduction in localities, though not to a serious extent. Another cause of diminished production was an unusual decrease in acreage, especially in States which grow this crop extensively, amounting to 15 per cent. in New York, 31 in New Jersey, 7 in Pennsylvania, 10 in Ohio, and 8 in the entire country. This was occasioned, in part, by the very low prices realised in 1875. Among the Northern States east of the Mississippi, Maine alone wisely planted an undiminished acreage, and her farmers were not being well rewarded by very remunerative prices for a crop which averages only 3 per cent. below that of 1875 in production, while it is 6 per cent. above it in quality. Vermont had the next best crop in the eastern section, falling 15 per cent. below that of 1875, and 10 per cent. below the average of Island 85. The great failure in the latter State was owing to a drought protracted beyond precedent, helped efficiently in its work of reduction by the beetle. New York, growing one-fifth of the entire crop, and the largest quantity in the entire State, fell off from 1875 49 per cent. The small crop grown in the southern section approached nearer to the yield of 1875, equaling it in Alabama, and rising 1 per cent. above it in South Carolina. These States and Oregon are the only ones in which the production was not below that of 1875. The entire crop is about 34 per cent. less than the previous one. There is also a very general decline in quality.

TANNING SUBSTANCES.—The last monthly report issued by the American Government Department of Agriculture contains the results of the analyses of the vegetable substances containing sufficient tannic acid to make them of value for tanning that were being well rewarded by very remunerative prices in the late International Exhibition in Philadelphia. "The list may not comprise all the indigenous products that are of value in this respect, but some of them, at least, have not yet received extended application. The method employed in our estimations was devised by F. Jean, and published in the Bulletin de la Société Chimique de Paris (xxv., 511), and depends upon the absorption of iodine by tannic acid." By this method the quantity of tannic acid found in the various samples respectively was as follows:—

Table with columns: Substance, Per cent. Includes items like Ground Sumac (mixed), Sumac (Rhus Cotinus), Sumac (Rhus glabra), Leaves of Sweet Fern, Ephedra antipathetica, Bark of Sweet Gum, Bark of Red Oak, Bark of White Oak, Crushed Quercus bark, Bark of Quercus macrocarpa, Bark of Hemlock.

Enquiries.

171. FRUITING OF THE ARBUTUS.—I have an Arbutus, a fine large healthy shrub, which is every season laden with pink blossoms, but it never fruits, though three years ago I found a solitary berry on it. Can you give me any reason for this, or tell me how to remedy it? H. A. B. [Please send some flowers for examination. Eds.]

Answers to Correspondents.

ARBUTUS: S. K. Ford.—Your seedling, a cross between Eagle and Queen of the Mountains, is a handsome one, and will be valuable acquisition. It is a clear yellow, like that of Linum trigynum, and large, the petals being upwards of 1 1/2 inch long. BOOKS: J. G. Cooper.—The Royal Horticultural Society may be obtained from the Secretary, at the Society's Gardens, South Kensington, S.W. "Lignorum" will find the address on the front page of our last issue. CHINESE YAMBS: An Old Subscriber. Next week.

EUCHARIS AMAZONICA: J. W. A. A dozen bulbs in the size of pot you name are too many by half to have a chance of attaining full maturity. They should have had a pot at least 3 inches in diameter larger, which give at once without disturbing the roots from the ball they are in. The night temperature keep up at 60 to 70 degrees, and during the winter season in a satisfactory way, however strong. Like most other bulbs it flowers free, especially in the winter, with bottom-heat, although it can be made satisfactory without it, will most likely bloom during the spring or summer.

INSECTS: C. H. The grubs which have destroyed your Primulas, &c., are those of the common weevil (*Otitus sulcatus*). The grubs round the roots of the plants must be carefully searched for, and if necessary the plants removed to sifted earth. The insects are large and plain enough to be easily seen.—*G. B.* The apple shoots which have been killed by the work of an aphid (most probably the American blight). Wash the trees carefully with a mixture of lime, soft soap, and sulphur.—*R. S.* The minute white insects in your hot-house are the nearly-winged aphid, the young state of which is a flattened scale on the leaves. Repeated fumigation, and washing the leaves with diluted spirit, will stamp out the pest.

NAMES OF PLANTS: L. Hartley. Professor Reichenbach has named the *Orchid Lucia albostriata*, nov. var.—*T. J.* *Garrya elliptica*. Propagate by layers.—*W. Taylor & Co.* *Excelsiora monticolaensis A. Sabinerii*. *Salvia purpurea*. The specimens received in a note without a signature, No. 1 is *Senecio Petasites*; of No. 2 our unknown correspondent is desired to send the best specimen; No. 3 is *Senecio calycina*.—*Appleby*, *Gilia pinnifolia*.—*K. G. W. 1.* The Arctley plant, *Filix serpyllifolia*, 2, not recognisable, possibly *Calliopsis*; 3, *Fraxinea latifolia*.—*T. J. P.* 1, *Crocus chrysanthus*, var. *fusco-lanceolatus*; Baker; 2, *Crocus chrysanthus*, we suppose, but cannot be certain without a corium; 3 and 4, *C. chrysanthus*, var. *fusco-lanceolatus*, Baker. See our number for May 13, last year, p. 222.

POTATS FOR EXHIBITION: A. B. V. White kidneys: Waterloo Kidney, Lapstone, and Excelsior Kidney. White roots: Porter's Excelsior, Rector of Woodstock, Schoolmaster, and Model. Coloured kidneys: Purple Ashleaf, Garibaldi, and Late American Rose. Coloured roots: Red Emperor, Scotch Elbe, Blanchard, and Vermont Beauty. All the foregoing of good exhibition size, and symmetrical in shape.

WEEDING POTATS: T. G. The tree in question has not been put into commerce.

Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors will be obliged by such communications being sent as early in the week as possible. Letters relating to Advertisements, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.

CATALOGUES RECEIVED:—MESSRS. HARRISON & SONS (Leicester), Catalogue of Choice Seeds for the Farm and Garden.—*T. W. Daley* (Yeovil, Somerset), Catalogue of Flower, Vegetable, and Farm Seeds, Gladioli, &c.—*Messrs. Vilmorin-Andrieux & Co.* (Paris), *Quai de Mégevrie*, Paris, Catalogue of Seeds, Trees, Shrubs, &c.—*Messrs. Kerr & Fotheringham* (Dumfriesshire), General Catalogue of 1877.—*H. Cannell's* Illustrated Florid Guide for 1877.

COMMUNICATIONS RECEIVED.—H. G. R. (foo letter)—*J. C.* (many thanks)—*J. S. W. P. D. S. Cork*—*H. A. R.*—*W. S. A. B. M.*—*J. M. T. R. D.*—*D. G. W.*—*W. J. S. H. E. F.*—*H. E. D. T. F. R. H.* (we only see a few spaw-threads of some fungus such as are rarely found among the roots of the plants).—*W. W. H. M. S. E. F.*, Florence.—*J. G. Amsterdam*.

Markets.

COVENT GARDEN, February 15.

Business has continued brisk during the past week, and the supply is still moderate, with a slight advance. *James Webber, Wholesale Apple Market.*

VEGETABLES.

Artichokes, per bush	4 0-10	Lettuces, per score	1 0-2 0
Asparagus, per lb.	3 0-10	Onions, per bush	5 0-8 0
Beans, French (new)	6 0-10	Parsley, per bunch	4 0-6 0
Beet, per doz.	1 0-2 0	Peas, green, per lb.	2 0-3 0
Brussels Sprouts, bush	7 0-10 0	Peas, per doz.	1 0-2 0
Cabbages, per doz.	2 0-4 0	Radishes, per bunch	2 0-3 0
Carrots, per bunch	0 6-10	Spinach, per doz.	2 0-3 0
Chicory, per bundle	6 0-10 0	Spinach, per bunch	2 0-3 0
Chills, per doz.	3 0-6 0	Turnips, per bunch	1 0-2 0
Cucumbers, each	2 0-3 0	Turnips, per bundle	4 0-6 0
Endive, per doz.	1 0-2 0	Shallots, per lb.	0 6-10
Herbs, per bunch	0 2-0 4	Tomatoes, per bush	1 0-2 0
Horiz Kidney, per bush	4 0-10 0	Tomatoes, per doz.	2 0-6 0
Horiz Kidney, per doz.	4 0-10 0	Turnips, per bundle	4 0-6 0

Potatoes.—*Kent Regents*, 4s. 6d.; *Essex Regents*, 4s. 10d. to 5s.; *Kidneys*, 4s. per ton.

FRUIT.

Apples, per 5-lb. doz.	2 0-4 0	Oranges, per 100 lbs.	1 0-2 0
Cobs, per lb.	1 0-2 0	Peaches, per doz.	0 0-0 6
Grapes, per lb.	4 0-10 0	Pears, per doz.	2 0-10 0
Lemons, per doz.	8 0-10 0	Pine-apples, per lb.	1 6-4 0
Melons, each	1 6-3 0		

PLANTS IN POTS.

Azalea, per dozen	2 0-4 0	Hyacinths, per doz.	2 0-4 0
Begonia, per doz.	0 6-10 0	Lily of Valley, each	2 0-5 0
Bouvardia, doz.	12 0-18 0	Magnolia, per doz.	0 6-10 0
Clivelia, per doz.	2 0-4 0	Myrtles, doz.	3 0-10 0
Coleus, per dozen	3 0-9 0	Palms in variety, each	3 0-10 0
Cyclamen, per doz.	0 6-10 0	Primula sinensis, doz.	4 0-10 0
Cyperus, doz.	0 6-10 0	Primula sinensis, doz.	4 0-10 0
Dryas terminalis	10 0-12 0	Primula sinensis, doz.	4 0-10 0
Erica, per doz.	10 0-12 0	Primula sinensis, doz.	4 0-10 0
Epiphyllum, per doz.	10 0-12 0	Primula sinensis, doz.	4 0-10 0
Ferns, in var., per doz.	0 6-10 0	Primula sinensis, doz.	4 0-10 0
Ficus elastica	10 0-12 0	Primula sinensis, doz.	4 0-10 0
Heaths, variety, doz.	0 6-10 0	Primula sinensis, doz.	4 0-10 0
Hellebore, per doz.	0 6-10 0	Primula sinensis, doz.	4 0-10 0

OUT FLOWERS.

Anemls, 12 sprays	0 0-10 0	Lily of Valley, 12 spr.	1 6-2 0
Bouvardia, per bun.	1 0-2 0	Magnolia, 12 bun.	6 0-10 0
Camellias, 12 blooms	2 0-4 0	Narcissus, 12 sprays	2 0-4 0
Cornations, per dozen	1 6-4 0	Pelargoniums, 12 spr.	2 0-4 0
Cyclamen, per doz.	0 6-10 0	Pelargoniums, 12 spr.	2 0-4 0
Epiphyllum, 12 blms.	2 0-4 0	Primula, dbl., p. bun.	2 0-4 0
Eucharis, per doz.	0 6-10 0	Roses, indoor, p. bun.	3 0-10 0
Euphorbia, 12 sprays	2 0-4 0	Christmas, bun.	0 6-10 0
Gardenia, per doz.	0 6-10 0	Staphanotis, 12 spr.	0 6-10 0
Helianthus, per doz.	0 6-10 0	Valerian, 12 spr.	0 6-10 0
Hyacinth, 12 spr.	2 0-4 0	Viola, 12 bun.	1 6-2 0

CORN.

At Mark Lane on Monday the market was extremely dull. Wheat holders were not so well disposed to make any concession, but sales could only be effected at some instances. Barley was decidedly cheaper in some lots. Malt was much the same in value. Oats fetched a low price, and in some instances being fully 6d. per quarter cheaper than last week. Maize had a downward tendency, as also had Beans, Peas, and Flour; but the business passing in them was almost none. The market was decided on sale. The number of sheep was also very small. Everything was excessively dull, and it was very difficult to make a clearance at reduced rates. Choice calves were scarce, and dear no doubt. *Beasts*, 4s. 4d. to 5s. 4d.; 5s. 10d.; calves, 5s. 6d. to 7s. 10d.; 5s. 4d. to 6s. 4d. and 6s. 6d. to 7s. 2d.; pigs, 4d. 4d. to 5s. 4d. The best market on Thursday was for the wheat, which was being established downwards. Sheep at a fair demand, at Monday's prices. Prime calves continued scarce.

HAY.

The Whitechapel report of Tuesday states that the supply of fodder, although short on account of the unsettled weather, was fully equal to the demand, and quotations receded somewhat. Prime Clover, 100s. to 125s.; inferior, 85s. to 95s.; prime meadow hay, 90s. to 125s.; inferior, 75s. to 85s.; and straw, 40s. to 54s. per ton.—Thursday's market was fully supplied, and the demand moderate. Quotations.—Clover, best, 125s.; inferior, 85s. to 95s.; hay, 90s. to 125s.; and straw, 40s. to 54s. per ton.—Cumberland Market quotations.—Superior meadow hay, 125s. to 135s.; inferior, 100s. to 120s.; superior clover, 125s. to 140s.; inferior, 110s. to 125s.; and straw, 50s. to 57s. per ton.

POTATOS.

The Borough and Spitalfields reports state that trade remains quiet, and that the position of the market for Sound Potatoes, of which there is only a moderate supply, are in demand at full quotations, while a dull sale prevails for inferior kinds at irregular prices. *King Regents*, 12s. to 13s. per ton; *Essex Regents*, 12s. to 13s.; *Rock's*, 10s. to 11s.; *Victoria's*, 12s. to 14s.; *Flukes*, 14s. to 17s.—The imports into London last week comprised 17,715 bags from Antwerp, 14,286 from Hamburg, 1,465 from Cherbourg, 185,000 from Bremen, 265 sacks from Boulogne, 930 bags from Harlingen, 573 from Bremen, 150 from Rotterdam, 370 tons from Rouen, and 95 from Pont'Abbé.

COALS.

At the market on Monday the trade was unchanged, a steady business being done at last prices. The following are the quotations respecting Wednesday's business.—*Holywell Main*, 16s.; *W. Hartley*, 16s. 2d.; *Walls End-Harton*, 15s.; *Hetton*, 17s.; *Hetton Lyons*, 15s.; *Walthams*, 15s.; *Lambton*, 16s. 6d.; *Oldfield*, Hartlepool, 17s.; *South Hetton*, 17s.; *Walls End*, 15s.; *Hartlepool*, 16s.; *Walls End*, 15s. 9d.; *East Hartlepool*, 16s. 9d.; *Tees*, 16s. 6d.

COCAO-NUT FIBRE REFUSE, invaluable for Gardening purposes. One thousand test-impounds, Four-bushel bags, 12s. 6d. included; truck-load, loose, free to any Rail, 25s. POTTER OYLER, Spitalfields-Market, N.E.

COCAO-NUT FIBRE REFUSE, newly made.—Reduced price, 8s. 6d.; 100, 80; 200, 75; truck-load, delivered free to any rail in London. J. STEVENS AND CO., Fens Works, High Street, Battersea, S.W.

COCAO-NUT FIBRE REFUSE, FOR POTTING and PROPAGATING. Cheapest and most reliable. Wholesale and Retail elsewhere write for Sample and Price, &c.

M. H. BENTOTE. FIBRE MAKER, ESSEX ROAD, NUNHEAD, S.E. Fibrous Peat for Orchids, &c. BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 4s. 6d. per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, &c. in Pots, 4s. per truck. Delivered on rail at Blackwater, S. E. R., or Farborough, S. W. R., by the truck-load. Stamping, 5d. each. FRESH HIGNUM, for 6d. per sack. WALKER AND CO., Farborough Station, Hants.

GARDEN COMPOST, made entirely of Horse Stable Manure, undressed and dry, for Bulbs, Flower-pots, &c. Flowers delivered free in London. 2s. 6d. for 15 lb. tub. MANAGER, 9, Dacre Street, Westminster, S.W.

MANURE, first-class, made from Blood, 8s. per cwt., of animals, 12s. per cwt., 4s. per ton. FINEST KENT PANTS, per sack, 10s. or truck. LOAM, dressing, per bushel, sack, or ton. SILVER SAND, fine or coarse, per bushel, cwt., or ton. FRESH SPHAGNUM, 8s. 6d. per sack. Before ordering, please write for Sample and Price. RUSSIA MATS, RAFFIA FIBRE, &c. M. H. BENTOTE, Nunhead, near Junction, S.W.

ODAMS' MANURES, FOR ALL CROPS. Manufactured by THE ASSOCIATED and ODAMS' CHEMICAL MANURE COMPANY (LIMITED), consisting of Tenant-Farmers occupying upwards of 150,000 acres of Land. Chairman—ROBERT LEEDS, Westgate Old Hall, Norwich. Managing Director—JAMES ODAMS. Sub-Managing and Secretary—C. T. MACADAM. Office—109, Fenchurch Street, London, E.C. Western Counties Express—Queen Street, London. Particulars will be forwarded on application to the Secretary, or may be had of the Local Agents.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1869, against the most destructive insects. It is used in solutions of from 1 oz. to 2 oz. to the gallon of soft water, and from 4 to 16 ounces as a winter dressing for Vines and Fruit trees. It is also used for the most destructive insects. Retail Sold by Seedsmen, in Boxes, 12, 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANNED COMPANY (Limited).

TOBACCO CLOTH and PAPER.—The cheapest and best article for Smoking Greenhouses and Destroying Fly. Price 1/2d. per sq. ft.; over 100 lbs. Tobacco Paper, 1s. per lb., 1/4d. per wt. P.O.O. payable at 165, Blackfriars Road, London, E.C. JOSEPH BAKER, 14, Nelson Square, Blackfriars Road, S.E.

GENUINE TOBACCO PAPER of best quality, price 10d. per lb. or 1/4d. per cwt. WM. KENYON, Tobaccostray, 4, Pollard Street, New Town, Leeds.

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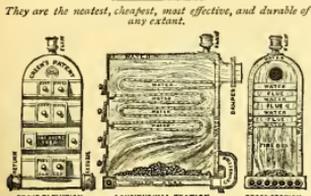
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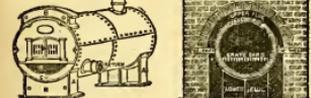
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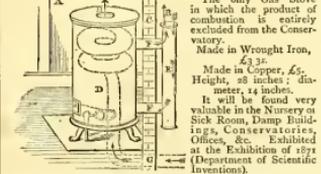
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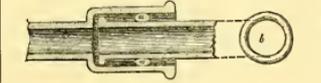
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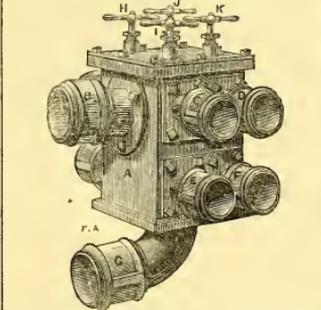
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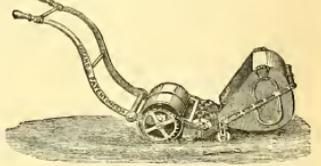
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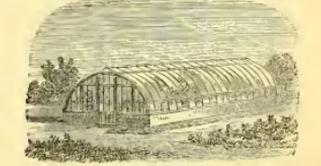
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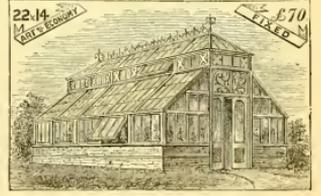
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Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County—SATURDAY, February 17, 1877. Agents for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

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No. 165.—VOL. VII. { NEW SERIES } SATURDAY, FEBRUARY 24, 1877. { Registered at the General Post Office as a Newspaper. } Price 6d. { Post Office as a Newspaper. } POST FREE, 5/4.

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Surplus Stock of 20,000, 2 to 3 feet to about 200,000,
3 1/2 to 4 1/2 feet. For price apply to
GEO. FLOWER, Nurseryman and Seedsman, 22, Market
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**GERANIUMS, strong from Store Pots,—
Bijou, Beatus's India Yellow, Vesuvius, Perrilla,
Crystal Palace, Crowned, Spring, Aurore, Any Hogg,
gr. per 100, strong Cuttings, 6s. 6d.**
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Gentlemen's Gardeners, Amateurs, and Others
**GARDEN POTS of best quality, are
requested to send their orders to
J. MATTHEWSON, Royal Tunbridge-well, Kent.**
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25 cents exchange—PAYABLE IN ADVANCE.

**Agents:—Messrs. B. K. BILLS, Sons, Seed
Merchants, 24, Barclay Street, New York; Messrs. M. COLE
AND CO., Drawer No. 31, Atlanta Post Office, Atlanta, Fulton
County, Georgia; and Mr. C. H. MAROT, 874, Chestnut
Street, Philadelphia; through whom Subscriptions may be sent.**

THE PELARGONIUM SOCIETY'S SHOW OF 1877 will be held, by permission of the Council, at the Royal Horticultural Society's Garden, South Kensington, on WEDNESDAY, June 20. The Schedule, comprising twenty-four Classes, and Prizes amounting to £200, can be obtained on application to the Hon. Secretary, THOMAS MOORE, Esq., Botanic Garden, Chelsea, London, S.W.

CRYSTAL PALACE.—ARTIFICIAL FLOWER and FRUIT SHOW, March 3 to 27, 1877. Intending Exhibitors may obtain the application to GENERAL MANAGER, Crystal Palace.

LEDS HORTICULTURAL SOCIETY. —The Fourteenth ANNUAL EXHIBITION will be held in the HORTICULTURAL GARDENS, Hyde Park Road, on JUNE 27, 28, and 29. Schedules of Prizes will shortly be ready, and may be obtained of the Secretary. J. H. CLARK, Printer, Baginbale, Leeds.

ORCHARD-HOUSE TREES, Fruiting in April.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Ricipis, Cherries, Mulberries, and other Fruit, by ARCHIBALD SMITH, Nurseryman and Seed Merchant, Worcester.

CAUCASIAN BRICKLY COMFREY (Symphytum asperum)—Set 1/6 per 1000, large quantities at reduced prices. Allowance to the Trade. Cuttings and all particulars on application. JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

JOHN PERKINS and SON beg to offer the following— BEECH, fine transplanted, 2 to 3 feet, 12s. per 1000. BLACKTHORN, 1 1/2 to 2 feet, 30s. per 100. Billing Road Nurseries, Northampton.

To the Trade. **JAMES BIRD, NURSERYMAN, Downham,** has to offer extra fine Standard MAYDUKE CHERRIES.

SNOWFLAKE POTATOS.—Warranted true and free from disease, in cwt. bags, 5s., 6s., free, and carriage paid to any Railway Station in England or Scotland, on receipt of Cash or Cheque. DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

B. S. WILLIAMS begs to announce that his NEW GRAPE VINES this year are unusually fine, and are now ready for distribution. For further particulars see Full Catalogue, Victoria and Paradise Nurseries, Upper Holloway, London, N.

Grape Vines. **FRANCIS R. KINGHORN** has still to offer strong planting and fruiting Canes of most of the leading sorts. Particulars on application. Sheen Nursery, Richmond, Surrey.

LARCH—For Sale, a quantity of extra strong, clean and well grown. For price apply to **JAMES DICKSON AND SON**, 35, Hanover Street, Edinburgh.

120,000 VEGETUS GERANIUMS for Sale
F. WOOLVEN, Langhedge Nurseries, Church Road, Upper Edmonton, London, N., has strong Autumn-rooted Plants of the above to Dispose of, at 5s. per 100, and well-furnished London Railway Station garden, on receipt of Post-office Order for number required, payable at the Upper Edmonton Post-office, London, N. Also several thousands of **DRUM GERANIUMS** at the same price.

NURSERY STOCK.—To be Sold,

FINUS AUSTRIACA, 5 to 6 feet, 9s. per dozen. 6s. per 100.
MAPLE, Norway, 12 to 14 feet, 7s. 6d. per dozen. 12s. per 100.
LARIX, 10 to 12 feet, 6s. per dozen.
BEECH, 6 to 8 feet, 3s. per 100.
SPICE FIR, 12 to 14 feet, 5s. per dozen.
OLIVE, English, 5 to 6 feet, 10s. per 100.
 Terms cash.

H. Y. MINCHIN, The Nurseries, Hook Norton, Oxon.

CHOICE TUBERS AND ROOTS.—Twelve tuberosus BEGONIAS, including Fendleri, roseiflora, Intermedia, Seleni, viviana, &c., for sale, very fine bulbs. Twelve CALADIUMS, splendid roots, for sale for exhibition, ready to start, 2s. A few choice tubers of London Railway Station garden, consisting of bulbs averaging 10 inches in circumference.

HEPATICA TRILOBA GERULEA.—Extra splendid roots, well finished with 1 to 2 flowering crowns, at 10s. per 100, or 6s. per dozen. Samples Post-free on application.
J. H. BARKER, The Nurseries, The Lily Nursery, Gendbrughe, Ghent, Belgium.

LARGE TREE BOX AND EVERGREEN
HOLLY—Handsome, bushy, and well-rooted, with branching good holly balls, 2s. 6d. per tree, and 12 feet high. Tree boxes under trees better than any other Evergreen. An inspection invited. Price on application to **T. JACKSON AND SON**, Nurseries, Kingston, Surrey.

Cabbage Plants, Cabbage Plants.
MESSEES, VIRGO AND SON, of Wonerah Nursery, Guildford, Surrey, can supply, in large quantities, the following sorts, viz., **EARLY BUTTERBEA**, **EARLY ENFIELD MARKET**, and **NON-PARCEL**, at 2s. per 100; and **ROBINSON'S DRUMHEAD**, at 3s. 6d. per 100, watered free on application.

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WILLIAM MAULE AND SONS offer Norway SPRUCE and CEDRUS DEODARA, to 12 1/2 feet high, well-rooted—the former at 1s. each, the latter 10s. 6d.
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Centaurea candidissima or ragusina.
WOOD AND INGRAM offer fine summer-plant of the above, thoroughly established in hampers, 2s. per dozen, or 10s. per 100, or 12. 6d. for 50, not less than which will be sold at the price.
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To the Trade.
H. AND F. SHARPE'S Special Priced List of HOME-GROWN GARDEN and AGRICULTURAL SEEDS of 1896 growth, is now ready, and may be had on application. See Growing Establishment, Wisbech.

NEW DRACENAS.—Twelve of the finest in cultivation for 21s., well established young plants, growing freely. If potted, on will do for exhibition in the autumn. **English Dracaena**, D. **Wrightii**, 4/6 each, including packages gratis for cash with order.
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To the Trade.
STANDARD and DWARF ROSES of the leading sorts—splendid plants, no better in the Trade, well-wooded—about 15,000 Standards and 3,000 Dwarfs, guaranteed true to name. For lowest prices apply to **GRANT AND CO.**, Park Nursery, Portadown, Ireland.

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 3-yr. Seedlings, 6 to 10 1/2 yr. Seedlings (8 in.), 8 to 10 inches, transplanted; 10 to 15 inches, transplanted; 15 to 18 inches, transplanted.
 For prices, which are low, apply to **HENRY FARNLEY**, 10, North Street, Derbyshire.

RALPH ROBSON, NURSERYMAN, Hexham, has to offer the following:—**LARCH**, Native, 4-yr. seedling, fine.
SPRUE, 2-yr., 12 to 18 inches, fine.
ASH, 2-yr., 2 to 3 feet, fine.
POPLAR, Black Italian, 2 to 3 feet, fine.
GARDEN YEW, Italian, 2 to 3 feet, fine.
FRUIT TREES, standard and dwarf-trained, of all kinds. All the above are fine clean stock, and well grown. Prices on application.

CRANSTON AND COMPANY have to offer—**FEARS**, Pyramid, on Quince, extra strong bearing trees, 3 to 4, 4 to 5, and 5 to 6 feet, all the best kinds.
FEARS, Standard, for Fagottiers and Walls, well furnished, all the best tree kinds.
FEARS, Standard, and PLUMS, Dwarf-trained.
FEARS, Standard, beautiful trees, double worked.
FEARS, Standard, 3 to 6 feet stems.
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 * **Cider**, Standard, twenty to thirty of the best Herefordshire King's Acre Nurseries, near Hereford.

Camellias in Bloom.
W.M. PAUL AND SON (Successors to the late A. PAUL & SON, established 1869), Paul's Nurseries, Waltham Cross, N., respectfully invite inspection of their Collection of **CAMELLIAS**, in flower, in bloom.
 * Visitors by Railway can enter the Nurseries from the platform, at Waltham Station, Great Eastern Railway.

To Planters of Forest Trees and Others.
THE HEATHERSIDE NURSERIES COMPANY (LIMITED) has decided on clearing the following Sorbus Stock, and will accept half the current prices:
 100,000 PINES, Weymouth, 3 to 7 feet.
 100,000 FIR, Scotch, 9 to 15 inches.
 100,000 QUICK, 2-yr. bedded, 3 to 1 1/2 feet.
 100,000 OAKS, Scudley, 3 to 4 feet.
 50,000 PINES, Austrian, 3 to 6 feet.
 50,000 PINUS RIGIDA, 3 to 6 feet.
 100,000 LAURELS, 1 to 2 feet.
 100,000 CHESTNUTS, Horse, 3 to 6 feet.
 And many thousand others.

For prices and particulars apply to **THOMAS THORNTON**, Manager, Heatherside Nurseries, Bughurst, Surrey.

Superb Ridge Cucumber.
CUCUMBER, Foster's X.L. Superb Ridge.
 This variety is a remarkably fine hardy, long, dark green Cucumber, and one that can be recommended with the greatest confidence. It is very prolific, and keeps 25 inches or the last; all who have seen it growing are satisfied that it can be had of all Seedsmen in sealed packets, and are convinced of its excellent quality, length, 12 to 18 inches. Price 6d. and 2s. per packet, price to the Trade on application.
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Shallot Seed.
DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild; with ordinary treatment have been grown from 10 to 25 inches in circumference—by far the best method of growing the Shallot. Treatment same as Onions, but 12 weeks. Can be had of all Seedsmen in sealed packets. Wholesale, of Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C., or
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 An abundance of splendid flowers can be had in a row or two, or at once, by purchasing a few Specimen Azaleas, now opening in flower. They are of 12 to 15 feet over perfect shape, some hundreds of flowers and buds, which will last for months at the time of the year. All new and valuable sorts, 21s. 6d. each, and 42s. each, according to size and stock. Eighteen plants only are for Sale. They are all worth double the money.
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To the Trade.—Seed Potatoes.
H. AND F. SHARPE will be pleased to send their SPECIAL CATALOGUE OF SEED POTATOES, showing the Trade and Retail prices. It comprises all the principal English and American varieties worthy of cultivation; they are all grown from the finest selected stocks, and will be found very moderate. See Growing Establishment, Wisbech.

GREEN TREE BOX.—The hardest evergreen, exclusive of the Conifers, thrives in almost any soil, especially on chalk. It is very hardy, and, on account of being applied in increasing quantities, it is now, as is rapidly rising in price. A few extra boxes planted annually would be a most judicious investment, with an almost fabulous amount of money. Very bushy and extra well rooted plants can be supplied.
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 2 1/2 to 3 feet, 9s. per dozen, 60s. per 100, £25 per 1000.
EDMUND PHILIP DIXON, FRUIT TREES, and General NURSERY STOCK, free.
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 Early White Perfection, Schoolmaster,
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FINEST ROUND POTATO.
 Description, with testimonials, in CATALOGUE, now ready.
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CHARLES LEE AND SON (Successors to Messrs. John & Charles Lee, of the Royal Vineyard Nursery, Hammersmith, W.), beg to announce that in consequence of the Retirement of Mr. John Lee from the business, they have the pleasure to announce that the Firm and SEED TRADE so successfully carried on for many years by the late Firm, and they trust the same liberal patronage so long given to Messrs. John & Charles Lee will be continued to the New Firm.

Charles Lee & Son pledge themselves to devote all their energy to raising First-class Stock in every department, which the large resources at their command will enable them to supply with considerable advantage to the Public both as regards quality and price. With a view to a more extensive production of Stone and Greenhouse Plants of the best quality they intend to also erect a new and extensive manufactory and Glass on a new site, a portion of the old Nursery being taken up for building purposes. All orders to be addressed to **CHARLES LEE AND SON**, New Firm, 10, Upper Street, Hammersmith, W., where the general business of the Nursery and Seed Trade will be carried on, or to **EDMUND PHILIP DIXON**, 6, Leadenhall Street, London, E.C., or **MRS. CANNON**, Ealing Nursery; Mr. WEBB, Arboracott, or Mr. MARSHEN, Wood Lane, Epsworth.

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HUGH DORAN AND SON (late Copeland & Doran), MARKET GARDENERS, can supply strong, well-wooded vines, all the leading varieties, for Planting to name, at reasonable prices. Lists on application. **FINE PLANTS, STRAWBERRY PLANTS, &c.** The Trade supplied. Seedling near **MAULE'S**, near Hereford.

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Genuine Garden Seeds.
W.M. CUTHBERT AND SON have for many years held some of the finest Stocks of SEEDS in the Trade, and they believe that no house can possibly supply better quality of seeds than they. Their principal varieties are **HIGHGATE, LONDON, N.**; and **BARNET, HERTS.**

LADY HENNIKER offers AGRICULTURAL SEEDS:
 6 for 12. 6d. for 2s. 6d. 50 for 8s. 100 for 15s. A splendid Kitchen or Desert Apple, weighs 10 lbs., bears freely on one-year's growth. Pyramids 1s. 6d. Standards 9s. each.
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VERBENAS, VERBENAS, VERBENAS.
 Strong, well-rooted, healthy cuttings, perfectly free from mildew, &c., of the following varieties: **FRANCOIS**, 6s. per 100, 10s. per 100, 100 rooted cuttings, in 12 distinct and beautiful varieties, first prize flowers, 7s. per 100, 10s. each.
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AUSTIN AND MCSLAIN, GLASGOW.
 Established 1792.
 GARDEN and IMPLEMENT (64 pages) CATALOGUE. Free on application.

TWELVE BEAUTIFUL ORCHIDS, 42s.
 established plants of fine sorts, as Cattleya citrina, Laelia autumnalis, Lælia albida, Scarlett and Fairy, 6s. per 100, and upwards of fifty other sorts. They have all made fine growth this season.
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Roses, Fruit Trees, Evergreens, &c.
WILLIAM FLETCHER'S CATALOGUE is now ready, and may be had post-free on application. The Nursery Stock generally is very fine, healthy, and well-rooted.
 Early orders are respectfully solicited.
Ottershaw Nurseries, Chertsey, Surrey.

Special Culture of Fruit Trees and Roses.
THE DESCRIPTIVE and ILLUSTRATED CATALOGUE OF FRUITS (by THOMAS RIVERS) is now ready; also CATALOGUE of SELECT ROSES. Post-free on application.
THOMAS RIVERS and SON, Sawbridge-works, Herts.

Verbenas, Verbenas, Verbenas.
WILLIAM BALIAN offers Purple King, White Starlet, Climax, and Rose VERBENAS, in single pots, at 12s. per 100; or turned out of pots, 10s. per 100. Good rooted cuttings, 6s. per 100, 50s. per 1000, package included. Terms Cash.
JOHN H. LEY, Royal Nursery, Croydon.

To the Trade.
MESSEES, LEVAVASSEUR AND SON, of Winerah Nursery, Guildford, Surrey, have an immense Stock of Seedling FOREST TREES, Hardy Conifers, and other SHRUBS, for transplanting and transplanted. Price Cash.
Messrs. R. SILBEERRAD AND SON, 8, Harp Lane, Great Tower Street, London, E.C.

STEPHANOTIS FLORINDANA.—Strong 2 1/2 year old plants, very few flowering, but many buds; smaller, but fine half specimens, which will produce abundance of flower early, the buds just appearing on some, 7s. 6d. each, 6s. per dozen; in 4-pots (flowered last summer), 9s. per dozen. This offer is for six weeks only, to make room, the plants being worth double the money.
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EWING AND COMPANY'S LIST OF NEW ROSES for 1897 is now ready, and may be had gratis. Additional Houses have this season been built specially to extend the Propagation and Growth of the above, and the result is a more extensive and vigorous, strong growth, and will be unusually large and fine.
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The Best Lutea Broccoli.
BROCCOLI, Christie's Self-protecting Lutea.
 White.—Pronounced by all who have seen it as the finest self-protecting Broccoli in cultivation. Price per packet, 1s. 6d. In small quantity order to the Trade, or price on application.
EDMUND PHILIP DIXON, The Yorkshire Seed Establishment, Hull.

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EDMUND PHILIP DIXON'S CATALOGUE of NEW and CHOICE SEEDS is now ready, and may be had post-free on application.
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Pelargoniums, Pelargoniums.
JAMES HOLDER AND SON have a fine healthy stock of new and old stock of low and following-crop for Cash, viz., 25s. per 100, distinct sorts, hamper and package included; also extra strong plants in 3-pots, 10s. per dozen, in 4-pots, 10s. per 100, distinct sorts, hamper and package extra. Crown Nursery, Reading.

SEEDS—SEEDS—ALL KINDS.
 Before ordering your Seeds, send for Illustrated CATALOGUE, which will be sent to you free of charge.
 How, When and What to Sow.
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ADAPARAS, ASPARAGUS, ASPARAGUS.
ROBERT AND GEORGE NEAL have the above to offer in large or small quantities, 1-37, 2-37, and 3-37, old 1-1, 2-1, per 1000.
 1-37, old, 2-1, per 1000.
 1-37, old, 3-1, per 1000.
 Price to the Trade on application.
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Special Offer.—150,000 Vesuvius.
WILLIAM BADMAN offers strong autumn-stored **VESUVIUS**, from single pots, 30s. per 100 or from store-pots, 2s. per 100, 75s. per 1000, package included.
 Terms Cash.
 Cemetery Nursery, Gravesend, S.E.

PALMS for TABLE DECORATION.—
 Twelve distinct choice sorts, ready to pot or in pots, for sale, from 18 to 24 inch high, will grow in LILLS, in moderate decoration, 4s. and 6s., according to sorts. A large and valuable collection of exhibition specimens, from 21s. each. Packages gratis for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

To Gentlemen intending Planting Avenues, &c.
BEECH TREES, a splendid lot of specimens for sale, from 18 to 24 inch high, will grow in LILLS, from 12 to 25, each; also a fine lot of **CYPRESSUS LAMBERTIANA** and **MACROCARPA**, well feathered, from 1 to 6 feet high, 9s. per 100, and **FRAXINUS LAWSONIANA**, fine young stuff, from 4 to 6 feet high, at 12s. per 100, 6d. each.
WILSON SEKPELL, Nurseryman, Plymouth.

Oleogyne cristata.
R. S. YATES has prepared in announcing this his **CELOYCYNUS**, 2s. as usual, very fine. They become a full bloom in S. and last for two months, with nearly 150 spikes and 500 or 600 buds on each pot, a portion of which he offers at 25 guineas each, for cash only. He has a large stock of plants, from 3 guineas.—See *Chronicle*.

W. F. BOFF offers magnificent Bulbs of
LILIUM AURATUM, 21s. per dozen; easy growing, free-blooming **ORCHIDS**, 21s., 32s., and 42s. per dozen.
THE VALLÉY, imported cuttings, 6s. per dozen. **CALLICOLARIAS**, yellow, red, and white, 2s. per dozen.
 25, Upper Street, Islington.

From Paris.—Roses, Pionies, Camellias
LÉVEQUE AND SON, NURSERYMEN, 25, Rue du Ligat, Irvy-sur-Seine, near Paris, have many thousands **ROSE TREES**, Standards, Half-standards, Dwarf, and on open root.—New and Old sorts.
LÉVEQUE AND SON respectfully solicit Gentlemen and Nurserymen visiting Paris to inspect their Stock, the largest in Paris.

SPLENDID PYRAMID CAMELLIAS, price 12s. to 50s. each; small, 6d. to 2s. each.

CATALOGUES and LISTS on application.

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 Seedlings, 8s. per 100, 5s. per 1000, 25s. per 10,000; mixed white, red, pink. Separate colours, 12s. to 100s. per 1000, 2s. per 1000. Named sorts, 20s. to 30s. per 100, 2s. per 1000, 20s. to 30s. per 1000 (the best, from 25s. to 40s. less or more, according to the novelty). All good growing bulbs, English Cheques on London, or Post-office Orders on Paris, accepted in payment.

New Catalogue of Hardy Herbaceous and Ornamental Plants.

ROBERT PARKER begs to announce that his new **CATALOGUE** is now published, and will be forwarded to applicants. It contains Select Descriptive and Price Lists of Alpine and Herbaceous Plants, Aquatic and Marsh Plants, Asters (herbaceous), Chrysanthemums (early blooming bedding varieties), Delphiniums, Fruit Trees, Helianthemums, Iris (perennials, not modern), Bedding and Decorative Plants, Pansies sinensis, Phlox (herbaceous), Potentillas, Pyscharras (double flowered), Sweet Violets, &c.
 Exotic Nursery, Totting, Surrey, S.W.

GLOXINIA CRASSIFOLIA GRANDIFLORA.—Magnificent plant, quite distinct: sown now will flower in autumn. Erecta and horizontalis, separate colours, 12s. and 2s. 6d. per packet.
PETUNIA, double large-flowered.—Yields a large percentage of fine flowers, 6d. per packet.
STREPTANTHUS FLORIBUNDA.—Remarkably free-flowering variety from the Mauritius, 1s. 6d. per packet.
CATALOGUES free on application.

JAMES TYNAN, Seed Warehouse, 55, Great George Street, Liverpool.

Splendid New Melon, 1877.

CHARLES LEE AND SON (Successors to Messrs. J. & C. Lee) have the pleasure to announce that they have purchased the entire Stock of **MANN'S HYBRID GREEN-FLESH MELON**, which they now offer for the first time. It has already earned a First-class Certificate in London and the provinces for its many excellent qualities, among which may be mentioned a remarkably high and exquisite quality at all seasons of the year, perfect shape and size for dessert—its thin rind and melting flesh, with an overflow of perfumed juice, which is very refreshing.

Dr. Hoop has spoken of this excellent Melon in the highest terms, and after tasting it pronounced it a fruit of the highest merit.

Mr. CULVERWELL, of Thorpe Perrow, fellow judge with Mr. FOWLER, of Horewood House, at the Crystal Palace Show, when they displayed a First-class Certificate in London of his Hybrid Green-flesh Melon. "speaks of it as 'an exceedingly good melon, especially at that early season—the early part of June.'"
 Mr. INGRAM, of Belvoir Castle, writes, in the third week of October, "it is in the condition of a melon, and has a very gloomy weather, at that season of the year." "Mann's Hybrid Green-flesh Melon" was sweet, tender in both, very juicy, and distinct in character.
 Messrs. Charles Lee & Son are now prepared to offer this very delicious and delicious new Melon in sealed packets, at 2s. 6d. per packet.
CHARLES LEE AND SON, Hammersmith, W.

STOCK VERBENAS.

JOHN KEYNES' STOCK PLANTS are now ready.
 Very fine and clean.

CASTLE STREET NURSERY, SALISBURY.

THE NEW PLANT and BULB COMPANY

Beg to call special attention to their new LIST (No. 3), just published.

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 NEW HARDY BULBS, NEW AND RARE LILIES, NEW HARDY CYPRIPEDIUM, NEW FERNS, SEEDS OF NEW HARDY FLOWERING PLANTS, &c.;
 All of sterling merit, and at low prices. Post-free on application.

LION WALK, COLCHESTER.

RICHARD SMITH'S GUINEA COLLECTION OF VEGETABLE SEEDS

Contains the following excellent sorts (Carriage Free):—

- PEAS, Kingleder 1 quart
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- Red Turnip 1 "
- White Turnip 1 "
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- SPINACH, Romand 3 oz.
- TURNIP, Early Snowball 1 "
- Early Red-top 1 "
- TOMATO, 1 pkt.
- VEGETABLE MARROW 1 "
- SWEET BASIL 1 "
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SEED WAREHOUSE, 61, HIGH STREET, WORCESTER.

BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named variety, will be supplied at from 5s to 12s per 100, and 18s. to 30s. per dozen.

Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well feathered and healthy and covered with bloom-buds, 15 to 18 in., in 12s. and 18s. per doz., or 15s per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded 15 to 17 1/2 in., per 100, or 18s. per dozen.

ANTHONY WATERER, KNAP HILL NURSERY, WOKING, SURREY.

SPRING FLOWERING PLANTS.

- FRIMROSE, double yellow, 1/2 per dozen, 20s. per 100.
- double lilac, 2s. 6d. per dozen, 25s. per 100.
- double purple-stemmed, 5s. per dozen, 45s. per 100.
- double crimson, 2s. 6d. per dozen.
- double white, 2s. 6d. per dozen.
- CARMINÉ PRATENISIS-pl. per doz., 20s. per 100.
- SISYRINCHIUM GRANDIFLORUM, in pots, 2s. 6d. per dozen.
- PANSY, Blue King, strong, 2s. per dozen, 20s. per 100.
- VIOLA, Blue Bell, strong, 2s. per dozen, 20s. per 100.
- late Queen, strong, 2s. per dozen, 20s. per 100.
- POLIANTHUS, strong, 2s. per dozen, 20s. per 100.
- DAISIES, white, 2s. per dozen, 20s. per 100.
- WALLFLOWERS, double German, 2s. per 100.
- single dwarf yellow, 6s. per 100.
- ANEMONE, Saxatile, 12s. per 100.
- RODGER McCLELLAND AND CO., 61, Hill Street, Newry.

CHARLES NOBLE, Bagshot, can offer the following:

- ROSES, Dwarf, 4s. per doz., 25s. per 100, 250s. per 1000.
- PEACHES and NECTARINES, dwarf-trained, 21s. per 1000, 150s. per 1000.
- RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 1/2 to 1 to 2, per doz., and 5s. per 100.
- " " " " for immediate effect, 2/6 to 4s. 2d., and same through, 4s. 2d. per dozen, 30s. per 100.
- " " " " 1/2 to 1 1/2 feet, 2s. 6d. to 30s. per 100.
- " " " " SEEDLING, 1/2 to 1 foot, bushy, 6s. per dozen, 35s. per 100.
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- 400,000 LARCH, seedlings, 3s. per 1000.
- 100,000 FIR, Scotch seedlings, 2-37.
- 3,000 ASH, Mountain, transplanted, 4 to 5 feet.
- 10,000 BEECH, transplanted, 1 to 4 feet.
- 40,000 SPRUCE, transplanted, 1 to 4 feet.
- 500 HOLLY, Green, transplanted, 2 to 3 1/2 feet.
- 500 CHRISTMAS TREES, transplanted, 4 to 5 1/2 feet.
- 1,000 LIME, transplanted, 3 to 4 feet.
- 1,000 transplanted, 2 1/2 to 4 1/2 feet.
- 600 PINUS CERASTIA, 12s. transplanted, 3 to 4 feet.
- 15,000 SPRUCE, transplanted, 1 1/2 to 4 feet.

Special offers on application.

ROBERT AND GEORGE NEAL, Wandsworth Common, Upper Totting, and Garrett Lane Nurseries.

These Nurseries comprise about 30 acres of well-grown and a most useful assortment of **STANDARD, ORNAMENTAL, FOREST, FRUIT, and ROSES, and SHRUBS**, all of which are in a most healthy and fit condition for removal. A personal inspection invited. All applications for particulars free on application.

The Nurseries are within a few minutes' walk of the Clapham Junction and Wandsworth Common Railway Stations.

Complete Liberal Collections of CHOICE VEGETABLE SEEDS.

15s., 21s., 42s., 63s., and 105s. each, carriage paid. As my new and choice seeds are now in large demand, please send orders early, as I can only supply a limited quantity. **CAULIFLOWER**, Veitch's Autumn Giant, true, 1s. 6d. per packet.

LETTUCE, Alexander Cos, true, 1s. per packet.

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BROCCOLI, Leamington, finest late, 1s. 6d. per packet.

CARROT, Alpha, large and early, 1s. per packet.

CATALOGUE of New and Choice Seeds on application.

B. B. COMBIE, Grower of Choice Seeds, 6c, Christchurch, Hants.

SURPLUS NURSERY STOCK.

TAMARIS, two sorts, 2 to 3 feet, 12s. 6d. per 100.

FUCHSIA GRACILIS, 20s. per 100.

YEW, English, fine, 1 1/2 to 2 1/2 feet, 25s. per 100.

PINUS INSIGNIS, 6 to 12 inches, 20s. per 100; 12 to 18 inches, 30s. per 100.

Berberis Darwini, 1 1/2 to 2 feet, 16s. per 100; 2 to 3 feet, 20s. per 100.

COTONEASTER MICROPHYLIA, 2 to 3 feet, 16s. per 100.

WINTERA GLOBOSA, 1 1/2 to 4 feet, 16s. per 100.

DRACENA INDIVISA, above 1 1/2 foot, 22s. per dozen.

25s. per 100; stronger, 30s. per dozen.

CISTUS, 2 to 3 feet, 12s. per 100.

CELANTHUS PINIFOLIA, strong, 3s. to 12s. per dozen.

CANTHUS, 2 to 3 feet, 12s. per 100.

MULHENECKIA COMPLEXA, 4 to 12s. per dozen.

POPLAR, Lombardy, 3 to 4 feet, 35s. per 100.

Canadian, 4 to 5 feet, 25s. per 100; 5 to 6 feet, 30s. per 100; 6 to 7 feet, 35s. per 100; 7 to 8 feet, 40s. per 100.

Privet, Evergreen, 3 to 4 feet, 30s. per 100.

Sycamore, 3 to 4 feet, 20s. per 100.

RODGERS AND CO., 64, Hill Street, Newry.

ALTERNANTHERAS, by the 100 or 1000.

White, Scars, and variegated, the following varieties, amongst others, available, amaranth, latifolia, magnifica, pramonchiosa, spinulata, tricolor, variegata, 5s. per 100, 20s. per 1000.

For Cash with order, 1000 specimens of the above arrangements for large quantities. Stock plants of all the above that would prove of permanent utility. All other plants suitable for **GARRET'S BEDDING**, as used on the West Brighton Estate and other Public Gardens, at the above Price.

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For the following:

- Plants of Recent Introduction. Conifers.
- Stove and Greenhouse Plants. Hardy Climbers, Clematis, &c.
- Plants for Water Features. &c. &c.
- Azalea indica and Camellias. Kalmias, &c.
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CHARLES SHARPE AND CO'S
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 SEEDS in new ready, and will be sent post-free on application.
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CHARLES SHARPE AND CO'S
 carefully-selected Stocks of SWEDE and TURNIP
 SEEDS, the produce of their own Seed Farms in Lincolnshire,
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Select Mangel Seeds.
CHARLES SHARPE AND CO.
 have much pleasure in asking attention to their select
 Stocks of MANGEL WURZEL SEEDS, which have been
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 Farms at Heckington, and in the adjoining parishes. Descriptions
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**EVERY DESCRIPTION OF HORTICUL-
 TURAL AND AGRICULTURAL SEEDS, SEED
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CHARLES SHARPE AND CO.,
 Seed Farmers, Steaford, and 31, New Seed Market,
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Morello Cherries—Special Offer to the Trade.

D. AND G. NEAL, having a very large
 Stock of Dwarf-tailed MORELLO CHERRIES,
 can offer them very cheap in quantities. Price per dozen or
 hundred on application.

The Nurseries, Wandsworth Common, S.W.
PANSY BLUE KING.—The finest hardy
 Blue Plant in cultivation; strong flowering plants, 20s.
 per 100; small rooted, free by post, 12s. 6d. per dozen.
FREDERICK PERKINS, Nurseryman, Regent Street,
 Leamington.

Early Rose Potatos.
POTATO, Early Rose, the best in cultivation,
 good sound seed, and warranted true, in cwt. bags, 12s.,
 bag gratis, on receipt of P.O.O.
C. ALLEN, Stone Hills Nursery, Heigham, Norwich.

**WHITE MULBERRIES for SILK-
 WORMS**, 7000, 2-37r. dried, very fine, 1 to 3 feet, 5s.
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CABBAGE PLANTS for Sale.—Seedsmen,
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 Stock, at moderate price—from the seed
 Eln Farm, Bures, Surrey.

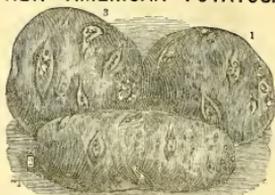
New Roses for 1877.
A DESCRIPTIVE LIST of all the best
 New Roses of the Season is now ready.
 Extra fine plants ready in March.
CRANSTON and COMPANY, King's Acre Nurseries,
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GEORGE SWALES begs to offer well-
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 LIGUSTRUM OVALIFOLIUM, extra fine, transplanted,
 4 feet, 12s. per 100. Sample orders of either may be had.
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APPLE TREES.—To be sold a Bargain, at
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E. F. STEVENS, High Street, Ealing, W.

A. M. C. JONGKINDT CONINCK,
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YUCCA ANOSTIFOLIA, strong plants, 1 foot high, 6s. per
 dozen, 42s. 10s. per 100. In my nursery this beautiful
 new Yucca without, without the slightest protection,
 the severe winter of 1875.
APPLES, strong 2-37r. Palmettes and Pyramids, 42s. per 100,
 42s. 12s. per 1000.
HARDY AQUATICS at the lowest prices.

NEW AMERICAN POTATOS.



No. 1. **CENTENNIAL.**—A seedling of the well-known
 Brownell's Beauty crossed with the White Pearl Blue; haulm
 stout, vigorous, 4 to 5 feet medium; tubers medium and of
 uniform size; shape round, somewhat flattened, symmetrical
 and handsome; colour deep red; flesh fine-grained, white and
 mealy; very productive, and of fine quality.

No. 2. **BROWNELL'S SUPERIOR.**—Of a same parentage
 as the preceding. Its tubers are medium to large, kidney-
 shaped, of a peculiar dark copper colour, very uniform and
 handsome in appearance; skin fine and smooth; eyes few and
 small; the haulm is strong and healthy; the tubers are thickly
 clustered round the stalks. It is a second early variety, keeps
 well, and is enormously productive, 673 lbs. having been grown
 from 1 lb. of seed with ordinary farm culture. A Certificate of
 Merit was awarded this variety at the International Potato Show.

No. 3. **IMPROVED PEARL BLUE.**—A cross between the
 well-known Jersey Pearl Blue and the Excelsior. It par-
 ticles of some of the characteristics of each of its parents, having
 the haulm of the Excelsior, while its tubers resemble the Pearl
 Blue, though better formed; white in quality it equals that of
 old standard sort, it is far more productive and matures earlier.

One pound of either of the above varieties will be mailed
 post-paid to any address in Europe upon receipt of 4s., or its
 equivalent in English currency.

Remittances can be made in Post-office Stamps or Postal
 Money Order on New York or London, payable to B. K. Bliss
 and Son.

The above varieties can also be obtained of Messrs. HOOPER
 AND CO., Covent Garden, W.C.; of LARBER, DUNN, & CO.,
 45, BEALE, London, W.C.; of CHRISTMAS QUINCEY,
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Our Illustrated and Descriptive POTATO CATALOGUE,
 40 pages, will be mailed free and post-paid to all applicants.

Address, B. K. BLISS and SON, Seed Merchants,
 34, Barclay Street, New York, U.S.A.

GROS GUILLAUME GRAPE

(Roberts' Variety)

The largest Black Grape in Cultivation.

Eyes or Scions from fine, strong, well-tipped wood, 10s. 6d. each

Ditto ditto ditto second size 7s. 6d. "

For particulars of this remarkable New Grape see *Gardeners' Chronicle* of January 27, pages 102 and 117, or apply to

Messrs. W. TAIT & CO.,
 SEED AND NURSERY ESTABLISHMENT,
 45, CAPEL STREET, DUBLIN.



Vines.
E. G. HENDERSON AND
 SON offer splendid Fruiting Cates of
 all leading kinds. Planting Cans, 3s. 6d.,
 5s., and 7s. 6d. each; Golden Queen, Venn's
 Black Muscat, and Waltham Cross, 42s. and
 60s. per dozen. Trade supplied.
 Pine-apple Nursery, Maida Vale, W.

To the Trade.
MAIDENS.—APRICOTS, NECTARINES,
 and PEACHES; MORELLO CHERRY, fine; PLUMS,
 in sort; STRAWBERRIES, in finest leading varieties.
STOCKS.—Pear, Crab, and Mussel, fine.
 HULLY, common, 9 to 12 and 12 to 18 inches; variegated,
 1 to 2½ and 2½ to 4 feet, well rooted.
D. HEFFERMAN, Nurseryman, Egham, Surrey.

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PRIMROSES, double lilac, 12s. 6d. per 100,
 100s. per 1000. About 15,000 to 20,000 to dispose of, good
 plants.
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 Newry.

LARGE ESPALIER APPLES.—Very fine
 large Trees, full of fruit-buds, measuring 6 to 20 feet
 wide and 4 to 6 feet high. Names and price on application to
FREDERICK PERKINS, Nurseryman, Regent Street,
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GERANIUM WONDERFUL (G. SMITH).
 Wonderful, a semi-double, intense orange-scarlet, is
 decidedly the best-habited, freest growing, and most profuse
 flowering GERANIUM ever yet sent out, either as a bedder,
 pot plant, or for winter flowering. Being semi-double it never
 sheds, and so requires no pinning. 2s. 6d. each, 2s. per
 dozen, 20s. per 100, and 80s. per 1000.
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THOMAS S. WARE'S NEW SPRING
 CATALOGUE of the above, including Pansies, Violas
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 Pyrethrum, and others, for immediate planting, may be had
 free on application.
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Cabbage Plants.
CABBAGE PLANTS.—East Ham, Enfield
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 rail, 3s. per 1000, package included.
 Since transplanted English OAK, 4 to 10 feet, 40s. per 1000.
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To the Trade.
WILLIAM FLETCHER has the following
 STOCKS to offer—
 CRAB, 30s. per 1000. 1 PEAR, 40s. per 1000.
 CHERRY, 40s. per 1000.
 ACER NEGUNDO, 3 to 4 feet, 20s. per 1000. Also
 AFRICOTE, Maiden, 5s. per 100.

Over 1000 young, 3 to 4 feet, 20s. per 1000. Also
 AFRICOTE, Maiden, 5s. per 100.
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POTATOS.—American Early Rose, Late
 Rose, and Breese's Prolific, grown from Imported Seed.
 A few tons of each to be disposed of at a low figure. Prices on
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HENRY CLARKE and SONS, 39, King Street, Covent
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To the Trade.
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ABIES MENZIESII, $\frac{1}{2}$ to 1 feet.
BETULIS STENOPIHYLLA,
 BROOM, White.
LAUREL, Italia, the finest of all the common sorts,
 12 to 16 inches, 1s. to 2 feet, and 2 to 2½ feet.
OAK, Scarlet, 6 to 8 feet.
RETINOSPORA PISIFERA, 3 to 3 feet.
PLUMOSA AUREA, 4 to 6 and 6 to 12 inches.
RÖSES, Half-standards and Quarter-standards.
SPIRÆA DOLLMANII, 4 to 6 feet.
LIBODERUS DECURRENS, $\frac{1}{2}$ to 1 foot.
WEIGELA ROSEA and **LAVALLÉ**.
 NEW Common, 2 to 2½ feet.
ESCALLONIA MACRANTHA.
VIRGINIANA CREEPER, strong. **IRISH IVY**.

THOUGHTFUL-HEADED KALE FOR SHEEP FEED.

HURST & SON

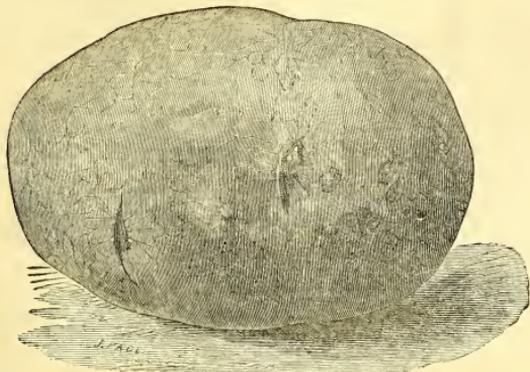
Can now supply NEW SEED of the true variety of the above (to the Trade only). Price on application.
 6, LEADENHALL STREET, LONDON, E.C.

Extract from the "Agricultural Gazette" of March 13, 1876.

In a Paper read by Mr. ROBERT RUSSELL, before the London Farmers' Club, on *Green Crops for Sheep Feeding*, he said:—"Towards the end of March we drill in the celebrated Thousand-headed Kale, which is the best known and most desirable of any green crop I have ever seen. It is a plant that produces more feed per acre than any other, and does not disagree with the stock, nor does it impoverish the land. With me it has never caused either sheep or lambs to blow or scour."

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THE BEST NEW POTATOS.



HOOPER'S COVENT GARDEN PERFECTION.

CHARACTERS:—Rough skin, white flesh, level eyes, good medium size, medium growth, good cropper, Second Early. On the table perfect both in flavour and flouriness.

Mr. Shirley Hibberd, after two years' trial, thus speaks of it:—"I believe it to be distinct. It is of remarkably fine quality, the very model of a Gentleman's Potato." It will bear close cutting in planting.

Price, 2s. 6d. per lb., 7 lb. 15s.

ALL POTATO GROWERS SHOULD TRY THE ABOVE NEW VARIETIES.

HOOPER & CO., COVENT GARDEN, LONDON, W.C.



THE BEST BUILT HOTHOUSES, CONSERVATORIES, &c., AT THE LOWEST PRICES.

Plans and Estimates given for Horticultural Buildings of every description, either in Wood or Iron. H. Ormson's Work, on an extensive scale, both Building and Heating, may be seen at the Royal Gardens, Kew, and at many of the Seats of the Nobility and Gentry throughout the Country.

CAST-IRON AND SLATE FOUNDATIONS, IF PREFERRED TO BRICKWORK.

PLAIN AND INEXPENSIVE HOTHOUSES

Designed and Built with a strict regard to Economy in Price, the best of Materials and Workmanship, and Practical Adaptation.

ORMSON'S PATENT TUBULAR CORNISH BOILER and Ormson's Patent Divisional Hot-water Apparatus
SURPASS ALL OTHER SYSTEMS OF HEATING BY HOT-WATER.

HOT-WATER PIPES, BOILERS, &c., AT WHOLESALE PRICES.

Surveys made and Gentlemen waited on in any part of the Country. Plans and Estimates on application. Tenders from Drawings prepared by Architects.

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HORTICULTURAL BUILDER and HOT-WATER APPARATUS ENGINEER,
STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.

Other NEW POTATOS offered by
HOOPER & CO.

CENTENNIAL.

Second Early Red American variety—very fine; by the raiser of Brownell's Beauty, upon which it claims to be an improvement. Price, 3s. 6d. per lb., 7 lb. 21s.

SUPERIOR (Brownell's).

Large Red Kidney, of extraordinary productiveness. In our trial last year we had a produce of 240 lb. from 4 lb. Price, 2s. 6d. per lb., 7 lb. 15s.

SUCCESS (Brownell's).

Fiat White Potato. Wonderful for size. Our crop from 3½ lb. planted was 167 lb. Price, 2s. 6d. per lb., 7 lb. 15s.

LADY WEBSTER (McKinlay).

A little beauty, red streaks about the eyes. Very high class variety, fine quality. Price, 3s. 6d. per lb.

RUBY.

A thoroughly good novelty, of which a few were sent out last year—red, rough skin; good cropper. Price, 2s. 6d. per lb., 7 lb. 9s., peck, 15s. 6d.



DANIELS' SEED POTATOS.



Our Stocks of POTATOS are warranted True to Name and Free from Disease, all being carefully selected at the time of growth, and afterwards passed through the bands at least three or four times before being sent out, and all inferior, misshapen and forked tubers carefully discarded.

To improve the culture and encourage the diffusion of really good varieties, we have determined to offer at the lowest possible rates COLLECTIONS of POTATOS FOR EXHIBITION PURPOSES, and trust our efforts in this direction will meet a want so much felt by our Customers and the gardening community generally. The selection in all cases must be left to us; it will be very carefully made, and only those of known excellence and superior qualities included.

COLLECTIONS.

1 lb. each.	7 lb. each.	14 lb. each.
12 varieties 3 6	4 6	5 6
18 " 5 0	5 6	6 6
24 " 7 6	8 6	9 6
36 " 10 6	11 6	12 6

All carefully labelled and packed.

The above are nett prices for cash, with no charge for packing.

Send Orders of the value of 20s. and upwards, including Potatos, carriage free to any Railway Station in England or Wales.

Price Lists on application.

Special Quotations given for large quantities.

Our Stock of Potatos is the most complete in the Kingdom, and consists of upwards of eighty varieties.

DANIELS' ILLUSTRATED GUIDE FOR AMATEUR GARDENERS.

The most complete, useful, and beautiful Seed Catalogue ever published.

Price 1s., post-free. Gratis to Customers.

The "Illustrated Guide for Amateur Gardeners" contains 112 pages of beautifully illustrated Letterpress, with two superbly finished Coloured Plates, Original Articles on the Rearing and Cultivation of various Garden Crops and Flowers, and complete Instructions for the successful Management of the Kitchen and Flower Gardens throughout the year, together with a Select List of choice Kitchen Garden and Flower Seeds, Seed Potatos, &c.

The most practical and comprehensive Guide for the Amateur yet issued, and should be read by every Horticulturist.



DR. DENNY'S PELARGONIUMS.

MESSRS. J. VEITCH & SONS

Have the pleasure to announce that they have made arrangements with Dr. Denny for the distribution in April, next, of his fine new Zonal Pelargoniums, remarkable for the size of their trusses, the brilliant colouring and perfect shape of their flowers, and for the persistency of their petals, which are of great substance, the trusses thence continuing in perfection for a long period.

They are especially adapted for pot culture for the conservatory, where their richly-coloured flowers and fine trusses will be found a welcome, as well as a useful addition to the decorative resources, and for which purpose James Veitch & Sons beg to recommend them, particularly for the winter months.

HEATHER BELL.

A magnificent florist's flower, of a distinct bluish tinted or black-pink colour, with a white blush on upper petals; the petals are of good substance and overlapping, and the pipes expand to slight convexity. The trusses, which are large and globular, stand erect over a neat sown dark green foliage. Owing to the persistency of the petals (in this respect unlike other varieties of the pink section), the trusses retain their perfection of shape and beauty for a long period. It is especially desirable in a dry conservatory, where its fine flowers in perfection throughout the winter months. Habit stout and branching. This variety undoubtedly possesses the nearest approach to perfection as regards florist's qualities yet attained in the pink section, and for pot culture is unrivalled. It is believed it will make an excellent border, but its bedding qualities have not yet been fully tested. Price 10s. 6d. each.

AMAZON.

A deep brilliant scarlet with a rich velvety lustre, of the finest florist's petals of great substance, with smooth edge, and very large, so as to considerably overlap each other; trusses large and well formed. Habit robust, and of free growth, suited for pot culture, or for being trained up the sides of pillars in a conservatory. It is not adapted for bedding purposes, but is well recommended for the purpose of the Flora Medal of the Royal Horticultural Society for the perfection of its florist's qualities. Price 10s. 6d. each.

IRENE.

Flowers of a deeper shade purple-gamoge than any previously raised by Dr. Denny, being a very considerable advance in colour upon Imogen, as well as in the quality of its flowers. The petals and pipes are of being shape and open, with slight convexity. Trusses of good size, and produced in the greatest abundance. A dwarf and compact-habited plant, with a deep green zonal foliage. This variety, with proper treatment, will flower throughout the winter months, and during that season its flowers show a deeper shade of purple and greater brilliancy of colour than at any other period of the year. Price 10s. 6d. each.

CLEOPATRA.

Flowers of a brilliant shade of carmine-gamoge, a large pip which expands to perfect flatness; trusses of fine form, and produced in abundance; habit robust and branching. For pot culture Cleopatra is a distinct and conspicuously beautiful variety. Price 10s. 6d. each.

NYNZA.

Flowers of a fine soft scarlet, of large size, great substance, and well formed; truss of good size; habit free, robust, and dwarf. Price 5s. each.

EGERIA.

Flowers of a deep purplish magenta-crimson, and of good form; trusses large, and owing to great persistency of petals retain their perfection of shape and beauty for unusually long period. Habit dwarf and good. Price 5s. each.

GLOBOSA MAJOR.

A deep maroon-crimson flower of the novelty or decorative type, producing trusses of immense size and of great globular form, which, owing to the persistency of the petals, is retained for a long period. For conservatory decoration this variety is unrivalled for brilliant effect. Price 5s. each.

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SATURDAY, FEBRUARY 24, 1877.

WALKS AND ROADS.

NOTHING adds so much to the comfort of a garden or estate as good sound walks and roads, and yet how seldom do we see or experience such, although plenty of material may be ready to hand, or easily obtainable in the immediate neighbourhood to put them into that very desirable condition. The principal thing in the formation of walks and roads, like that of building a house or other structure, is to have a good solid foundation, without which they are never afterwards in a satisfactory condition, whatever amount of labour may be expended on them with the view of rendering them so, unless they are entirely remade. Many commit the grave mistake of using gravel just as it is obtained from the pit, in which state, however good, it is seldom that a comfortable walk can be made. It frequently happens that gravel so raised is simply placed on the natural soil after a few inches of the top has been dug out, the result of which is, that after a little wear, wet, or frost, the bottom oses through, and the worms cast it up, when it at once causes a discoloration of the surface, and forms a bed for a prolific crop of weeds that soon take possession and luxuriate in such a congenial home. Besides all this, the gravel having no proper foundation to rest on, the walk or road becomes soft and rotten at a time when most needed for use. At no season has this been more forcibly brought home to us than during the present winter, when the country has been almost inundated with water.

In cases where either walks or roads are in an unsatisfactory state, the best way is to break them up at once, and set about remaking them in a proper manner. As before observed, the foundation is the principal thing, and the next is proper and efficient drainage to carry off the surface-water, which should never be allowed to lie on the gravel or percolate through to the rough bed below. The depth to which the walk or road should be dug out will depend entirely on the nature of the soil, the amount and kind of traffic that is likely to take place over it, and the general purposes for which it may be required. If the roads are simply wanted for carriage use or for other light vehicles to pass over them, from 8 inches to a foot of good sound stuff will be amply sufficient. The lower part of this should consist of broken burrs from brick-kilns, slags from iron-foundries, rough stones, or any hard material of that character that is most readily accessible. This should be spread uniformly over the bottom, and the interstices filled up with fine chalk or good binding gravel, that it may not lie loose and hollow, for when this is the case the top can never be firm, but will shift about under the pressure of any vehicle or heavy weight that may pass over it. Having laid a solid foundation as above advised, the next thing is to ram it firmly, so as to get it well together, and that done, add for the next 3 inches a layer of hard angular stones, such as may be obtained by sifting coarse gravel, in doing which sufficient of the fine should be left to bind the whole firmly together. The quantity required for that purpose will vary according to the character of the gravel made use of, but may roughly be set down at one-fourth. If the fine part should be at all of a sandy nature, and not possess good binding qualities, fine chalk should be substituted in-

stead, or, failing this, a slight portion of pulverised marl or clay may be used. The great thing is, to have materials that will bind firmly together so as to be impervious to wet, and that will not become loose and detached in dry weather, as all gravels of a sandy description do.

To finish the road off with a nice smooth surface, the top should consist of a similar kind of stone, varying in size from an acorn down to that of a pea. This assortment can easily be arranged at the sifting by passing the material through suitable screens or sieves, first of all taking away the excess of fine the stuff may contain, when the separation of the other may be readily carried out. It is very important that the top layer of the road should be of the very best binding material that can be obtained. Chalk near the surface could not be made use of without its appearance being objectionable on account of its colour, otherwise there is nothing more suitable or better, otherwise for mixing with stone for roadmaking purposes than that is. The binding qualities of gravel may always be judged of, and its value estimated, by the appearance it presents in the pit before being dug, for if found solid and firm, and adhering closely together, it will get in the same state again when laid down after having a heavy roller passed over it a few times.

In forming the road the centre should be laid higher than the sides, but not so much so as to throw all the traffic in one part, otherwise ruts will occur or the middle will be kicked up and disfigured. The water being thus thrown to the sides, provision should be made to conduct it away either by gratings and drains or by laying the gravel sufficiently high to throw it over the sides, where, unless the soil is unusually close and heavy, it will soon soak away.

GARDEN WALKS.

For ordinary walks in pleasure grounds and gardens, a less depth than is requisite for a carriage road will answer every purpose, and as the same remarks relating to their formation are applicable to these also, it is useless going over the same ground again. It may be well however to observe that to give them a smoother and more finished appearance, the top inch or so should consist of very fine stones and binding material that when rolled will become compact.

To render such walks always dry and comfortable, it is very requisite that they should have a good main drain under the middle, with side branches at suitable intervals to conduct the surface-water into it. These side drains should be placed at from 30 to 50 feet apart according to the width of the walk, and each terminate in a small cesspool made to catch the silt or washing, which may be carried off after heavy storms, by which means it will be intercepted before reaching the main and thus blocking the water-way. Over each cesspool a neat iron grating will be required, none of which need exceed 6 inches square, and as they are made to set without any stone curb around them, they are not at all conspicuous objects, or the least objectionable in appearance. Those now sold for the purpose have cast-iron frames with a narrow inner groove for the grating to rest on, so that it can be lifted out and the cesspool cleared of any deposit without disturbing the frame. By making use of these much needless expense is saved, and the objectionable appearance of stone or other settings that would otherwise be required is entirely avoided.

To get the newly made walks in a solid firm state as quickly as possible after their formation, they should be thoroughly rolled when wet till they show that they are becoming soft and will not bear the weight of the roller any longer, when they should be left to settle for a time, and then be rolled again, after which they will become thoroughly consolidated, and in a sound

condition for ever after with very little attention beyond keeping them free from weeds.

SALTING FOR WEEDS.

Weeds may be destroyed by scattering a small quantity of salt regularly over the walk, but this should only be done when the weather is fine, or it may be washed to the sides and do much damage to the verges. By treating walks to a slight dressing of salt every spring and autumn, they may be kept free of weeds at a minimum of the amount of labour and cost that would be required to pull them up, and not only this, but it has such an effect in killing all mossy *conferva* as to render the gravel always bright and new looking, nearly equalling in that respect any fresh raised from the pit and newly laid down. It may be remarked, however, that it does not do to use salt where the edgings are of Box, as that is sure to suffer injury, and perhaps be killed altogether, but grass verges will stand it well if not sown too close to soak to the roots, or get washed to them, should rain by chance occur immediately afterwards. Many other remedies have been recommended to extirpate weeds from walks, such as the use of some of the mineral acids, but there is nothing so cheap and simple, or that can be so readily and safely applied, as salt, which can be had in most places at from $\text{£}1$ to $\text{£}1\ 10\text{s}$. per ton.

GARDEN EDGINGS.

The value of salt as a labour-saving medium brings us to the question of what is the most suitable edging to use that salt may be applied as occasion requires without risk of destroying or disfiguring the same. For kitchen gardens, where utility is more considered than mere ornament, there is no doubt that brick would be the most serviceable, and if a suitable selection were made to get such as are of a hard nature and thoroughly burned, they would last for many years in good condition. Indeed there is no limit to the endurance of some makes of these, and notably so with those from Staffordshire that are much in use at railway stations, and which are almost as hard as iron, so that there need be no fear of breakages, as they are impervious to wet, and frost has not the slightest effect on them. If these could only be obtained with the edges on one side of the brick rounded off and left with a recess at each end, for a dab of cement to be put when laying them, so as to keep them firmly together and hold them in their proper position, it would leave little to be desired, and it is to be hoped that makers will take the hint and mould them in this form. Edging tiles have been so disappointing hitherto, from the way they get displaced and the manner they are shivered about by frost or become disfigured by breakages, that most people have abandoned their use, but with such as these they would only be too glad to revert to them again, instead of employing Box, which is always a harbour for slugs, which are a plague in most gardens.

Were it not for this, and the gappy state into which it frequently gets, through the carelessness of labourers, there is no edging perhaps that has a better appearance than Box; indeed except for the time and attention necessary to keep it in order, and other drawbacks already noticed, it has everything to recommend it. In cases where this is decided on, and it is desired to have it of a special green colour and in first-rate order, healthy preparations should be made that it may have a suitable soil, one of the principal ingredients in which should be some calcareous matter, such as pulverised mortar rubbish or fine chalk. Either of these mixed up with the border where the Box is to be laid in will ensure its well-doing; and another important thing in its management is to clip it

at the right time, which is about the middle or end of May, according as the season may be early or late. Box clipped at that time makes just sufficient growth to give it a close compact appearance, which it retains till it starts afresh the following spring.

In suitable soils, such as are loamy and rather inclined to adhesiveness, *Gentiana acutis* may be used with most excellent effect, indeed there is no place where the beauty of this plant is seen to such advantage or produces such a striking effect as when grown in long lines as an edging. In order to get it to do really well, and produce its lovely blue flowers in the free way it is capable of doing, its roots must have a cool moist bottom afforded them, which can best be secured by making use of any very large pebbles or flints that may be handy to hand for the purpose. These should be so arranged as to afford room for a tuft of *Gentian* to be planted between each, which can be done by nearly burying up the stones at from 3 to 6 inches apart, when the plants will spread and unite over them, and form such a mass of colour most beautiful to behold, and which cannot be secured in anything like the same state of perfection in any other way. The roots so favoured enjoy much the same conditions they do when growing on their native Alps, where, from the constant melting of the snow, they are kept cool and moist, while the tops of the plants are exposed to the cheering sun, under the influence of which they expand their blooms. J. S.

NOTES FROM A LANCASHIRE GARDEN.

February 14.—Let me take advantage of this quiet moment in a garden's life, and speak of the year that has passed, and the year that lies before us. There may be little indeed of interest in the present, but at least the "pleasures of memory" and the "pleasures of hope" are ours; and yet, except when all the earth is frost-bound, we are sure to have some flowers to cheer the darker days. Here is the "hardy Laurustinus," Mrs. B. and the "yellow" and "white" clusters of golden Aconites peep up under the bare branches of a Chestnut; here tufts of Snowdrops pierce through the grass upon the lawn; here the yellow winter Jasmine stretches out sprays all laden with bloom, and looks in upon us through the great hall window. Then in the hall itself we have had *Primulas* and Roman Hyacinths, and the spring bulbs are now taking their place.

What an open winter it has been, but how incessant has been the rain. Day after day the men have had to leave off work, and spend their time in cutting up wood in the log-house. I have been relaying part of my lawn, and the task has been terribly delayed, but it is done at last. We have also been altering some of the garden beds. We have cut out the large *Athanas* from the border where it was, and it now stands alone, with a gravel walk round it. The *Buddleia*, too, is now the centre of a round bed, with clumps of Iris growing underneath it.

This last year was a very bad one for us. The spring was cold and treacherous—the summer was broiling—the autumn was rainy and ungenial. And yet, while I complain of the summer, I recall delightful summer evenings, when the house was too hot, and we sat upon the terrace after dinner with the claret and dessert; in the air was all perfume, and the light lingered long in the east over the church steeple, 3 miles away. The big dog and the children were at our feet, and as the night fell there was no sound but of our own voices to break the silence and the peace.

But one night, a little later on, a strange noise alarmed our gardener. It was the jarring of the nightjar, an unusual bird with us, and I don't think he quite knew what to make of it. However, our poor visitor was shot, and is now stuffed, with a cockchafer in his mouth, and stands under a glass-case in the dining-room.

In the porch a swallow had built her nest, and it was pretty to watch her as she skimmed round and round in anxious flight till we had left the place. I look upon it as good luck to have a swallow building on the house. We all remember how Bangoo says, when he notices their "pendent beds" on Mabeth's castle that—

"Where they most breed and haunt, I have observed,
The air is delicate."

But all poets love the swallow. Can any of us, who has once read it, forget *Les Hirondelles* of Béranger, and how the French captive among the Moors questions the swallows about his country, his home, his friends, which they perhaps have seen? Then is there not Tennyson's delightful—

"O swallow, swallow, flying, flying south,"

and bearing the message that—

"Dark and true and tender is the north."

Even American poetising of the swallow, and Lowell has one particularly happy line when he describes—

"The thin-winged swallow skating on the air."

But I must get back to the garden and the flowers. The *Desfontainia spinosa* flowered twice with me—

more ordinary sorts, white Haricot Beans, Scorzonera, Salsify (the "Oyster plant" as it is sometimes called), and Water Cress.

A word now about our spring beds. We shall have one entire bed of Crown Imperials, which ought to look handsome, and two of *Ranunculus*, one mixed, and one of the brightest scarlet. The other beds will be for the most part much as I have described them in former years.

This open winter has given us more Violets than we ever had before, but which are certainly not the "Violets *dim*," of which Shakespeare speaks, but deep, richly coloured blossoms. The Wallflowers, too, have scented the air on the few sunny days we have had, and I now see the *Rhododendron dauricum* and the *Daphne Mezereum* just bursting out.

represented the general opinion of cultivators on the subject, we advert to the question again to show how the case really stands.

The original name was *Olea Aquifolium* of Siebold and Zuccarini. In due time the flowers were found to be different from those of *Olea*, and the plant therefore became *Osmanthus Aquifolium*. This plant in its native country (Japan and China) is so variable in the shape of its leaves, as the specimens in the Kew herbarium testify, and as M. Franchet and Savatier tell us that it is impossible even to distinguish varieties, as on the same branch leaves of very varied form may be met with. Miquel had observed and recorded the same fact. Such being the case, we were justified in applying the name *Osmanthus Aquifolium* to the plant commonly known in gardens as *Olea ilicifolia*.

Then comes the question, "What is *Osmanthus ilicifolius* of the nurseries? To this we answer, after examination of the fresh flowers of both forms, as well as of the books and dried specimens, that the so-called *O. ilicifolius* is the same as *O. Aquifolium*. On the wild plant it is easy to pick leaves of both so-called species from the same bough. Seeing, however, that in British gardens the two plants maintain their distinctive characters, and do not as yet manifest any such sportive tendency as we have mentioned, we suggest that for garden purposes two names be made use of. The broad-leaved less deeply cut variety, commonly known as *Olea ilicifolia* (fig. 37), we propose should bear the original and correct name of *O. Aquifolium*. The more deeply cut form we propose should still be called (as it is now) *Osmanthus ilicifolius* (fig. 38). Botanists will with greater pro-

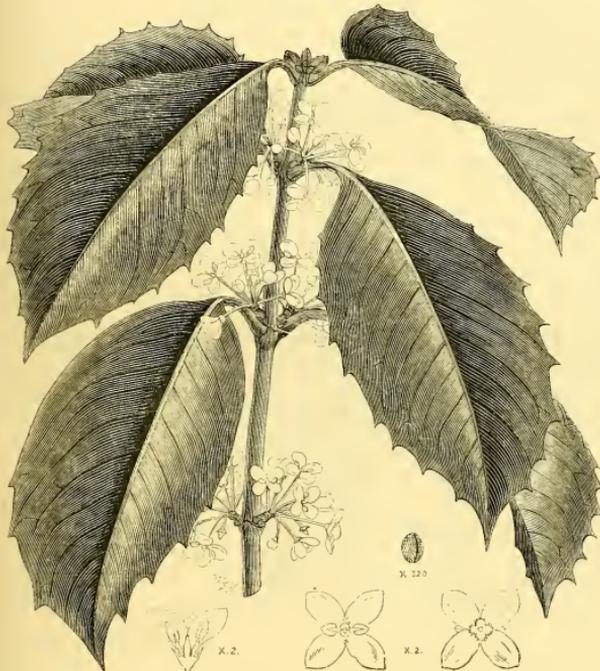


FIG. 37.—OSMANTHUS AQUIFOLIUM.]



FIG. 38.—OSMANTHUS ILICIFOLIUS (FLATTENED BY PRESSURE)

piety call it *Osmanthus Aquifolium* variety *ilicifolius*, though, after what has been before said, it is doubtful whether they would think it worth while to keep up such a variety.

THE KITCHEN GARDEN.

The management of the kitchen garden is a branch of practical gardening which does not receive from gardeners generally the attention it deserves, and, with your permission, I would beg to address myself mainly to my younger brethren in the profession, because it is from their ranks that the head gardeners of the future must be chosen.

At the present time the want of a knowledge of the culinary garden is undoubtedly an ugly fact in connection with the rising generation of gardeners. This no doubt arises from one of two causes—either from want of opportunity, or a disinclination on the part of young men to undergo the laborious drudgery of cultivating the soil.

Journeyman gardeners who can very creditably stake a Heath, turn a large Azalea bush into a shapely pyramid, or neatly train a Peach tree to the wires, are frequently met with, but, whilst these things are all very desirable in their way, how seldom do you find a young gardener who can make an Onion-bed in a workmanlike manner; and I hold that no man has a right to call himself a gardener until he is capable of making a neat and trim Onion-bed.

Again, how rarely do we meet with a young gardener having any knowledge of the different varieties of either hardy fruits or vegetables; and I ask how many are there who can name at sight, say half a dozen sorts of Gooseberries or Strawberries?

* Read at the Darlington Gardeners' Institute on the evening of February 15.

once in July, and once at the beginning of October. It is the greatest addition to the garden I have made for a long time. Now, too, I have got another curious Holly-leaved shrub, the *Osmanthus ilicifolius*, and with this I hope to be equally successful. Other flowering shrubs I have also been adding to the shrubberies, and to the clumps in the outer garden. I cannot bear to see a lawn cut up into little twisted knots of *Verbenas* and *Pelargoniums*, but colour is wanted and flowering shrubs with a few herbaceous plants seem to me to give all that is necessary. So I have been planting among the *Lilacs*, *Syringas*, *Brooms*, *Azaleas*, *Rhododendrons*, and *Laburnums*, several varieties of *Spirea*, and many other beautiful things which scarcely any one takes the trouble to grow, and of which I will tell you more hereafter.

Our fruit this last year was miserable. We had some Figs and Apples, and that was really almost all, when once the summer fruit was over. Our vegetables are generally pretty good, and we grow besides the

The *Crocuses* are late, but their yellow cups are peering here and there above the soil. The Christmas *Roses* have been beautiful, as they always are, and I have planted in one of the shrubbery borders some other varieties of *Heliolepis*, all well worth growing.

The rooks have been noisy among the Elms, for is not to-day the sacred festival of St. Valentine? They and the other birds will now begin to pair and build, and all the sights and sounds of spring will come to us once again. H.

NOTE ON OSMANTHUS.

SOME time since we published a woodcut of a very useful and now well-known evergreen Japanese shrub, under the name of *Osmanthus Aquifolium* (fig. 37). No sooner had we done so than the propriety of our procedure was challenged by various nurserymen and amateurs. Knowing that our correspondents rightly

How many could at sight name three varieties of Peas or Broccoli?

This, I think, a state of things which we ought all to try and remedy without further delay, as I can conceive nothing so humiliating to a head gardener as his being obliged to acquire a knowledge of kitchen gardening from those under him; and what can lower him so much in the estimation of his men as an inability to show them how to properly handle the spade or rake—arts which cannot well be learnt in after life.

I would sincerely urge those who have not had the good fortune to be well trained in the kitchen garden during their apprenticeship to lose no time in placing themselves under some good practical gardener, where kitchen gardening is well done, even if this step should involve pecuniary loss and a sacrifice of personal comfort.

When a gardener enters upon his first responsible situation he should make it one of his first duties to take stock of the kitchen garden, and, having ascertained as soon as possible the requirements, likes, and dislikes of the family, he should arrange his crops for the year, allotting as nearly as he can to each vegetable the proportion likely to be at his disposal, and taking care to avoid a glut or a famine at any time. The following is the plan I adopt.—On some fine day in autumn I go round, pocket-book in hand, and on one page I draw a rough plan of the garden, on which I affix a number to each border and quarter. I then number the succeeding pages to correspond, and proceed to allot the next year's crops to each plot, arranging what is to be dug or trenched, or heavily or lightly manured.

The south borders I consider most valuable, inasmuch as the earliest vegetables are always most highly appreciated, for which reason these borders should always be divided into several parts, of which the first would be occupied by early Peas, sown about the second week in November, and which I consider a good crop to precede Strawberries for the following year. Allow me to remark in passing that notwithstanding all the high trumpet soundings about Alpha, King Edward, Emerald Gem, Blue Peter, or William the First, I have not found one to surpass the old Dillstone's Early for the first dish.

The adjoining piece of ground I give to early Potatoes, always taking care to have them well sprouted before planting, and for the first dish I have not found any better than the "Early Celery," of which however there are many superior kinds, representing so-called improved Asparagus Kidneys. The true sort is easily known, as when commencing their growth, they have smooth yellow sprouts with green points, whilst the bulk of the others have purple sprouts.

In the remaining portions of the south borders places should be found for winter Onions, early Carrots, Turnips, Cauliflowers, Broad and Kidney Beans, Radishes, Lettuces, &c., and, when these come off, the land is usually in good condition for late crops of French Beans, Spinach, Turnips, saladings, &c.

The east and west borders are always useful for a variety of crops successional to those grown under more favourable circumstances, whilst the north border is valuable for late Strawberries, Turnips, saladings, Parsley, herbs, and many other things. I may remark that it is better not to occupy fruit tree borders with tall vegetables or anything likely to injure the trees on the walls.

Turning now to the main portion of the garden, we shall have to determine how the quarters are to be cropped. In the first place a good space must be set apart for Potatoes, and in my experience I have always found that, in addition to mature, Potatoes are much benefited by a little fresh line being applied to the land at planting time, besides the good done to the land, the quality of the Potatoes is much improved. If the land has been recently trenched, and is in good condition after the second early Potatoes, fine crops of late Broccoli, Savoy, or winter greens may be got, and these in turn may be advantageously succeeded by Celery. The year following the main crop of Peas will do very well where the Celery has been, taking care to have the Peas where the Celery trenches were, as in this way the manure serves for two crops.

The part of the garden allotted to Carrots, Beet, Parsnips, and Onions ought always to be trenched at least two spits deep some time during the preceding autumn, and well manured for the crop of Onions.

The best time to sow spring Onions is so soon as

you can trample on the ground without the soil sticking to your boots. I have for a number of years found wood ashes very beneficial to Onions, Carrots, Beet, and Turnips. When the seed is sown I have the drills filled up with the ashes; and the back of the rake is then drawn over the whole, and in due time the seed sprouts strongly through the loose surface, which never cracks, no matter how many showers there may have been in the interim; and, moreover, I never knew Onions, when treated as I have described, to be badly attacked with the grub so common in old gardens. Onions make a very good crop to precede Cabbages, as they are got off the ground early in the autumn, and the Cabbage plants get a good hold of the soil before winter sets in.

You will observe I have not said anything about such vegetables as Asparagus, Globe Artichoke, Seakale, or Rhubarb, which are so often found in back, out-of-the-way places; these I consider most valuable vegetables, and they will well repay any extra labour bestowed upon them. Before making a new plantation of these be sure to have the land well manured and deeply trenched, then, with ordinary attention afterwards, success is almost certain.

For the opportunity of figuring this fine species (fig. 39) we are indebted to the courtesy of J. T. Peacock, Esq., Sadbury House, Hammersmith. At one time it was supposed to be specifically identical with *E. viridescens*, recently figured by us (p. 172), but Dr. Engelmann now considers the two as distinct. In the new *Botany of California*, vol. 1, p. 245, the plant is thus described:—

"Heads middle-sized, or large oval, or cylindrical; often profliferous at the base, with 2-7 obtuse, somewhat tubercled, or woolly, spinules, and 2-7 depressed top; reddish spines, all stout and annulated, recurved or flexuous, 12-18 exterior, the lowest usually hooked, and four very stout central ones; yellowish flowers, 2 inches long, with 40-50 stamens; the petals sepals on the exterior are only twenty-five fringed petals. Stigmas and fruits as in *E. viridescens*." (*E. cylindracea*, Engelm. *Cact. Mex. Bound.* 25, t. 30; *E. viridescens* var. *B. cylindracea*, Engelm. in *Amer. Journ. Science*, 2 ser., 14, 338.)

The plant is a native of the desert of Colorado, and is distinguished from *E. viridescens* by its taller growth, more numerous ribs, larger and more numerous spines, and larger flowers and fruits.

GRAMMATOPHYLLUM REMPELRIANUM, n. sp.

Unexpected pleasures are the best ones. You have believed in a new large-flowered Grammatophyllum, with a lip resembling that of *Phajus tuberosus*, but without its basilar fur? The flowers are larger than those of the favourite Grammatophyllum Ellisi, Lindl., scarcely smaller than those of the three heroes of the beautiful genus, macranthum, speciosum, Wallisi. There it is, the newest sailor from Madagascar. If I rightly understand, *en route* for Mr. Steven's garden. The flowers are like the flowers, as far as I may judge of it from dry specimens, is unusually strong and firm. Sepals oblong; petals ovate; lip trifid, the side lacinia broad, angled, the middle lacinia protracted, narrower, emarginate. There are two grand, obtuse-angled lamellae, and a small one between before the base of column; and three smaller angular lamellae before the end of the lip, and both connected with emerging lines. "Colours?" Don't ask too much. The flower looks as if it had been white or light yellow, but I can take no responsibility. But that I see not decidedly is some purplish hue on the tip of the lip. I obtained the flowers from my excellent correspondent, Mr. Luedemann, 18, Boulevard d'Italie, Paris, the famous Orchid Eden, who once directed Mr. Pescatore's Orchidic Eden. They have been obtained by Mr. Keweler, of Nancy, who is said to have made a curious importation from that mysterious island, Madagascar. H. G. Rehb. j.

* *Grammatophyllum Rempelrianum*. — Grandiflorum; sepalis oblongo-ligulatis obtuse-acutis; petalis multo latioribus; lacinia suboblongo, prope Phajus tuberosus; lacinia latiuscula, subulata, lobis cordatis; lamellis parvis, curvis angulatis magnis geminis in basi media, intersecta curvis angulatis parvis geminis in basi laterali; columnis lacinia apicis incrassatis conjunctis. Videntur hinc generis planta certissime nova. Mosco me unicum pollinatum incompletum vidisse. Madagascar.

PARAGUAY TEA, OR MATÉ.

I WAS delighted to see in your issue of December 30, 1876, that among the novelties presented at the Centennial Exposition at Philadelphia was the Maté, a decoction of the leaves of the Maté tree (*Ilex paraguayensis*), and that a pamphlet had been written on its claims, which pamphlet had been translated into four of the European languages, viz., Portuguese, French, English, and German. The quantity exported is said to be over 95,000,000 lb. annually. The home consumption in Paraná is said to be about 9,000,000 lb. annually, and that of Rio Grande do Sul about four times as much. It is claimed for the Maté that it is very nourishing, and it is spoken of as "the king of teas for a day," and that it has become the favorite beverage of a large portion of the people of South America. It costs about 5*d.* per pound in Rio Janeiro, and 6*d.* is estimated as a supply for one individual for a whole year; but the author of the report wisely adds that it requires intelligent expert and observation to appreciate the real qualities of the plant. This account is just such as a commercial man would give of the wares he offered along with the canister containing the goods, but leaves out of the question the whole art of preparing the "black drink" of the Indians. It is mentioned by the Jesuit Fathers, and from all that can be gathered from authentic sources there were three species of Hollies used—namely, the *Ilex paraguayensis*, *I. Daboon*, and *I. dipyrrena*. Now, this last species grows freely in England. I grew it in Devon, and find and choose it as it is sweeter than the *Ilex Aquifolium* that it requires some skill to tell them apart. The Paraguay species differs widely from the others in size of the leaf and in general appearance; but when I roasted the few leaves I had of this species it yielded the same characters as the other, and it is evident that the tea-roasters of Paraguay could make good tea out of all the three Hollies of the country. Be that as it may, I am delighted to see such evidence of the great importance of an article which I have taken so much pains to bring to the front, and Dr. Antonio Joazim de Macedo Soares deserves the thanks of the whole European family for exhibiting the Maté in its true colours. There is little doubt that if our native Holly grew in the Argentine Republic, its foliage would be roasted, and used as a beverage. It is worth trying every experiment at home; it is not a quackery where 70,000,000 lb. are got annually for home and foreign supplies. *Alex. Forsyth.*

DUPPLIN CASTLE,

THE seat of the Right Honourable the Earl of Kinnoull (see fig. 49, p. 245), one of the most beautifully situated mansions in Scotland, stands about 4 miles west from Perth, and about the same distance from the Bridge of Earn, and commands magnificent views of nearly the whole basin of the Earn. The Castle was accidentally burnt down in 1827, and the present one, which is in the Elizabethan style of architecture, and is most tastefully and elaborately furnished, was rebuilt at a cost of £30,000. Dupplin Castle was visited by Her Majesty Queen Victoria and Prince Albert in September, 1842, in their progress to the Highlands. This neighbourhood was the scene of an engagement on August 18, 1332, between Edward Baliol and the Earl of Mar, which ended in the complete overthrow of the latter. There are some monuments of antiquity in this quarter, but whether they have been erected as memorials of this disastrous battle, or claim an earlier era, is uncertain. There is also here a stone cross of enormous workmanship, quite entire.

At the south of the Castle, and close up to it, is a very neat flower garden devoted to the usual bedding-out plants, with figures cut in the grass. Here there are four very unique bronze vases of large size. At the south side of this garden there is a wall 4 feet high, covered with Ivy. To the right there is a handsome balustrade stair, where neat bronze vases of smaller size than the above have been placed at intervals along the top. This stair leads down to the lower flower garden. Here the walk curves gently to the left round the top of a deep dell, at the bottom of which there is a fine run of water, and in front of the Castle there is a pretty waterfall of good height, which adds much to the appearance of the place. The banks of this beautiful dell have been most judiciously planted with Rhododendrons, Ferns, Spices, Bays, and Yews, with here

and there a fine *Cupressus Lawsoniana* and *Cedrus Deodara*. To the east again there is what is called the Horse-shoe Dell, which forms part of the above, and is planted very much in the same manner. This fine glen is seen in nearly all its extent from the windows of the Castle, and when the *Rhododendrons*, &c., are in flower the effect is most charming. At the top of the dell, and stretching away to the south and east, there is also a flower garden. In this department there are large clumps of *Rhododendrons*, each figure consisting wholly of one variety, edged round with hardy mixed *Azaleas*. As those plants have not as yet attained a very large size, there are some open spaces here and there in the figures. Advantage has

Birch, *Cedrus Deodara*, *Thujaopsis borealis*, *T. gigantea*, and an immense specimen of Portugal Laurel.

This garden is intersected through its entire length by a gravel walk 7 feet wide, which at the south-east corner turns round sharply to the left, and leads straight on to the dell above-mentioned. At this point a complete clearance has been made of nearly everything lofty that would obstruct the view from the Castle. Looking north by east, the prospect is almost univalued. The eye takes in nearly the whole of the lower valley of Strathearn, with the beautiful River Earn winding its way in gentle curves towards the sea. About 4 miles distant is seen the finely-wooded

and a little further off is Condie, the seat of Lawrence Oliphant, Esq. One cannot fail to be struck with the beautiful appearance of this district. A little further on stands Ardasie, the seat of the late Donald Lindsay, Esq., with its beautiful deep dell, full of openings, where one gets sweet glimpses of rural scenery. A little further west stands Invermay, celebrated in song. Here there is a finely sculptured stone, of a very ancient date. Two miles further off is Duncrub, the residence of Lord Kollo, and looking still to the west, a good distance off, are seen the woods and mansion of Ardoch, the seat of G. Home Drummond, Esq. Here there is a Roman camp, a celebrated remnant of antiquity, considered the most

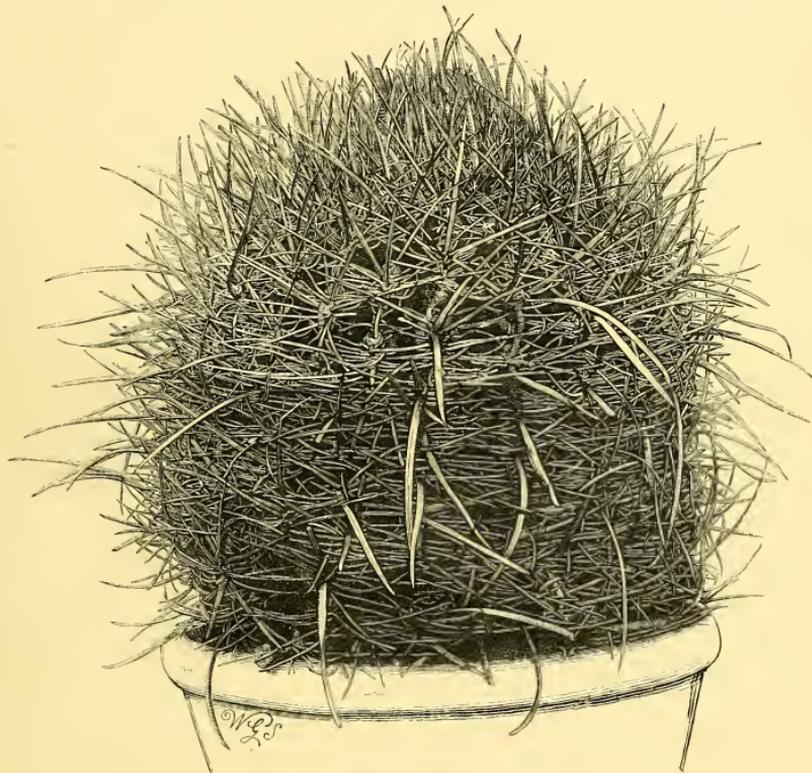


FIG. 39.—ECHINOCACTUS CYLINDRACEUS.

been taken of these to sow the single scarlet Poppy, and when in flower the effect at a distance is very striking indeed. Here there are a few very fine specimens of Swedish Junipers, Irish Yews, &c., and in the centre of the garden there is a small stream of water, which is crossed by a very neat rustic bridge. The banks of this stream, which slope down to the water, have been planted with large clumps of Bays and common Yews, all neatly and evenly cut back to within 2 feet of the ground. Here there are a few very fine specimens of *Araucarias*, averaging 40 feet in height; and also large figure-beds of *Rhododendrons*, each figure planted with one sort only, and bordered with *Azaleas*. The same style is carried out here as in the first-mentioned. There are a few very fine trees at stated distances of Silver Fir, Weeping

and picturesque Hill of Moncreiff, with Moncreiff House, the seat of Sir Thomas Moncreiff, Bart., on its southern base—a fine place, surrounded by many both natural and artificial beauties. In the distance the view is bounded by the hills in Fifeshire, some 20 miles off, and, nearly opposite, the thriving town of Dundee. Turning west, the whole range of the Ochil Hills is seen. On their northern slopes there are the prettily situated little towns of Newburgh and Abernethy. The latter is supposed to have been an ancient Pictish capital. Here there is a very fine specimen of a round tower, in good preservation, 74 feet in height, and built about the middle of the twelfth century. On again, there is the picturesque Pass of Glenfarg and Freeland, the seat of Colonel Wood, with its grand old Lime trees,

perfect of its kind in the kingdom. The whole measures 1060 feet by 900 feet, and was capable of containing over 20,000 men. To the north in the distance from this point is seen the pretty village of Crieff, with the hills all about Drummond Castle, &c.

About 6 miles east from Crieff are the ruins of Inchafrae Abbey. It was the Abbot of Inchafrae that said mass in sight of the Scottish army at Bannockburn, and exhorted them to be valiant in combat for their rights and liberty; and to the east again there is Methven Castle, the seat of W. Smythe, Esq. Within the grounds of this mansion there is an old Oak, called the Pepperwell Oak, with a trunk 18 feet in circumference. A little to the north of the above place is Lynedoch House, and near to it, in a secluded spot called Dronch-haugh, at the foot of a

beautiful bank or cave of the same name, on the River Almond, is the grave of Bessie Bell and Mary Gray, celebrated in pathetic song. Bessie Bell, according to tradition, was the daughter of the ordinary brewer, and Mary Gray of the Laird of Lynedoch, mutually attached in strong and tender friendship. They lived together at Lynedoch when the plague broke out in 1645, and to avoid it they retired to a romantic spot called Burnbraes, on the estate of Lynedoch, and there in a bower or temporary dwelling lived in complete seclusion. A young gentleman of Perth visited them in their solitude for the purpose, it is said, of supplying them with food, but unhappily he communicated to them the very pestilence from which they had fled. Falling victims to the disease, they were, according to the usage of the period, refused sepulchre in the ordinary burying grounds, and they sleep together, as they had latterly lived, amid a scene of solitude and romance—

"They thocht to lie in Methven kirkyard,
Among their noble kin,
But they maun lie on Lynedoch brae
To beek forenent the sun."

The late Lord Lynedoch put an iron railing round their grave, and planted several Yew trees beside it.

From this district fine views are had of the highland mountain ranges of Ben-y-gloe, 3704 feet, the lofty hills that form the northern part of the great Athole forest, and the finely wooded slopes all about Dunkeld. To the east from Lynedoch House stands the ancient Castle of Ruthven, the scene of the memorable incident known in Scottish history as the Raid of Ruthven. Here tradition has it that an extraordinary exploit of a young lady has added to the notoriety of this Castle, and has given the name of "The Maiden's Leap" to the space between its two towers, which though now united by late buildings were originally separate. The lady was a daughter of the first Earl of Gowrie, and her exploit consisted in leaping in a fit of terror from the leads of the one tower to the battlements of the other, a space of 9 feet 4 inches, and over a chasm of 60 feet. In the middle distance, about 2 miles off, is Scone Palace, surrounded by fine healthy plantations of large extent, with the River Tay sweeping round its western base; and 2 miles to the south is the fair city of Perth, with its beautiful surroundings. A short distance to the east stands Kinfauns Castle, the residence of Lady Grey. Such are some of the environs of this grand old place.

Returning to Dupplin, and entering by the north lodge, there is here an avenue of good breadth nearly mile in length, which runs on in almost a straight line for two-thirds of its length, when it turns sharply to the right, and leads on with a gentle curve to the left till the Castle is reached. To the right from the lodge, and leading on to the south, there is a fine row of grand old Beeches, while here and there between these trees Scotch Fir has been planted as underwood, which adds very much to the appearance of the place during winter. In this avenue an octagon is passed through, at the east end of which, and extending on to the lodge, there is a row of very healthy *Araucaria imbricata*, from 15 to 20 feet in height. Between these, and a little in front, are clumps of *Rhododendrons* recently planted, which can be seen in full time to produce a good effect. In front of the Castle, and stretching away to the north-west in a straight line, there is an avenue 20 feet broad, passing through a thriving plantation, with many trees in it of very large size, and in it about 600 yards from the Castle up this avenue, and to the left, there is the Pinetum, occupying a large space, and finely sheltered. Here I found the ground intersected in all directions with grass walks 20 feet broad. I have noted a few of the plants, with their heights, that struck me as being particularly fine:—

Taxodium sempervirens	Feet.	Thuja Loblii	Feet.
<i>Picea nobilis</i>	35	<i>Cedrus Deodora</i>	40
<i>Pinus grandis</i>	35	<i>Abies Douglasii</i>	40
<i>Northmanniana</i>	40	<i>Weylandia gigantea</i>	33
<i>Phedonatica</i>	40	<i>Cryptomeria japonica</i>	30
<i>Thuja Warreana</i>	40	<i>Cupressus Lawsoniana</i>	25

I may here mention that in this department the Earl of Kinnoull personally takes great interest, and Lady Kinnoull has been long known as an ardent lover of flowers, and for her fine taste in gardening matters. She at her own expense some years ago set agoing what is termed a Parish Flower Show, where prizes are given to the cottagers for the best-cropped kitchen gardens, and nearest and best arranged flower-plots in front of their houses, which has been the

means of doing much good among those whom it was intended to benefit. May such kindness and generosity be always appreciated as it deserves. In Lady Kinnoull's old and infirm have a true friend.

To the west of the above there is the parsonage, a very neat, substantial building; and a little to the south there is what is termed the western approach, in the midst of which, about midway between the entrance and the Castle, there is a circular piece of grass, kept short, of about 3 acres in extent, where the avenues sweep round on both sides. Round this circle there is a row of immense Beeches, with clean stems, and trunks branchless to a great height. From the Castle the road leads down to the kitchen garden, by a grass walk some 10 feet broad, through a deep well wooded glen. Here there is a line of Spanish chestnut of very large size and great age; and to the left, on the steep hillside, there are wonderful specimens of *Cupressus Lawsoniana*, *Yew*, &c. Just outside this plantation, and before entering the kitchen garden, there is a space of ground in short grass, sloping sharply to the south. Here there is an *Araucaria imbricata* some 40 feet in height, considered one of the most perfect specimens of its kind in the country. A little from the above there is a *Cryptomeria japonica* 30 feet in height, and bushy in proportion; a grand plant.

THE KITCHEN GARDEN.

Entering the kitchen garden from the west there is first a greenhouse, 100 feet by 17 feet, filled with a miscellaneous collection of over 1000 plants, largely the following *Camellias*—*imbricata*, 11 feet by 5 1/2 feet; *Triumphans*, 10 feet by 4 feet; *Mathotiana*, 7 feet by 3 feet; *Lady Hume's Bush*, 4 feet by 4 feet; *Frankfortensis*, 8 feet by 4 feet; *Jubilee*, 5 1/2 feet by 3 feet, with a host of others of smaller size, also many large plants of *Rhododendrons* in tubs. The next is a small house, 13 feet by 9 1/2 feet. This is chiefly planted with *Tea Roses*, which are found very useful for cutting purposes during the season. The next is a Fig-house, 55 feet by 10 feet, planted chiefly with Lee's Perpetual, good healthy plants, bearing a fine crop all the year. The next is a Rose-house, 12 feet by 10 feet, planted with *Roses Lamarque* and *Climbing Devonians*, both sorts very fine; next a Peach-house, 90 feet by 10 feet; *Grosse Mignonne*, *Noblesse*, and *Chancellor* are the only three sorts in this house—good trees, and very fine crop. The next is a Nectarine-house, 45 feet by 9 1/2 feet, the trees in it not yet in a bearing state; and next come a Plum-house, newly erected, 40 feet by 9 1/2 feet, a viney, 60 feet by 9 1/2 feet, and a Peach-house, 30 feet by 9 1/2 feet; the last two are in course of erection.

To the extreme east of the garden there is the Melon-ground, &c. In it the first house is a Cucurbit-house, 40 feet by 9 feet. The second is a Gardenia-house of the same size; the plants in this house are remarkably well managed, and flower most abundantly. In front of the last-mentioned house there are two brick pits, 80 feet by 6 feet, and to the south, in a lower division, there is a new span-roofed house, running south and north, 21 feet by 11 feet. There are other two houses of the same dimensions as the last, in course of erection. These three houses are to be entirely devoted to plant culture. In front of them there is another range of brick pits, 70 feet by 6 feet, used for growing on young soft-wooded plants, &c.

Returning to the kitchen garden, there are in the centre three divisions of houses, running east and west, on three different elevations, divided by a span-roofed verandah, 66 feet by 11 feet. This house is planted its entire length with climbers of the finer sorts, and on its different stages there are some excellent plants of *Camellias*, among which are the following—*alpa* plants, 10 feet by 4 feet; *Colvillii*, 10 feet by 5 feet; *Marchioness of Exeter*, 6 feet by 4 1/2 feet; and many others that might be enumerated. All the houses are entered from this verandah, right and left, with a handsome stairway leading down to each division. Entering from the north end, the first to the right is a Gardenia-house, 46 feet by 10 feet, filled with plants of good size, and remarkably healthy. To the left is a house 48 feet by 10 feet, filled with finely-established plants. The second division to the right is an Orchid-house, 36 feet by 15 feet. In this house I found a very select collection of the above, among which the following were very superior:—*Lælia* anæta, *Dendrobium Dalhousiana*, *D. nobile*, 10 pots of *Calanthe vestita*, throwing up grand flower-spikes; *Cattleya crispata superba*, *Phajus grand-*

folius and *P. Wallichii*, *Corylogyne cristata*, *Dendrobium Wardianum*, *D. Devonianum*, *D. densiflorum*, and *D. thyrsiflorum*, *Vanda savais*, &c. To the left is a plant stove, 26 feet by 15 feet, with a very select collection, but the growth of large plants is not encouraged, as many in this department are required for table decoration.

Entering from this by a few steps down, there is an intermediate house, 28 feet by 10 feet, principally filled with cool Orchids. The next is a general forcing pit, 36 feet by 6 feet, with a small stove leading off from it, used as a nursery for new and rare plants as occasion requires. To the right is a Fern pit, 36 feet by 6 feet, containing a choice collection in fine condition. Leading off from this to the left is a miscellaneous intermediate house, 28 feet by 11 feet, with a small stove adjoining, principally filled with choice exotic Ferns. Descending to the lower division, to the left is the potting shed, 48 feet by 15 feet, and to the right is the stockhole, above which is a greenhouse, 27 feet by 14 feet, principally used for wintering *Pelargoniums*, and resting bulbous plants when past flowering. At the extreme south end of the verandah are three lean-to vineries. The centre one is a Black Hamburgh house, 46 feet by 16 feet; a most excellent crop all over the house. To the left is a late house, 31 feet by 16 feet, planted principally with Black Alicante, Lady Downe's and Gros Colman, and other fine crops. To the right is a Muscat-house, 31 feet by 16 feet, with a choice crop. I may mention that the whole of these divisions are heated by one of Crombie's boilers, which does its work most efficiently.

The kitchen garden here is over 8 acres in extent, and all sorts of crops are had in abundance. Over 200 Apple trees on Paradise stocks have been planted in it lately, most of which have done well, and carried fine crops last season. To the north of the garden there is the young men's dwelling—a most substantial two-storied erection, most comfortably fitted up, to the west of which, on a steep, sloping bank, there are a few extraordinary specimens of *Cupressus Lawsoniana*, perfect models both in shape and size. To the south of the garden, on a gentle eminence, stands the gardener's house, a handsome modern erection of two storeys, which for situation, comfort, and convenience is just what a gardener's house ought to be.

In concluding this cursory notice I have to compliment Mr. Browning, his Lordship's head gardener here, who is well-known as a thorough enthusiast in his profession, on the next condition and high state of culture that I found everywhere in, and which gives ample evidence that he was a faithful and painstaking gardener. *John Downie, West Coast Nursery, Edinburgh.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—If the stove is a good light house, and the plants are in a vigorous healthy state and well elevated up to the glass, the temperature may now very shortly be increased, letting it be in the daytime 80° or 85°, on very bright days, 5° higher will do no harm so early as this in the season. I would rather let the thermometer run up as high as 90° than give air, more particularly at the roof, the external air being so different to what the plants at this time require. A lower temperature than above recommended must be maintained till later on, where the house and plants are not such as here spoke of. Stop the fires sufficiently soon in the morning, when there is a probability of the day being bright, to prevent the house getting too hot. All potting here should be got on with as quickly as possible, and brought to a conclusion as soon as circumstances will permit. The syringe may be used more freely now than the days are lengthening; but it is necessary to exercise judgment in this matter too much syringing is not good for plants that have delicate roots, and will do more harm by excess of moisture to them. All twining and climbing subjects must be well and regularly attended to in training their shoots, so as to never let them get entangled. If this occurs, the points are sure to be injured more or less in separating them. Where all the stove plants are grown in one house, those that require shading should be put at one end, leaving such as do not need it at the other. It sometimes happens that much mischief is done through the plants that are not protected from the sun by shading, but they are. It will be well to get the shading ready, so as to prevent this happening. The space devoted to the roots of stove climbers is often very small, and as those that are planted out are principally of a vigorous, tree-growth habit, and the soil is very liable to become too poor to enable them to either flower or grow as they ought to do. It is a good plan every

year to remove as much of the surface soil as it is possible to get away without much disturbance of the roots, replacing it with good new material. *Ardisia crenulata* and *crenulata alba* are extremely useful decorative plants. They may be increased either by seeds or cuttings. They are best to be sown in shallow pans filled with sandy peat, just covered with sand and put in a brisk heat. As soon as the young plants are big enough put them singly into small pots. If last year's seedlings have not been potted on, they should be put in now, giving them a shift; do not, however, let them have too much root-room, as, like all other plants intended for the same purpose, they are much the best in as small pots as they will succeed in. *Achimenes* started some time ago possibly in the autumn, and are now ready to bloom in. When grown in pots they are the most useful for ordinary decorative purposes of a comparatively small size. Do not put too many bulbs into a little pot, and when the growths get 4 inches long stop the plants; this will cause them to break out, and be bushy and dwarf. Baskets for *Achimenes* ought to be small or medium-sized, unless the houses they are intended for are very large. They are the best made of galvanised wire, and they should be covered with a material like the one which has to be put to prevent the soil coming out.

If *Sarracenia* are not yet potted, they should be attended to without delay; it is absolutely necessary to renew the soil entirely every year, or else it gets entirely bad state, and the plants will not be able to come out equal parts of good fibrous peat, from which the early portion has been got away, and chopped sphagnum, with which mix a fifth of crocks broken small and some sand. *Nepenthes* likewise should not be seen to. If they need it, give them larger pots than the very best not to let them have too much root-room. The roots of these plants are of the tenderest description, and always look as if they were dead. There must be no potting be attempted getting the old soil away, or reducing the bank. This being settled, it is to be noted that the soil and water material they are put in should be such as will last long; a mixture similar to that recommended for *Sarracenia* will answer well for *Nepenthes*. The reason many do not succeed in growing them in a satisfactory way is that they keep them too dark, too close, and too far away from the light. They ought to be hung up close to the glass, and, as they need more head-room, they can, of course, be lowered. They look the best in baskets, but these are not the best as their roots are so tender that they protrude through. The pots can, however, be placed in baskets, thus having the advantage in appearance, without its being at the expense of the well-being of the plants. Both *Nepenthes* and *Sarracenia* ought to be watered in the same way as they are growing. The *Nepenthes* also will be benefited by syringing in the afternoons. *T. Baines.*

FLOWER GARDEN, ETC.

Shrubby *Calceolarias* which have been struck in frames or boxes may soon be removed to a sheltered place to remain until planted out; previous to removal the lights had better be taken off daily (weather permitting) and the plants get all the air possible in order to harden them for the change. Have protecting material at hand in the event of frost, when the plants can be covered as required. After the plants get well established they had better be looked over and all their tips pinched out, which will make them grow bushy in the frames where the *Calceolarias* were struck can then be filled with *Lobelias*, *Fyrethrums*, *Verbenas* and such things. Stocks and *Asters* may be sown in boxes or pans, and set in a moist warm place where they will soon come up strong, but take care they are not too close together. Such plants may be sown up weakly; when fit, they can be pricked out and receive attention. Where heat cannot be applied, keep the plants as dry as possible in cold weather, and where watering must be done let it be looked over in the day and the soil surface in the morning may be dispelled before night. Herbaceous borders will soon require attention, as the mild weather has brought forward the plants before their usual time. The plants may be divided and reduced in size as required, and the blanks filled with new and fresh labels added where worn out. New borders may be made by trenching and preparing the ground; after being properly levelled the tallest growing kinds should be arranged along the back row and the shorter ones brought to the front. Such borders may be old-fashioned, but when well arranged according to height and colour are very interesting in certain places. The planting of trees and shrubs had better be brought to a close as early as possible; where the soil is so recent, and planting may be done in a better manner than with light porous soil. Lawns and pleasure grounds never looked fresher and better at this time of the year, not a leaf injured by frost. *Laurelums* are now in full flower, and at a distance looking like *Thorns* in May, and at a close view are undistinguishable from them, and if frost does not come soon, the mowing machine must be had in

readiness; have the lawns well swept, rolled, and made ready for mowing. *T. Blair, Shrewsbury Park.*

FRUIT HOUSES.

VINES.—To have Lady Downe's, Mrs. Prince's Black Muscat, and other late kinds of Grapes, thoroughly ripe and in the best condition for keeping without shrinking for some months after removal to the Grape-room, the buds in late houses should be fairly potted in the first week in March; and as thoroughly ripened wood and roots have a great deal to do with abundant shows and free setting, a little extra attention to firing and early closing, up to the stoning period, will be well repaid by the time so extra being given to the collection of the fruit, which should be complete by the first week in September, when the outside borders may be covered with a good layer of dry Fern and shutters over it to throw off heavy rains. Assuming that all inside borders have been top-dressed and put into a growing state by the liberal application of tepid liquid manure, houses which have been started may range from 5° at night to 65° by day, with a rise of 5° more when closed with sun-heat. Sprinkle three or four times a day with vigorous young roots in a horizontal position until all the buds have started into growth. Attend to disbanding and tying out in succession-houses. Remove all surplus bunches from free setting kinds, turn the points of the bunches of Muscats up to the light, and increase the temperature to 70° at night, with a rise of 15° by day when in bloom. If artificial fertilisation is resorted to, foreign pollen should be applied with a camel-hair pencil; this process may be more tedious, but it is safer and does not heat the house so much as when the weather is warm, as the perspiration sometimes causes a small spot to appear on the apex of the berries when ripe. Pot Vines carrying full crops of fruit will require liberal supplies of liquid manure 10° warmer than the temperature of the house in which they are growing, and plunged in fermenting material the quality of the fruit will be greatly improved if the roots are allowed to run into the bed. *W. C.*

MELONS.—Although nearly all the early Melons are grown under the influence of hot-water, there are a great number of gardeners who still have to depend upon fermenting material, either in pits or under frames, for their first crop. Where fermentation alone is depended upon for the production of a steady heat, it is better to decrease the temperature of the preparation of the materials, otherwise the heat is liable to come to a stand just when an extra spurt would be acceptable. The best materials for the beds are good stable dung which has not been robbed of its droppings for the Madroppo-houses. Oak leaves collected in a dry state and kept under cover until wanted for use. These should be thoroughly mixed together in a heap on a dry bottom, protected from heavy rain, and turned twice in the course of a fortnight, to prevent burning. Select a light, airy situation on a dry bottom on which to build the bed. If only just large enough to receive the frame so much the better, as new linings can be brought into nearer proximity to the roots when the fruit is finishing. Make 5 feet high at back, tread firmly, put on the frame at once, keep close until the heat rises, when the soil may be introduced. If the bed is likely to get very hot 6-inch drain pipes may be laid across under each hill, which should be small at first, very firm, and rest upon solids of stiff loam turned grass-side downwards. Nothing is gained in turning the plants out too early; the cultivators will therefore do well to have vigorous young stocks ready for planting when the heat in the bed has declined a little below 90°. Guard against injury from rank steam by keeping the lights down at night and day until danger is past. *W. Coleman.*

Figs.—A temperature of about 60° at night, and 65° by day, will be maintained in a house where the fruit is swelling, unless very unpropitious weather abounds, when it would in those houses which are not efficiently heated be advisable to be content with a few degrees less, particularly at night, than to have resort to excessive heat being continuously. None of these subjects and in all others of this nature take advantage of the presence of daylight to accelerate forcing operations. See, therefore, that the fires are pushed on early in the morning, so that the standard heat for the day is attained by the advent of daylight. At the present time the condition of the earlier started trees will be such as to require some stimulating agent in a mild form mixed with the water, which should be given at about the same temperature as the house; and in this important matter the same rule should be followed, both as regards trees in pots or otherwise. Continue to give the useful attention to pinching out the points of the shoots which are to be stopped as before advised, and at the earliest opportunity it can be effected, allowing the plants to be planted in the house as they run when the space in the house will admit it. Keep the atmosphere in the house sweet and agreeable

to vegetation by means of sprinkling and syringing, applying the latter with considerable force over any leaves which may be infested with red-spider. Bring to a close at once the necessary operations of cleaning and training of the trees, &c. in late houses. As Fig trees are so readily obtained from suckers, other means of propagation is not in private establishments often requisite, excepting in the case of new varieties. Those shoots of from 3 to 6 inches long, which can be got out of the last year's wood, and which are the best for the purpose. Eyes will also strike very freely if they be placed in a warm house or pit, and be plunged in a brisk bottom-heat, in both cases employing sandy soil and well drained pots. *G. T. Miles, Wycombe Abbey.*

HARDY FRUIT GARDEN.

PROTECTION OF FRUIT BLOSSOMS, &c.—As a natural consequence of the extraordinary mildness of the weather up to the present time, all kinds of hardy fruits are at least a fortnight or three weeks forwarder than they usually are at this season; and unless means are at once taken to retard the opening of the blossoms of Apples, Peaches, and Nectarines, and to guard them against frost, should such an event occur, the chances of a crop will be very slight indeed. So long as the branches are shaded or kept close to the sun in any other way, every gleam of sunshine by warming the bricks immediately behind them gives a great impetus to their growth. The best that can be done at present is to unfasten the trees from the wall and so place the branches where they are the most exposed to the sun by putting mats or a few Laurel or other evergreen branches in front of them during bright weather, the effect of which will be to cause a current of air behind, whereby the expansion of the buds will be retarded, and the fruit will be smaller, and appear to run to wood, and the blights in front of these will be no necessity to detach them from the wall, as these may be let down to ward off the sun till the flowers expand, when they will be in position to protect them by night.

PRUNING.—In the advanced state both Peaches and Appriots are now in, pruning should be no longer deferred, and in the case of the latter attention ought principally to be directed to keeping the spurs as short together as they possibly can be. This may be done by shortening back all such as are well situated, leaving just sufficient flower-bud for a crop, and by cutting entirely out any that are gnarled and project far away from the tree, as these are perfectly useless, owing to the fact that they are so far from the wall, from which they derive little or no benefit as regards protection, and only prevent other healthy young shoots starting out to occupy their places. In the cultivation of the Appriot I find that the best way of pruning and managing the trees to secure a crop of fruit is to adopt a compromise between the spur system and that of laying in young wood of the previous year, after the manner of Peaches; this I do wherever space can be found, as it frequently occurs when the trees are so close together that the cut off by frost those nestling close to the warm bricks escape injury, such a difference is there in the degree of heat in the two places. Of course these young shoots, to furnish vacant spaces, have to be thought of and left when the summer disbanding and stopping takes place, and little can be done in the matter now beyond turning to account any that may be so situated as to be available for the purpose. As regards Peaches and Nectarines, the skillful pruner will look well to furnishing the trees with medium-sized wood, and to see that the spurs are equally well distributed over the entire surface, having special regard to the bottom, where, unless well managed, they are sure to run bare. Nothing injures either a Peach or Nectarine so much as allowing them to make those gross and unproductive shoots, which constitute a portion of sap to themselves, and starve the rest of the plant. If any of these were overlooked at the time when they should have been removed, cut them away at once, unless absolutely required to fill in any bare space, and the same rule should not be covered by such as is of a more useful character. Unless the trees are infested with scale, the labour and time spent in painting them over with the many mixtures in use is completely thrown away, and when such injurious insecticides as Gishurst Compound gets into hands that are not particular as to the quantity used, much harm frequently results. Spider and green-fly, the most troublesome insects that infest Peach trees, lurk in the joints and nail holes in the walls or deposit their eggs there, and time may be wasted in applying a wash of lime and sulphur mixed with soft soap, glue, and sulphur mixed up as a wash, which will effectually seal them in without causing the walls to present an unsightly appearance. Bullfinches and sparrows will now come in, and, according to the standard, the Damson and Gooseberry bushes, the latter of which may be readily protected by syringing over them freshly slaked lime made to the consistency of whitewash. *J. Sheppard, Woolverstone.*

THE
Gardeners' Chronicle.

SATURDAY, FEBRUARY 24, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Feb. 26. Sale of Orchids at Stevens' Rooms, &c.
WEDNESDAY, Feb. 28. Sale of Camellias, Shrubs, Roses, &c., at Stevens' Rooms.
THURSDAY, Mar. 1. Linnæan Society: Meeting at 8 p.m.
SATURDAY, Mar. 3. Sale of Mr. Wilkins' Collection of Orchids at Stevens' Rooms (two days).
Crystal Palace: Exhibition of Artificial Flowers and Fruit.

WE have received the programme for the horticultural and agricultural departments of the Universal International Exhibition at Paris in 1878, from which we extract the following particulars. The Exhibition will be open from May 1 to October 31. A garden will be formed in the Champs de Mars, in which will be erected hothouses, greenhouses, tents, &c. Every description of horticultural produce may be exhibited, and all classes of plant growers, whatever their nationality, are invited to compete for prizes (*recompenses*). Twelve series of exhibitions will be held in regular succession, each lasting a fortnight. Every exhibitor will have to allow his plants to remain for the whole fortnight, and to take care of them for that period. Fruit and forest trees, ornamental shrubs, and the like must be planted before March 15, 1878, and if possible in the spring of 1877, and will remain throughout the whole period. Soil and other requisites will be provided by the Commissioners. All plants must be duly labelled, and in the case of seedlings the name proposed must be enclosed in a sealed envelope, which will not be opened if the plant does not receive an award.

For the first series, May 1 to 15, 1878, the principal subjects invited are Azaleas, eight classes; Conifers, fourteen classes; new plants, new seedlings, &c., thirteen classes; stove plants, eighteen classes, including foliage plants, four classes; Orchids, one class; Cacti, ten classes; Selaginellas, three classes; greenhouse plants, thirty-five classes, including Heaths, Ferns, Wallflowers, Cinerarias, Agaves, Aloes, Yuccas, Rhododendrons, Epacris; hardy plants, nineteen classes; forced shrubs, eight classes; Pæonies, sixteen classes; Clematis, Tulips, Stocks, vegetables, &c.

The second series, May 16 to 31, includes classes for Rhododendrons, trained fruit trees, Orchids, Ferns, Azaleas, Calceolarias, Clematis, hardy shrubs, herbaceous plants, Roses, vegetables, &c.

The third series, June 1 to 15, comprises Orchids, eight classes; Pelargoniums, eight classes; stove, greenhouse, and hardy plants, including Roses, &c.

The fourth series, June 16 to 30, will be devoted to Palms, Cycads, and Pandanads, with Roses, Pelargoniums, various stove and greenhouse plants, herbaceous and alpine plants, &c.

The fifth series, July 1 to 15, is to be devoted to Pelargoniums and Gloxinias, Orchids, Nepenthes, economic plants, Begonias, Sarracenias, hardy plants, Roses, &c.

The sixth series, July 16 to 31, comprises stove plants, herbaceous plants, Hollyhocks, Gladioli, Phlox, fruits, &c.

The seventh series, August 1 to 15, is principally devoted to Fuchsias, Gladioli and Hollyhocks, together with climbing plants, Heaths, Dahlias, Lilies, Tropæolums, fruits, &c.

The eighth series, August 16 to 31, includes Aroids and Tree Ferns, seventeen classes; Orchids, Achimenes, Fuchsias, Dahlias, Phlox, &c.

The ninth series, September 1 to 16, is to be mainly devoted to Dahlias and Asters, with classes for Crotons, Allamandas, Veronicas, with other classes for fruits and deciduous trees.

For the tenth series, September 16 to 30, the

competition requested is for Aralias, Dracænas, stove plants, Fuchsias, Pelargoniums, Dahlias, Gladioli, cut Roses, hardy Bamboos, annuals, &c.

The eleventh series, October 1 to 15, is specially devoted to fruits of all kinds, together with Orchids, Chrysanthemums, &c.

The twelfth series, October 16 to 31, is to be particularly set apart for vegetables of all kinds, together with forest trees, seeds, and Chrysanthemums.

On each occasion vegetables and fruits may be shown according to the season. It will thus be seen that special classes are framed for the main groups of plants, so timed as to suit the period when they may be expected to be in greatest perfection; but, in addition, subordinate classes are allotted to them at various other exhibitions, so as to secure early and late varieties, as well as the main crop, if we may so speak. Nothing is said as to the nature of the *recompenses* to be allotted.

In due time we suppose our Government will cause the programme to be translated for the benefit of British exhibitors.

The Botanical Society of France is, we learn, engaged in organising a Botanical Congress during the Exhibition, and doubtless other arrangements in which horticulturists are interested will be hereafter made public.

— A CORRESPONDENT writes to ask if the FLOW OF SAP IN TREES is influenced by the age of the MOON?—

"Two or three years ago I was much interested by seeing in your journal that a distinguished vegetable physiologist was making experiments on this subject, and was nearly convinced of the truth of a theory that the flow of sap in trees was greatest at the full, and least at new moon. I then drew attention to the circumstance that the architects of ancient Rome believed them to be so, and that in their contracts for timber works they specified that the timber should be cut in winter, and at the wane of the moon, the reason for this being that there was then least sap in the wood. Can any one tell me whether any additional confirmation of this theory has been obtained? C. W. D."

— We have received from Mr. JAMES MENZIES, gr. to W. R. FRYER, Esq., South Lytchett, Poole, Dorset, a sample of *CAMELLIA BLOOMS*, cut on the morning of February 17 from plants growing in the open air at that place. Mr. MENZIES states that, owing to the mildness of the season, the trees have been more or less in flower all the winter, and are mostly now in full bloom, and will last up to the middle of May. The flowers, about three dozen in number, and of various colours, are of fine size and very bright. With such a climate and such a display as the Camellias at South Lytchett now afford, no wonder that that place is called the Sans Souci of England.

— Mr. CANNELL sends us cut flowers of *FUCHSIA SLENDENS*, which he states is in very fine condition with him just now. We are surprised that this beautiful and very distinct *Fuchsia* is not more frequently seen.

— The complimentary DINNER to Mr. JOHN LEE, on the occasion of the retirement of that gentleman from the firm with which he has been so long connected, came off with great success on the 15th inst. The dinner was presided over by Dr. HOGG. It was well served by the manager of the Horticultural Club, to members of which and their friends it was limited; the tables were decorated by Mr. WILLS, and the dessert enriched by the contributions of Mr. KILLICK. Mr. LEE acknowledged in heartfelt and touching terms the compliment paid him, and gave an interesting sketch of the history of this old-established firm, embracing much of general interest concerning horticulture in general. If the firm of LEE had done no more than introduce the *Fuchsia*, they would have earned the gratitude of all flower-lovers.

— *Nature* states that Mr. DARWIN has received as a testimonial, on the occasion of his sixty-ninth

birthday, an album, a magnificent folio, bound in velvet and silver, containing the photographs of 154 men of science in Germany. The list contains some of the best-known and most highly-honoured names in Europe. He has likewise received on the same occasion from Holland an album with the photographs of 217 distinguished Professors and lovers of science in that country. A German correspondent informs us that the German album bears on the handsome title-page the inscription—"Dem Reformator der Naturgeschichte, CHARLES DARWIN."

— It is proposed by the horticultural friends of Mr. JOSEPH DALE, of the Middle Temple Gardens, to present him with a suitable testimonial in recognition of his services as a promoter of the culture of the Chrysanthemum in towns. Mr. DALE first introduced the Chrysanthemum into the Temple Gardens, so far back as 1841, and it has flourished there ever since, furnishing annually an abundance of proof of what may be done with flowers, and with the Chrysanthemum in particular, in the heart of a smoky city. Those of our readers who may be willing to assist in such a desirable proceeding should communicate with Mr. J. S. HOBSON, Gray's Inn Chambers, High Holborn, W.C.

— An interesting question with reference to the fertilisation of *ERUVALVE FEROX* has presented itself. The plant is usually propagated by seeds, the offspring of the flower's own pollen on its ovules. This, then, is a case of self-fertilisation, which might be expected to be productive, in the long run at least, of more unfavourable results as to the number of seeds, vigour of plants, &c., than appears to be the case. In order to arrive at such conclusions on this matter it is requisite to know definitely whether the plants in British gardens are the offspring of recently introduced Indian seeds, or whether they are the lineal descendants of the plant originally introduced in 1809.

— Under the heading "Industrial Celebrities" the *British Trade Journal*, in its last issue, has given a portrait and biographical notice of Mr. MARTIN HOPE SUTTON, as the head and virtual constructor of the well-known firm of "SUTTONS." The memoir is one of great interest, as affording one more illustration of what may be done by determined industry and well-directed zeal.

— OUR AMERICAN cousins are determined that we shall not lack POTATOS for cultivation, even though the beetle should presently come over and eat them all up. Three new kinds are offered for sale this year, at doubtless fairly remunerative prices, but it is evident that the rage that once existed for new American kinds has nearly died out. Superior is a large, handsome, bright red tuber, the haulm robust, and the plant generally a good cropper. Success is a large, even, coarse-looking form of Snowflake, and probably does not excel that popular variety. In "Centennial" we find our cousins outbidding us in names, as in the face of such an unusual anniversary the "International" must hide its diminished head. Centennial has yet to be grown to test its qualities, but it is to be desired that with such an appellation we may have also a variety worthy of it.

— FOR THE INTERNATIONAL HORTICULTURAL EXHIBITION, to be held at OPORTO on the 23rd and 30th of June and the 1st and 2d of July next, Messrs. VERTCH, WILLS, and WILLIAMS are agents in this country. Steamers leave for Oporto once a week, the agents being Messrs. COVERLEY & WESTRAY, 73, Great Tower Street. A reduction of 75 per cent. will be granted for plants sent to the Exhibition; and tickets for exhibitors to go and return will be issued at £8. The cost of unloading and placing in the exhibition will be defrayed by the Society. The Secretary is DUARTE DE OLIVEIRA.

— The POLYANTHUS is just now one of the most refreshing of spring flowers. In regard to its time of flowering it may be said to precede its congeners, the Auricula, by a few weeks, and especially is this true of the fine early varieties. Even in the open ground, without shelter of any kind, the plants have been in flower for nearly two months past; they are now gay from autumn trusses, and the spring trusses are also on the move, and before the former have faded the

latter will be unfolding their blossoms. What a flush of hues these Polyanthus afford? In this respect they are superior to the old gold-laced varieties, which, while displaying much refinement of beauty in their marking, afford but little variation of character. As in the case of the Auricula, so in the case of the Polyanthus, the florist top-dresses his plants in February or early in March, and adopts the same practice as that followed with the Auricula. Top-dressing is required more especially in the case of well-established plants in pots, but it is certain to benefit all the plants, as in spring young roots are thrown out near the surface. At this season of the year the Polyanthus is particularly liable to be infested with green-fly, which cluster on the undersides of the leaves and about the young growths in the hearts of the plants. An occasional washing with Fowler's Gardener's Insecticide will keep the plants clean and healthy. These remarks apply to plants cultivated in pots, and when it is remembered that

four years old, and about 18 inches high. At the beginning of last year it was a handsome tree 36 feet high, with the branches covering an area 55 feet in circumference. The girth of trunk close to the ground was 8 feet; at 5 feet above the ground 4 feet, and at 10 feet above the ground no less than 3 feet. The Duchess of KENT's Wellingtonia was planted in 1858, two years later. This is not so compact in habit as the other, but already at the beginning of last year it had reached the height of 51 feet, and the circumference of the branches close to the ground was 56 feet. The trunk measured 9 feet in girth at the base, 5 at 5 feet from the ground, and 4 at 10 feet above the ground. The foregoing particulars are borrowed from the Berlin *Monatsschrift des Vereines zur Beförderung des Gartenbaues*.

— At a recent meeting of the Horticultural Society of Berlin, Dr. KARL KOCH exhibited a series of twenty-four diagrams, intended to illustrate a course

poses in the vicinity of BERLIN. The Horticultural Society of that city has taken up the subject with spirit, and it is to be hoped that its efforts will be rewarded with success. From Mr. C. BOLLE we have received a copy of an article entitled "A Word in Favour of the Dendrological Garden," addressed to all lovers of trees. The writer very ably discusses the advantages that might accrue from a good collection of named trees and shrubs suitable for the climate of the district, and points out the utter ignorance of the general public in all that concerns, not alone the trees of other countries, but often also of those indigenous in the country. In such an establishment as the promoters wish to found, the aim should be not so much to form a large collection as to thoroughly cultivate a selection that will flourish in the climate, both of useful and purely ornamental species. Each subject should have sufficient space to attain its full development and assert its own merits. Mr. BOLLE concludes by expressing the hope that Dr. K. KOCH,



FIG. 40. — DUFLIN CASTLE, THE SEAT OF THE EARL OF KINNOULL (SEE P. 240).

the peculiar beauty of the Polyanthus is heightened by growing it with the greatest care in an even genial temperature, it is easy to appreciate the force of the directions given by the old florists for applying extra coverings to the frames in time of frost.

— THE RATE OF GROWTH OF THE WELLINGTONIA and other North American Conifers, under favourable circumstances, in this country encourages the belief that in sheltered situations they will attain dimensions greatly exceeding those of any of our indigenous trees, though probably even in plantations of considerable extent it is doubtful whether they will reach anything approaching the size of the largest of their species in their native mountain sides and valleys. In the January number of the organ of the Berlin Horticultural Society the size is given of the Wellingtonia planted by the Crown Princess of PRUSSIA in Windsor Park, on the occasion of her confirmation, as also of another planted by the late Duchess of KENT. The first was planted in March, 1856, and it was then

of instruction on FRUIT TREE CULTURE. They were designed by C. MAIER, of Baden, a pomologist of experience, and published by the Landwirthschafts- und Gartenbau-Verein. Dr. KOCH strongly recommended them as being admirably adapted to the requirements of general schools, as well as agricultural and horticultural establishments.

— On the same occasion Dr. KOCH called attention to a NEW SPIRÆA, received from BAUMANN under the name of *S. splendens*. It comes near the dwarf forms of *S. callosa*, and is described as of dwarf, bushy habit, with a profusion of peach-coloured flowers. It is also stated that it will bear forcing, and flowers nearly all the year round. The same plant, it was mentioned, is also grown under the names of *S. callosa rosea*, *S. hydrangeifolia*, and *S. paniculata grandiflora*.

— We recently mentioned the project of an ARBORETUM and SHRUBBERY for educational pur-

who has long laboured in the cause, and was the originator of the movement, may be appointed the director.

— In our article on SCHOOL GARDENS IN SWEDEN in last week's issue we should perhaps have referred to an abstract of an article "On the Position of the School Garden Question in Austria," which appeared in the *Gardener's Chronicle*, vol. vi., new series, p. 136. Some statistics and other interesting information bearing upon the subject will be found in the place to which we refer. The statement that there were 2000 school gardens in existence in Sweden in 1871, seems somewhat at variance with more recent information, but these figures were taken from the original article in the *Neue Freie Presse*.

— From the Berlin *Monatsschrift des Vereines zur Beförderung des Gartenbaues*, we learn that a prize of £10 is offered for a short practical guide to the MANAGEMENT OF THE KITCHEN GARDEN, for

the use of teachers in country schools. The object is to disseminate the knowledge of a good system of planting and keeping cottage gardens, so that the owners may obtain a maximum of pleasure and profit from them, and the country generally present a more smiling appearance. It is hoped that the guide will enable teachers to cultivate their gardens in a superior manner, and thus make them good examples for the instruction of others.

— A fine specimen of *AGAVE ELLEMEETIANA* is now flowering in the Succulent-house at KEW. The spike reaches a height of 11 feet above the base of the plant, and is about 8 feet in length. The flowers are expanded for a space of 2 feet at the same time, and from the yellow anthers, which reach from side to side about 9 inches, have a very ornamental appearance. It belongs to the group with soft unarmoured leaves; the edges are quite smooth, and the surface of a distinct glaucous green, quite unlike any other species. This specimen has about twenty-five leaves, the largest of which are 2½ feet long and 6½ inches wide, lanceolate-spathulate in form. It is shortly caulescent, and it is said not necessarily to die after flowering. It was figured in the *Journal of Botanicum* from a specimen grown by Mr. W. W. SAUNDERS.

— We have the *Index Seminum Horti Mons-peliensis* for the present year before us. It includes about 2000 species, and is especially rich in herbaceous plants, including some 360 Composite, 200 Gramineæ, &c. The seeds of shrubs and trees offered are almost exclusively those of quite common species. Lists of desiderata should be sent in before March 1.

— The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, Feb. 26, when a paper will be read by Mr. J. LUCAS, F.G.S., entitled "Modern Geology; or one of the Developments of Modern Practical Geology." The chair to be taken at 8 o'clock.

— At a recent meeting of the Society of Arts Sir JOHN LUBBOCK gave a lecture on the subject of certain relations between PLANTS and INSECTS. With reference to the attractions which plants offered to insects capable of fertilising them, and to their means of defence against insects incapable of doing so, Sir JOHN LUBBOCK asked why it was that ants, whose fondness for honey was well-known, did not anticipate the visits of bees to honey flowers. Ants were kept of such plants by *chevaux de frise* of hairs, and by slippery and glutinous surfaces. The hairs on the stem of a honey plant would be found to point downwards, and there would be a prickly beard surrounding the flower, so that an ant could only with great difficulty reach the honey; and if it succeeded in passing the *chevaux de frise*, it would rob the plant without fertilising it, whereas a flying insect could hardly settle to sip the honey without touching the stigma. The stickiness of some plants was a similar precaution against ants, and some of the Lettuce species only exuded a sticky fluid when touched, so that the walking of an ant would stimulate the exudation, and the insect would be unable to proceed, and would come to a miserable death. Where the protection of the plant consisted in a slippery surface, the flowers were often pendulous, as in the Snowdrop and the Cyclamen, and an ant could walk all over the leaves, but in trying to reach the flower it would fall over. The so-called sleep of plants was governed, he considered, by the habits of the insects which visited and fertilised them. He could not at first understand what advantage a certain plant derived from opening its flowers about six o'clock in the morning and shutting them about ten; but it occurred to him as an explanation that bees and wasps got up early, but that ants did not come out until the dew was off the ground. The second part of the lecture, on the action of plants on insects, related chiefly to the colouring of caterpillars. Why were caterpillars first of all pale green, and why did they then gain longitudinal and diagonal lines, become brown, and have eye-spots? These questions were answered by the lecturer in a series of suggestions based on observation. First of all, the small caterpillar was light green because, obviously, that was the colour of the leaves on which it fed, and thus the creature was concealed. When the caterpillar grew large, it was important that there should be lines to divert the eye from the outline of the body, and the longitudinal lines resembled those

of grasses and narrow-leaved plants. Caterpillars that fed on broad-leaved plants did not have longitudinal but diagonal lines. Longitudinal and diagonal lines were not found on the same segment, for the crossing of these lines would not agree with any leaves in Nature. White lines were edged with violet, producing the effect of shadow, in the case of caterpillars which fed on the under-side of leaves, near the mid-rib. Caterpillars that fed upon large trees and could not very well come down to hide by day, retained their original green colour, but others which fed on small plants were known, approximating to the colour of the ground on which they lay in hiding during the day. Some brown caterpillars placed themselves at an angle when feeding, and looked like a bit of dead wood. The eye-spots resembled light shining through a thick foliage; and in the case of some caterpillars which derived no protection from this cause it was found that their marking gave them a snake-like appearance which frightened birds. *Daily News*.

— The Astronomer-Royal, having undertaken to register the hours of SUNSHINE in comparison with the number of hours the sun is above the horizon, some interesting results have been obtained. Thus last week the sun was above the horizon 69.3 hours, but his light was intercepted, and he only shone on London 9.3 hours; four days not at all; Sunday, 5.3 hours; Friday, 3½ hours, and Saturday half an hour.

Home Correspondence.

Fertilisation of Plants.—In the last number of the *Gardener's Chronicle* (p. 203) Mr. Henslow's words, that "the seeds from which the self-fertilised plants of the third generation (of *Petunia*) were raised were not well ripened." The word *self-fertilised* is a misprint for *crossed*, as he would have seen if he had looked to the full account of my experiments given at p. 194, where I say, "The sole conjecture which I can form is that the *crossed* seeds had not been sufficiently ripened, &c." But I have no right to expect a critic to take so much trouble, and I am much obliged to him for having led me to detect this unfortunate error. Mr. Henslow then went on to say that "Mr. Darwin also accounts for the greater growth of the eighth generation of *Ipomoea* from their having been raised from unhealthy seeds." He ought, I think, to have added that the greater growth of the self-fertilised plants was confined to the early part of their lives, and that they were ultimately beaten in height by the *crossed* plants in the ratio of one hundred to eighty-five. It was this anomalous manner of growth which led me to compare these plants with those of *Iberis* which were raised from seeds not well ripened. I have long been convinced that controversy is a mere waste of time; I will, therefore, not make any other remarks on Mr. Henslow's criticisms, though I think that I could answer them satisfactorily. I hope that any reader who is interested in the subject will not take Mr. Henslow's interpretation of my statements without consulting my book. *Charles Darwin, February 19.*

Utricularia montana seeding.—It may interest some of your readers to know that last spring *Utricularia montana* seeded with me very freely. The plant was very strong, and there were several pods on every spike. The flowers were consequently last autumn, a very short time, leading me to regret the profuse seeding. My Orchid grower, Spyers, showed the seed when ripe in pans of moss mixed with a little fibrous peat, and we now have hundreds of young plants. I may mention that the correct name of this species is *Utricularia*, as shown by me at the meeting of the Floral Committee of the Royal Horticultural Society on January 17 is *D. Findlayannum*, not *Lindleyannum*, T. L.

Royal Horticultural Society.—Will you permit me to make a few remarks on what passed at the meeting on the 13th. Mr. Elwes, who, as a horticulturist, will add nothing, and as a writer, has no need after the loss of the well-known name of Bos-cawen, instances the Zoological Society as a case in point. The comparison with the Royal Horticultural Society having once occurred to me, I worked it out, when many points of difference occurred; these seemed the principal ones. "The Zoo" has a show every day; it has no serious competitors in the country; its objects of exhibition have motion as well as life, and these are always the most attractive; and last, but not least important, it has its own special friends. As the Zoological has its children, its travellers, and its foreigners, it will have its own numerous visitors, in addition to the general public. Mr. Veitch's speech, I admit, fairly puzzled me. Believing that he has influence with the owners of gardens, I spoke to him

among the first about the guinea Fellowship. He seemed to adopt the idea warmly, and until his speech at the meeting I never had a hint that he had changed his mind; and what added to the puzzle, he, after the meeting, said publicly that he still fully believed in guinea Fellowships. It was difficult to work with uncertain supporters. Now to the more important part of my letter. I am constantly being asked—"What are we to do now the Society offers guinea memberships?" My advice is, for the present hold yourselves in reserve, and do nothing. You agreed to become guinea Fellows when the Society was free—the Society is not free, and we will not yet be received as Fellows, but only as members without a vote. I have, however, sent a proposal to the President, and I think, fairly meet the circumstances. Immediately on the receipt of the meeting, I will make known. *George F. Wilson, Heatherbank, Weybridge.*

— The next meeting of the committees will be held on March 7, and, looking at the advanced nature of the season, it is probable that a very charming display of plants will be found. What steps does the Council propose to take to ensure the attendance of the Fellows and others, and thus give to their enterprising exhibitors the only reward at present available in repayment for considerable outlay of expense and labour? If things are not improved in that respect, the display will be a failure, and will not soon follow. I venture the suggestion that the Council should have some neat circular announcements of the meeting, or future meetings, printed and circulated amongst all London fellows, and at the houses of the local horticulturists, and that the meeting should be at 11 o'clock, as there being no competition, it is a waste of time for the committees to absorb the entire show for two of the best hours of the day. *Exhibitor.*

— I perceive by the reports of the Royal Horticultural Society's annual meeting (*vide p. 210*) that the remarks of Mr. Henslow, in regard to the Horticultural Show Fund either were not distinctly heard by the reporters, owing to the confusion caused by the breaking up of the meeting, or I failed to make myself clearly understood. The first paragraph of your report gives correctly the substance of what I said, but the second bears a directly opposite construction to what I meant to say; I should therefore be obliged by your permitting me to state that what I wished to convey to the meeting was, that I did not believe, if the matter were properly put before the Finance Committee, that that body could do anything to assist me in my endeavours to be refunded out of the Society's current account. It will be remembered that, in instituting the Society's provincial shows, the Finance Committee refused to allow any of the Society's money to be spent for that purpose, so that I was obliged to carry on through the exertions and personal guarantee of a few spirited horticulturists outside of and on the Council, but with the understanding that the profits (if any) resulting should be allowed to constitute a distinct fund for similar undertakings in future. This arrangement was subsequently confirmed by the action of the Finance Committee. I therefore maintain that the money borrowed by a former treasurer (Mr. Dobree) from this fund is as much a debt due to the Society as that which was borrowed, to meet the same object, by the Society, from Messrs. Conyngers, and which has been repaid. *John Denmy.*

Corsican Crocuses.—I have long had misgivings as to the identity of the highland and lowland Croci of Corsica, which since the time of De Candolle, and other writers, have been generally supposed together as one species under the synonyms of *minimus*, D.C., and *insularis*, Gay. The larger mountain plant has, however, been known to all collectors in the island. Dean Herbert separated it as a variety under the name of *major*, and named in 1838 described it as a distinct, and as well separated, form from the smaller plant of the coast, from which all of Gay's MS. figures appear to have been taken. I would here correct an error that crept into some notes on Corsica, that appeared in the *Gardener's Chronicle* in 1856, p. 768, the name of the variety of *versicolor* (for which I had mistaken *Vanucci's* C. corsicus) as occurring abundantly on Monte Rotundo. I have not till to-day had an opportunity of comparing the two plants in a living state. They are not identical, and are well separated in essential specific characters as any other species of the *versicolor* group of Croci. Their geographical distribution is suggestive, for whilst the smaller plant, with a yellow stigma much exceeding the anthers, is so far as I am aware restricted to low levels near the sea, the large mountain form is only found above 2200 feet, and occurs profusely on Monte Rotundo up to 6000 feet. It is truly as large as *Crocus versicolor*, though a little shorter and much broader in the limb, which is generally of a paler purple than the latter, and has a most placid aspect, and in nearly the whole of my specimens the anthers overtop the stigma, which is bright orange-scarlet instead of yellow. I know of no habitier for either the large or small forms between the coast line and

2200 feet. I believe the two plants are specifically distinct, and would suggest that Vanucci's name "coruscus" be retained for the mountain plant, to separate it from De Candolle's *minimus*. As I have distributed both plants under the name of *minimus*, I would state that the bulbs from the mountains above Corte, and from the range between Bastia and St. Florent (1873), are of the larger species (*Crocus corsicus* of Vanucci), and those from Portigliolo, near Ajaccio, distributed last year, are the typical *Crocus minimus*, a good figure of which will be found in the *Botanical Magazine* (plate 6176). The yellow stigma flowers of the latter are clearly visible in the figure. *George Mason, F.L.S., Benitelli Hall, Broadway.*

Lobelia Emperor William.—I can fully endorse all the praise bestowed on this excellent *Lobelia* by Mr. Davidson (p. 215). As a variety for carpet bedding it has few, if any, equals, being of dwarf robust growth, with large brilliant flowers, which continue to produce in great abundance throughout the summer and autumn months. This the punila section does not do; even when well supplied with water during hot, dry weather, it often ceases to flower during the summer. Distributed at a number of nurseries and other carpet-bedding plants are at their best, thus leaving a blank in the beds which very much detracts from the effect of the whole arrangement. Emperor William only requires to be better known to become one of our favourites. *J. Drummond, The Cedars, Harrow Weald.*

Action of Pollen on the Seed of Peas.—I notice in your last issue (at p. 210) that Colonel Trevor Clarke exhibited before the Scientific Committee of the Royal Horticultural Society a pod of Woodford Marrow Pea, the flower of which was fertilised with the white-seeded Avergine, the result being the production of blue and white Peas in the same pod. Colonel Clarke considered it a novelty, and said that Mr. Laxton had not observed it; but I beg to say that when my father was gardener to Mr. Laxton, at the Swanwick, near Bath, this was one way in which he obtained his new varieties. Sometimes the blue Peas revert to white ones, and *vice versa*. My father and Mr. Laxton have also noticed round and wrinkled Peas in the same pod. *W. E., Waltham Cross.*

Brassica Napus (see ante, p. 148).—I beg to make a few remarks on the note added by the Editors to my account of a hereditary deformity in *Brassica Napus* (*Gardeners' Chronicle*, Feb. 3, 1877, p. 148). The Editors say:—"The specimen in question resembles those figured in the *Gardeners' Chronicle* in 1875, and is a variety of the monstrous tubers, the result of a Committee of the Royal Horticultural Society in the same year by Mr. Wilson Saunders." And in fig. 24 a woodcut of "adventitious buds on underground stem of Brussels Sprout" is represented, which exhibits nothing of tuberosity or deformity, but only a fast-growing drawing is clear enough to enable me to judge, adventitious leaf-buds, directly breaking forth from the tap-root. The similarity consists, therefore, only in the presence of adventitious buds in both cases, but as regards the essential point, in the *Brassica Napus* these break forth from the monstrous tubers, and not from the roots themselves, whilst in the Brussels Sprout they originate from the root directly, the two cases are wholly different. The Editors say furthermore:—"As the tuber is of cauline rather than radical nature, the production of adventitious buds is not so surprising." I add that it would not be at all surprising if the monstrous tubers were of radical nature, as a great quantity of roots, such as those of some kinds of Poplar, of Horse-chestnut, and of the *Convolvulus* species, some of which I gave a list in *Schriften der Physik-Äthionom. Gesellschaft zu Königsberg*, 1873, p. 109, make leaf-buds. The thing surprising is this, that these adventitious buds spring from the monstrous tubers, which, as far as I know, never occur before the first time. Monstrous tubers on roots, although perhaps originating from different causes, are not of a very rare occurrence, as on those of the Alder, of *Cycadeis*, of a great quantity of *Convolvulus* roots, and even of *Brassica Napus*, &c., but on none has an adventitious leaf-bud ever been observed. The reasons why I consider those monstrous tubers of *Brassica Napus* as deformed roots are—firstly, because all those tubers, most of which have no tuberosity, are, as a whole, destitute of any sort of leaf, even of the minutest scale: as far as I know no organ of cauline nature exists without leaves, except sometimes the embryo (*Bertholletia excelsa*, *Garciniaæ*, *Orobanchæ*, &c.); and, secondly, because the terminal bud is wanting, and then, as a proof, that all are adventitious, as far as I have seen, and that those tubers seem to have an analogy to the monstrous tubers of the Alder and *Cycadeis*, which are doubtfully deformed roots on account of their

mode of development, their root-sheath and anatomical structure (*Of Schacht, Flora of Regensburg*, 1853, 261). *Trievrims* (*Botanische Anzeiger*, 37, 66) considered the tuberosus swellings of the Leguminosæ as of cauline nature, chiefly on the analogy with flowering and fruiting underground buds which some Leguminosæ have—a reason which proves this analogy is not existing. If, as the Editors seem to think these tubers are cauline, may I ask them to state, for the benefit of science, the reason for their view? *Professor R. Caspary.* [In writing from memory some errors crept into our commentary. In Mr. Davidson's account of the monstrous tubers of sprouting Broccoli, without the intervention of any such tubers as Professor Caspary describes. These tubers, like the buds in the other case, are apparently of root-origin. It is not sometimes the caulicle which becomes tuberosus? Adventitious buds sometimes spring from the caulicle, which is a stem-organ, though generally without leaves other than the cotyledons. Eds.]

Celogyne cristata.—Foremost among many things well done by Mr. Beesley (who took charge of the gardens after the retirement of my old friend, Mr. Drummond) at the Swanwick, during the few days ago a fine lot of the lovely *Celogyne cristata* in various sizes; the plants were in the most vigorous health and totally covered with fine racemes, and in their lovely white flowers they are quite equal in point of cultivation and for the quality of flowers to the grand plants grown by Mr. R. S. Yates. *J. Wills, Ousley Crescent, Feb. 20.*

Gardeners' Royal Benevolent Institution.—I am one of those who think that the present system of canvassing for votes for pensioners on the funds of this institution should be discontinued, as all the needful information is furnished to every subscriber by the Secretary. In the second part of Mr. Grieve's excellent letter there is just one little error which he in common with a good many others has fallen into, and that is, he ignores the fact that subscribers for fifteen years are placed upon the list without the trouble of election. I quite agree with his remarks on the smallness of the pensions, and I know that there are hundreds of gardeners who think as I do—that subscribers and non-subscribers should not be placed upon the list, except for the purpose of being elected. The non-provident man has equal shares with those who have toiled hard to pay their subscriptions; this is one cause I know which keeps many gardeners from subscribing. Allow me to suggest also that it would be much better for subscribers, who are short, to give pensions to subscribers of £20 or £25, and allow the non-subscribers to remain as they are. *James Clark, The Gardens, Colchester, Somerset.* [At present, subscribers of fifteen years are placed on the fund, if there is room for them—without election. Would it not remove many of the objections to the present system, if subscribers of ten and of five years respectively were at the elections credited with a proportionate number of votes by the committee? Thus for five years one-third the average number of subscribers elected, for ten years two-thirds, and for ten years two-thirds, while the fifteen years subscribers would be saved the trouble of election. Eds.]

Winter-flowering Eupatoriums.—How many species are in ordinary cultivation for decorative purposes? I find all the following names floating about, but they seem to belong to not more than a couple of species. Which are the recognised names, and which are the synonyms, or how is it? The names are *adenophorum*, *ageratoides*, *corymbosum*, *fragrans*, *glabrum*, *glandulosum*, *ligustrinum*, *Mertensia oclorum*, *riparium*, *roscum*, and *Weinmanniana*. *G.*

Rhododendron Nobileanum.—I was much surprised on going through the pleasure-grounds at The Denbies, near Dorking, a few days ago, to see huge bushes of this bright-coloured *Rhododendron* covered with finely-developed flower-trusses, the flowers being in. Have any I ever remember to have seen of this variety under the most favourable circumstances. The plants were flowering freely in all positions, and have been in blossom for the last two or three weeks. *J. Wills, Ousley Crescent.*

Orchid Collecting.—The remark at p. 81 "that the well-known collector, Colombia will have some competition in affording a fallow time to the Orchids, which otherwise would run a fair chance of extirpation, if there be not some of their extirpated already," reminds me of a passage in the last letter I received from Mr. W. Bull, when he has been in the country, and the collectors of the present day. Not satisfied with taking 300 or 500 specimens of a fine Orchid, they must needs scour the whole country, and leave nothing for many miles round. At least 15,000 of the beautiful *Odontoglossum cirratum*, (some 2000) he lately, some 6000 *Oncidium macranthum*, &c. have lately

been sent over to England, and Mr. Wallis says that the environs of Quito and Caena have been perfectly plundered in even the remotest corner, and that no collector will henceforward there find any of these beautiful Orchids, the natural treasure of these districts, as not even the smallest bits escaped in the general slaughter. Fishermen spare the young fishes, and hunters do not kill indiscriminately, but these modern collectors spare nothing. This is no longer collecting, it is wanton robbery, and I wonder that public opinion is not stronger against it. Professor Reichenow has, in his own original way, given unmistakable hints in this direction, and has even dealt a blow now and then with no reluctant hand, but to no purpose as it seems. No fallow time will help these poor Orchids, where everything is gone already; only a general and strongly expressed indignation against the collector, and, moreover, most unpolitic behaviour can bring back a more reasonable and more honourable way of collecting. Let collectors take by all means as many of a good Orchid as the market reasonably will bear, but no more. Most likely they themselves, or at all events their employers, ought to be very glad if they can some years later get a fresh supply from the same locality. *E. Orzig, Botanic Garden, Zurich.*

West's Patent Trellis.—In reply to Mr. Simpson's letter on the above, which appeared in the last issue of the *Chronicle*, I beg to state, in contradiction to "the worst objection," that in the case of the trellis being fitted in a span-roof house it need not be 1 inch shorter than the rafters; the reason it appeared so in my diagram was to make it more distinguishable, and in a lean-to, where it is 18 inches to 2 feet at the outside is lost, which is amply compensated for by the advantages gained as the training space is lost where the Vine bears least. With reference to the trellis getting out of order I can only say that it has happened to me only once in 20 years in the patentee's vineyard and has never done so yet, and no such complaints have been received from others who have the trellis in use. *W. McGrath Compton, Hibernia Works, London Bridge, S.E.*

"Royal" Nurseries.—Is it allowed to any one in England, whoever and whatever he may be, to style his place of business as "Royal," and to use the royal arms? If so, I think it is a great mistake, as many people are undoubtedly misled by certain individuals using largely the above qualification of "Royal," which ought not to be employed except on sound grounds. For instance, Continental nurserymen, who are not entitled to use the royal arms, are selling by certain English firms (sometimes very small people indeed) on the credit of their "Royal" place. I think the title of a "Royal" nursery ought not to be advertised or used in any way without the consent of the high party to whom it is given. It is not a shame to see people neither whose establishment nor any personal merit or capability could ever command the highly respectable title of a "Royal" nursery, paying one day perhaps 1s. 6d. or 2s. in the pound, and advertising that they are the "Royal" nursery, the dazzling puff of a "Royal Nursery"? Such practices should not be permitted; it hurts the feelings of all honest men. *F. N. V.* [A general association of the trade seems wanted for many purposes, among others to put an end to misleading advertisements of all kinds. Eds.]

Fruit Blossom.—In all my experience I have never seen such profusion of blossoms as exist on some trees here about this spring, and this has more particular reference to the young wood of the past season's formation. I send you examples of Pear shoots, whereon I will perceive, though but few young wood of the past year's growth, almost every wood-bud has developed into a fine plump flower-truss. Plums are similarly fertile, whilst the same characteristic in some degree or other prevails generally. Filberts and Hazel-nuts are wonderfully loaded with the pretty crimson-pointed female blossoms, and Peaches, &c., have clusters of blooms at every bud. In passing through Kent this week I saw several Damsons in full bloom, and many Pears with blossoms expanding, or a week or two earlier than they are here in Essex. *William Earley, Ilford, E.*

How to Renew a Vine Border without Losing a Crop.—In reply to "E. P.," of Jersey, p. 117, I may state that if he follows the directions here given he can renew his Vine borders and not lose a crop. I may here premise that I don't pretend to say I can do the border all at once, and save the crop. I do it in one year, but I do it in the following manner. In my case the Vines had been planted nearly thirty years, and were showing signs of distress. I began in March to take away some of the old soil around the stems of the Vines, replacing with fresh soil to encounter the first frost, which was in July. Then in August following, when the grapes were

* By mistake, *Brassica Rapa*, instead of *Brassica Napus*, is put under the woodcut, fig. 25.

cut, and the leaves yet green, I prepared to renew the one half of the border. To make it plain, we shall number the Vines, one, two, three, four, &c. Having the soil ready, rather dry, I had a line set from the stem of No. 1 Vine to the front of the border, and a mark made along the line, which was then shifted to No. 2 Vine, and a similar mark made parallel to the first line. The soil is now to be dug up between the two marks, taking roots and soil clean out till you get within 6 feet of the stems of the Vines. Then take forks and fork out the remainder of the soil from among the roots, shovelling it away as you go on. Have a mat on each side to place the roots under as you fork them out. The sides of the trench are to be cut down on each side with the spade, not perpendicularly, but a little inwards, or undermined a little: the reason for this will be seen by-and-by. If the border wants any draining, have broken stones ready to place in the bottom of the trench, when all is cleared out. After the broken stones are put in cover with turves, the grass side downwards; now wheel in the soil, levelling and ramming it carefully, more especially at the sides and end of the trench next the front wall. Fill up to within 8 inches of the top. Spread out the roots of each Vine, regularly over the surface. There will, no doubt, be some dead or rotten roots to cut away. Shorten the strong roots to different lengths, cutting from the under-side. Cover the roots carefully, give some water, and the work is done. You then begin with No. 3 and 4 Vines, do the half of each, as in the first instance. Then you go to 5 and 6, and so on till you get to the far end of the house. This will complete the first part of the process. I put some short grass, the moving of a lawn, to raise a little heat in the border, and keep it moist. The artificial heat, however, is not essential, as the soil is naturally warm at that season of the year. In the November following the renewal of my border the roots were running in the fresh soil very freely. You have now to commence next year with, one half of the roots of each Vine in the old border, and the other half of each Vine having vigorous roots in the new border, a considerable improvement on the old border. In August the following year you have to do the intermediate spaces, in the same way as was done in the first instance, by clearing out the soil to within 6 feet of the stems of the Vines, then forking out the roots, and cleaning the bottom of the border. You will get quite beneath the stems of the Vines this time, and, in putting in the soil, advantage will be seen of previously undermining the sides of the border. The soil now put in will act as a wedge, and leave no crevices, if well rammed as it is. Be careful in firming the soil among the roots under the stems of the Vines, so that no vacancies are left. The above plan was a great success with me, and I have no doubt it will be equally successful with "E. P." if he has the work carefully done. Given the soil and labour, who need have had Vine borders? "E. P." probably spurs his Vines, and very likely the spurs have got long; get young shoots from the bottom, cutting out the old spurs as the shoots grow up. In my own case I had young shoots from the bottom, cutting out the old spurs every year for four years; then I cut down the old stems so that, hazing the old stems at the bottom, my Vines looked always like four-year-old Vines. As to soil, bones and charcoal are good ingredients in it. I have neither bones nor charcoal in my border, and I had Black Hamburgs weighing 7½ lb. a bunch last year. W. Hutchison, *The Gardens, Llynvyn Court.*

Lilies of the Valley. Having read several articles in your paper on Lilies of the Valley, wherein opinions have been expressed by several correspondents about the quality of these roots from different origin, I have to-day sent you a small box containing a pot of Lilies of the Valley for your inspection, and I would feel obliged if you will give your opinion about them. The pot contains a clump as generally grown here for the trade, and of the sort which is considered here as the best. Growing the Lily of the Valley very largely, I have some refuse clumps, from which I selected and forced a few, to adorn a small plant-house of my own; these, of course, were not the finest, the best having been sent to my customers. If you care to have my opinion of the reason why our Dutch Lilies of the Valley are judged by some parties to be of inferior quality, I beg to say that some people abroad, paying from everybody and often under market price, are sometimes imposed upon by growers, who sell the roots growing here in a wild state, and which are of very inferior quality. The difference between the two sorts however, were very obvious, the one being much smaller and of a darker green, and the flower-stems shorter and giving only a few bells. An experienced man can distinguish at once the wild sort, even when leafless, the crowns being not so plump by far as those of the cultivated variety. As to the plants I have just received was a very good one, and much better than many other Dutch Lilies of the Valley that have come under our notice. EDS.]

STEMLESS MUSHROOM.

The accompanying illustration, fig. 41, is a representation, natural size, of a stemless Mushroom, found last November near Newbury, by Mr. J. A. Bartholomew, of Penelope, Chicheley. The first in-

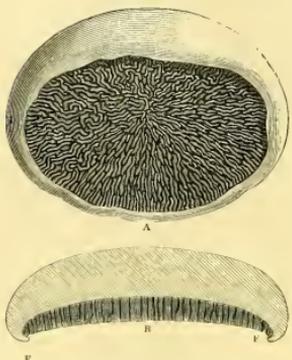


FIG. 41.—STEMLESS MUSHROOM AND SECTION.

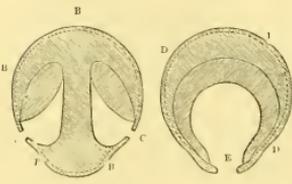


FIG. 42.

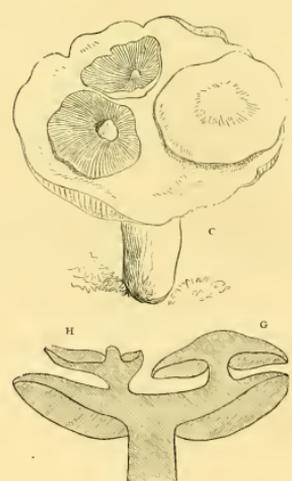


FIG. 43.—MONSTROUS RUSSULA AND SECTION.

mination which reached me regarding this singular monstrosity was contained in a letter from Mr. Henry Reeks, F.L.S., of Thruxton, and through this gentleman's kind offices I was enabled to exhibit the actual specimen before the Scientific Committee of the Royal Horticultural Society, on December 9 last.

In a letter from Mr. Bartholomew, the writer therein says he gathered the Mushroom himself in his

own meadow at Penelope; the fungus was lying in a natural growing position (the dewy grass partly hiding it from observation) with no sign of a stem or any connection with the ground in any way, above or below.

By reference to the illustration it will be seen that the gills do not radiate from a centre as they usually do in Mushrooms, but are disposed in labyrinthiform patterns, after the manner of *Dodeaea*, *Boletus* or *Paxillus*. Nevertheless the plant is a genuine specimen of the true meadow Mushroom, *Agaricus campestris*. This is proved by the nature of the trama and the size and colour of the spores, which I have examined microscopically. The upper figure, A, shows a general view of the complete plant, and the lower figure, B, a section.

It is by no means an easy task to explain the meaning of this singular monstrosity, and as far as my experience goes the specimen is quite unique. A stem is not invariably present in every member of the Mushroom tribe, but of necessity there is always a distinct point visible, showing where the fungus has been attached to the matrix which has carried it. In the plant here illustrated there is not the slightest trace of attachment to the ground, either above or below.

I am inclined to explain the abnormal growth of the plant in the following manner. In one way or other all members of the Mushroom tribe are in infancy enclosed in an entire wrapper; this wrapper may either take the form of a cloth-like veil, a mass of spider-web-like thread, or a coating of slime. An entire veil or wrapper is shown at B, in F, fig. 42. When an *Agaricus* is present in every member of the Mushroom tribe, and does not put on the appearance of a Puff-ball, till the wrapper is cracked all round (by the growth of the stem), as at C, C. No doubt the stemless Mushroom was veiled in infancy by a wrapper which entirely covered it (B, D), and the point of attachment to the ground was at the bottom of the veil at the same point where the veil was ultimately ruptured (E); the edge of the veil is clearly seen in the actual specimen, at F, F, fig. 41.

The entire absence of a stem in the Penelope Mushroom is very remarkable, and the lesson it teaches should not be lost sight of by mycologists.

In the *Gardener's Chronicle* for July 26, 1873, pp. 1016, 1017, we have found a series of illustrations of monstrosities in the Mushroom tribe, and a set of singular "twin Mushrooms" may be seen in the number for March 25, 1876, but in neither paper is there anything like the monstrosity now described.

The following example, fig. 43 C, is also different from any of the specimens hitherto figured in the *Gardener's Chronicle*, and therefore may be worth a place at the present time. It represents a specimen of *Russula vitellina*, exhibited at the last fungus meeting of the Woolpoole Club at Hereford. The remarkable point in the plant is that it has three smaller specimens growing upon and confluent with the top. One of the upper plants has its gills placed downwards, as seen in the section at G, whilst the two others have them displayed upwards, as at H. W. G. Smith.

Florists' Flowers.

THE PROPOSED CARNATION SHOW IN LONDON.—You will greatly oblige if you will allow me through the medium of your pages to invite the attention of your readers to, and solicit their support for, the show of Carnations and Picotees intended to be held in London in July next.

It owes its origin to the fact that, save by this special show, no opportunity is afforded to the cultivators of these flowers for their presentation before the public, neither of the two societies devoted to horticulture offering inducements in the shape of prizes or days of exhibition suitable for their production, whilst an additional incentive to this action may be found in an assertion made some time since in the pages of the *Journal of Horticulture*, that "Florists' flowers were hopelessly at a discount in the South."

When I state further that the proposed show is due directly to the suggestion of Mr. Charles Turner, of the Royal Nursery, Slough, and Mr. Douglas, who has charge of the fine collections at Loxford Hall, I shall have said enough to assure your readers that the display will be of great merit, and worthy the notice of all lovers of these very beautiful flowers, whilst, further, a reference to the subscription list, a copy of which I enclose, will show the promoters

do not solicit aid without first contributing liberally from their own pockets.

A schedule of prizes which has been proposed, and which the promoters believe would appropriately illustrate the cultivation and development of the flowers, offers ninety-one prizes, including, in Carnations, collections of twenty-four and twelve, and single specimens in each class; Pinks, white ground, and the same; yellow ground Picotees, prizes for collections of twelve and for single specimens; miscellaneous Selfs or fancies, a class usually especially interesting to Ladies, three prizes each of twelve blooms; and Plants in Pots, two prizes each for twelve specimens. Resulting in an aggregate of 462 specimens, and a money total of £54 16s.

The funds thus far contributed amount in round numbers to fifty guineas, a further sum of £15 to £20 is therefore needed to provide the desired prizes, and for the expenses incidental to the show, and to this extent the promoters will gladly accept of help from any of your readers disposed thereto. E. S. DeWull, Hon. Sec., 11, Clatham Terrace, Larkhall Rise, Clapham, S.W.

AURICULA SHOW.—We are glad to learn that the fund for carrying out the Southern Show of Auriculas, fixed to take place at the Crystal Palace on April 24 next, may be regarded as complete, allowing for a probable addition of £5, which, in the experience of the promoters, generally accrues at the last moment, as the contribution of the lagards in floriculture.

The tenacity with which the **AURICULA** cultivators cling to their traditional ideal of what constitutes a perfect Alpine Auricula is well set forth by the Rev. F. D. Horner in the current number of the *Florist and Pencilist*. In the January number of that periodical Mr. K. Dean put in a plea for the recognition of the Self Alpine Auriculas at the coming exhibition of Auriculas. Several very beautiful flowers have been raised by Mr. C. Turner and others, but being destitute of the shaded petal they have been practically excluded from competition at the exhibitions of the National Auricula Society. Referring to this plea the Rev. Mr. Horner states:—

"The flower comes before us with a broad enough distinction, but it is a rather awkward one, for it makes the flower an alpine with the very first and prettiest property of the alpine left out. For it is not a mere berefted notion idea that the alpine should be a flower of shaded ground colour, but it is a leading property universally recognised among florists; it is the golden eye; and flowers possessing these properties will always take high precedence of those with pale eyes, or those nondescript neo-covers the self alpine. Beautiful they are, and cannot fail to be; but to me, they have the same dark piercing eyes, of an intensity that is almost fierce; and I see no such loveliness in them as I find in the true alpine, with all its tender, sweet expressiveness of softly-shaded petal, and the beauty of the golden centre. This class, in its strict integrity, forms a very lovely contrast to the self proper, the consort to the edged classes. The self, with its densely mottled centre, most not trespass on the shadings of the alpine, nor the alpine appropriate the pure ground colours of the self. Intermixture and confusion among them, in so far as they are florists' flowers, are to be deprecated. If there be self alpine, why not also alpine self, and a host of perplexing half-breeds? Were I a grower of alpine, I would dissent none to the raising of show varieties, but of the one legitimate and not necessarily limited class of golden centres and heavy shaded petals."

It may be remarked that the National Auricula Society have broken through this limitation set up by the Rev. Mr. Horner, by making a class for alpine with white centres; and now that a beautiful race of self alpine has been obtained, it does seem a pity to exclude them altogether from competition; but what was admitted it would be best if they were classed by themselves, and not in companionship with edged alpine proper, as some growers of the alpine Auricula will not admit the self flowers to their collections.

Natural History.

WITCH KNOTS ON THE BIRCH.—The great mass of twigs looking like a large bird's nest fallen in a loose bunch amongst the branches of the Birch tree, and commonly known as a Witch Knot, is familiar to all, but its origin, from the attack of a minute four-legged Acarus (Phytostus), very similar to the one causing much mischief to young buds of the black Currant, is not so well known.

During the last winter there has been a deal of this peculiar growth on some Birches planted by the roadside in the neighbourhood of Isleworth, which has given an opportunity of studying its progress from the beginning.

In the autumn leaf-buds are observable, distinguishable from the natural smooth lanceolate shape by their swollen appearance, being roughly spheroidal, comparatively large, and composed of loosely imbricated scales. In November the Phytostus may be found in these buds, and it continues active through the winter. About the beginning of February these scales will drop to a touch, and show inside a short thickened axis, beset with numerous very minute round huds at the base of the scales—the beginning of the future diseased mass of twigs.

By examining the tree this growth may probably be found in every progressive stage, from the shortened twig, with the infested loose made buds placed as close as they can grow on it; the second stage, when some of these buds have again produced diseased twigs; what may be called the third, when the great numbers of swollen buds near together have formed a cluster, with diseased twigs proceeding centrifugally from it; up to the complete growth, a central nucleus of diseased buds, with a mass of variously diseased twigs in all stages of growth, disease and decay surrounding it, these often forming together a bunch a yard or more in diameter. The gall mite originating the malformation is cylindrical, whitish, about the two-thousandth of an inch long, and a quarter that width at its broadest diameter, and in walking appears to make much use of the sucker-like appendage with which its legs are terminated; and in February the creature may be found in the act of dis-



FIG. 44.—WITCH KNOT ON THE BIRCH.

closure from egg-like bodies, occurring in some numbers in the Phytostus-infested buds. Whether these, however, are eggs or a stage of change in the Phytostus I was unable to discover.

The matter is of some interest, from the Acarus attack producing woody growth, instead of simply galls from the cellular tissue, and it would be interesting to find whether, in cases where the black Currant buds were similarly infested, any instance could be found of increased woody growth taking place. In the Birch the numbers of Phytostus are so much smaller than those given for the black Currant that it suggests the probability of their exciting the diseased growth instead of destroying the point of attack.

The mischief in a case like the present is considerable, and would make it worth while to cut down the infested trees. O.

Notices of Books.

The Cactus and other Tropical Succulents. By H. Allnutt. (*Estates Gazette Office, Fleet Street.*)

Mr. Allnutt is an enthusiastic and, we may add, a very successful amateur town gardener, and in the little book before us, of 133 pages with sixty illustrations, he has rendered his flower and plant loving fellow citizens a service of no little value in bringing prominently under their notice, in a plain, agreeable, and instructive manner, a class of plants which, of all others, are the most calculated to afford them a maximum amount of enjoyment for a minimum expenditure of labour or money. As our author well puts it, "there are about five months out of the twelve in which little or nothing can be done in a flower garden," and as a consequence the ardent amateur's love and enthusiasm for plants has to be somewhat

shelved during the winter months; but should he obtain, as Mr. Allnutt has done, a choice collection of small succulents, this order of things is at once changed, inasmuch that "the interest we may feel in a Cactus does not depend solely on its flowering, as is the case with the generality of plants." On the contrary, the Cactus is, by reason of its grotesque forms or individual peculiarity, a source of never-fading interest in the family circle. For culture in windows, or in a small frame as Mr. Allnutt has figured and described in his book, the succulent plants have a great advantage over such subjects as Fuchsias and Pelargoniums, and which consists in the grower being able to keep a dozen or more of the former in the space taken up by one or two of the latter. Like everything else in the plant world, the succulent pays for attention in the matter of cleansing, watering, and potting as required, but where a little neglect in the case of any other plants would be fatal to their well-doing, it does little or no harm to the Cactus, and would, indeed, often prove beneficial. Written by an amateur for amateurs, practical gardeners being warned off, we shall not attempt to judge the merits of the book by a strictly horticultural standard; but we unhesitatingly recommend it to the class for whom it is intended.

—We take the first opportunity of announcing the publication of the first of a series of volumes on *Economic Entomology*, by Mr. Andrew Murray, for the Committee of Council on Education (Chapman & Hall). The present volume is devoted to the wingless insects and, like those which are to follow, is intended as a guide to the admirable collections now in the Bethnal Green Museum. We shall have to speak more at length of this excellent book when our space is less crowded, but whatever we may find to criticise hereafter we at once say that no other library should be without the book in question. It is copiously illustrated.

PUBLICATIONS RECEIVED.—A *Nep Kertész*.—An Agricultural Rip Van Winkle (C. Matthews, 265, Strand).—*Bulletino della R. Società Toscana di Orlicoltura*.—Notes on the Colony of Victoria.—The Principles of Fumigation, by E. W. Cox, Sergeant-at-Law (*Law Times Office*).—The Gardeners' Monthly.—Report of the Royal Botanic Garden, Edinburgh.—Delcous Seminars, &c. (Imperial Botanic Garden, St. Petersburg).—Annual Report on the Melbourne Botanic Gardens.

Reports of Societies.

Edinburgh Botanical. Feb. 8.—Dr. Cleghorn, V.P., in the chair. The following communications were read:—1. Experiments with Turnip Seeds, by A. Stephen Wilson, of North Kilmarnock. 2. Notes on some British Plants in the Herbarium at the Royal Botanic Garden, Part IV., by Mr. F. M. Webb. 3. Notes on some Plants Introduced by Wool collected on the Banks of the Tweed in 1876, by Mr. C. W. Peach. 4. Notes on Open-air Garden Vegetation, by Mr. J. McNab (see p. 205). 5. Notice of Donation of Specimens of Palms to the Herbarium at the Royal Botanic Garden from Islands in the Indian Ocean, by Dr. Isaac Bayley Balcan, 6. Notes on Tillandsia anodes, by Mr. M'Nab. Dr. Bremner exhibited a mass of roots taken from the interior of an old Willow tree. The tree was a very large one, and had the lower part of its trunk completely decayed. An upper branch, however, was quite fresh, being supported by a great quantity of roots which descended from it into the bark. Mr. Boyd, of Ormiston, exhibited a cone of the common Spruce, having one half of its bracts reflexed.

The Villa Garden.

THE GREENHOUSE.—This, in the case of a well-cared-for house, is becoming alive with floral pleasures; there is scarcely a thing but what is on the move. Spring is advancing with rapid strides, accompanied by soft, balmy, sunny weather more like that we look for in the general April days than in February—one of the principal months of the winter. Some things demand immediate attention, and must have it.

Fuchsia cuttings in stone pots—the cuttings put in early in September—are putting forth budding growth, and must soon be potted to have nice plants in June. Placed on a warm airy shelf in the early part of the winter, and watered in favourable weather, they are

breaking into growth at every joint, and urgently need root-room. Store pots of show Pelargoniums wintered in the same way require the same treatment. Some of the plants, by reason of being crowded in the pots, are a little lank in appearance, but by pinching out the tops as soon as the plants get a little established after potting off, they break into a free growth, and quickly make stocky bushy plants. Two or three pots of cuttings struck in this way come in very useful, when they bloom late, after the larger plants have gone out of flower; and as the show Pelargonium is not only a fine and effective decorative plant, but also very useful to cut from, as the flowers keep fresh for a considerable time in water, their value is increased thereby.

A friend having a small greenhouse wrote a few days ago in a state of some alarm, on the ground that his plants of show Pelargoniums were making such a rapid growth, though kept in the coolest and airiest part of the house, that he was afraid the flowers would be expanding before the chances of wintry weather had quite worn themselves out; and he does not stand alone in this respect, for the rapid movement into growth is something remarkable, and it is difficult to divest one's mind of the fear that March, April and May, will in all probability be, in some part at least, chilly, and most unpleasantly unconventional. The wintry frosts are locked up somewhere, and must free themselves sooner or later, and with the exception of last and other winters, there has not been in one's memory, the later spring months may be waited for with some misgivings. Our advice to our friend was not to pinch out the tops of the shoots of his Pelargoniums as he had proposed, but simply to keep them in the coolest and airiest part of his house, and not allow them to suffer in any way through drought. The plants were reported earlier than usual during the latter part of the past summer, and got into growth before the usual time. After the buds begin to shoot they are some time coming up, and it will be later than our friend imagines before they begin to bloom. The few plants are wanted specially to bloom in June, perhaps for an exhibition, the growing shoots should then be stopped, pinching them back to about six leaves.

BEDDING LOBELIAS.—As the blue Lobelia is such a favourite and indispensable bedding plant, attention should be turned to getting up a stock of it from wintered plants. These are always to be preferred to seedlings, inasmuch as they can be better depended on for uniformity and similarity of colour. The seedlings of the blue Lobelia varies very much in character, and spoils the effect of a mass. If three or four plants of a good variety be selected at the end of the summer, and wintered in pots on the shelf of a greenhouse, they make a free growth in spring, and can then be divided into a great number. But amateur gardeners are sometimes very unsuccessful in wintering the Lobelia: they keep them too dry, and kill them with mistaken kindness. We have wintered some plants in a cold house, by simply planting them out in a shallow box, and keeping them on a plant stage. They grow nearly all the winter, and each shoot is now throwing out roots just above the surface of the soil. These shoots can now be divided and potted singly in small pots, and kept in the greenhouse, where they cannot fall to grow into nice plants by May.

The Weather.

LONDON: Barometer.—During the week ending Saturday, February 17, in the vicinity of London the reading of the barometer at the level of the sea decreased from 29.98 inches at the beginning of the week to 29.82 inches by the morning of the 11th, increased to 29.94 inches by the evening of the same day, decreased to 29.69 inches by the morning of the 12th, increased to 29.04 inches by the evening of the 14th, decreased to 29.77 inches by the evening of the 15th, and increased to 30.10 inches by the end of the week. The mean reading for the week at sea level, was 29.88 inches, being 0.28 inch below that of the preceding week, and 0.10 inch below the average.

Temperature.—The highest temperatures of the air were from 56° on the 12th to 50½ on the 17th. The mean for the week was 47½. The lowest temperatures of the air ranged from 36° on the 17th to 45½ on the 11th. The mean for the week was 41½. The mean daily range of temperature in the week was 11½, the greatest range in the day being 14½ both on the 14th and 17th, and the least 8½ on the 15th. The mean daily temperatures of the air were as follows:—11th, 50°; 12th, 48½; 13th, 47°; 14th, 48½; 15th, 48½; 16th, 43½; 17th, 42½; and the departures in excess of their respective averages

were 1½, 9° 3', 8° 1', 9° 9', 9° 8', 4° 8, and 4° 2. The mean temperature of the air for the week was 47½, being 0.2 above the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 102° on the 11th, 95½° on the 16th, and 93° on the 12th, on the 15th 60½° was the highest reading. The lowest readings of a thermometer on grass with its bulb exposed to the sky were 31° on the 16th and 17th, and 38½° on the 12th, the mean for the seven low readings was 37½.

The direction of the wind was W.S.W., and its strength brisk. The weather during the week was mild, occasionally fine, but generally dull and cloudy.

Rain fell on five days in the week, the amount collected was 0.77 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 58½ at Bradford and 57½ at Plymouth; at Brighton, Portsmouth, Norwich, Wolverhampton, and Eccles 54½ was the highest temperature; the mean value from all stations was 55½. The lowest temperatures of the air were 31° at Wolverhampton, and 34° at Nottingham and Eccles; at Truro 43° was the lowest temperature; the general mean from all stations was 37°. The range of temperature in the week was the greatest at Wolverhampton, 23½, and the least at Truro, 14°; the mean range of temperature from all stations was 18½.

The mean of the seven high day temperatures was the highest at Truro and Plymouth, 54½, and the lowest at Nottingham, Manchester, Exeter, and Hull, all 50½; the general mean from all stations was 52°. The mean of the seven low night temperatures was the lowest at Hull, 38½, and the highest at Truro, 47½; the mean value from all stations was 42½. The mean daily range of temperature was the least at Portsmouth, Truro, and Liverpool, all 17°, and the greatest at Sunderland, 12½. The mean daily range from all stations was 9½.

The mean temperature of the air for the week from all stations was 46½, being 4° above the value for the corresponding week in 1876. The highest was 50½, at Truro, and the lowest 44°, at Hull.

Rain fell on every day of the week at Bradford, and on four or five other days at most places. The amounts of rain varied from three-quarters of an inch at Farnham, Truro, Blacketh, Bristol, Liverpool, Manchester, and Sunderland, to a quarter of an inch at Sheffield and Leeds; the average fall over the country was six-tenths of an inch.

The weather during the week was mild, generally dull, and the sky cloudy, but fine at times.

SCOTLAND: Temperature.—The highest temperatures of the air ranged from 55° at Leith to 52° at both Dundee and Aberdeen; the mean for the week from all stations was 53½. The lowest temperatures of the air varied from 31½ at Aberdeen to 36° at Leith; the mean from all stations was 33½. The mean range of temperature in the week from all stations was 19½.

The mean temperature of the air for the week from all stations was 42½, being 4½ above the value for the corresponding week in 1876. The highest occurred at Leith 44½, and the lowest at Aberdeen, 40°.

Rain. The amount of rain measured during the week at Greenock and Paisley was rather more than 2½ inches, whilst at Dundee half an inch only fell. The average fall over the country was 1½ inch.

DUBLIN.—The highest temperature of the air was 58½, the lowest 33°, the range 25½, the mean 47½, and the fall of rain 0.63 inch.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, FEB. 21, 1877.

MONTH AND DAY.	TEMPERATURE OF THE AIR.				WIND.	WIND FORCE.	WIND DIRECTION.	WIND VELOCITY.
	Barometer Reduced to Sea Level.	Thermometer in Shade.	Thermometer in Sun.	Thermometer in Shade.				
Feb. 19	29.67	41.5	53.0	41.8	8.2	4.5	8.2	82
20	29.67	41.5	51.5	37.2	12.0	4.5	4.5	3.5
21	29.84	41.0	50.0	36.0	14.0	2.0	4.0	3.5
22	29.87	41.5	48.5	37.0	8.2	4.4	4.4	3.5
23	29.84	41.0	47.5	35.0	10.0	4.0	4.0	3.5
24	29.84	41.0	46.5	34.0	10.0	4.0	4.0	3.5
25	29.84	41.0	45.5	33.0	10.0	4.0	4.0	3.5
26	29.84	41.0	44.5	32.0	10.0	4.0	4.0	3.5
27	29.84	41.0	43.5	31.0	10.0	4.0	4.0	3.5
28	29.84	41.0	42.5	30.0	10.0	4.0	4.0	3.5
29	29.84	41.0	41.5	29.0	10.0	4.0	4.0	3.5
30	29.84	41.0	40.5	28.0	10.0	4.0	4.0	3.5
Mean	29.83	41.0	48.8	36.0	10.0	4.0	4.0	3.5

- Feb. 15.—A very dull cloudy day. Mild.
- 16.—A fine light day, partially cloudy. Rain in early morning.
- 17.—A fine day, very cloudy, and little thin rain at times.
- 18.—A dull cloudy day; occasional thin rain.
- 19.—A fine day, very cloudy. Dull and wet, at night. Little rain in morning.
- 20.—Overcast, dull with sleet till 11 a.m. Fine, but cloudy after. Cool. Strong wind. Cloudless night.
- 21.—A fine but very cloudy day. Cold wind. A little thin rain fell at 10.

JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—BACON.
172. THE OLD BABY CUCUMBER.—*The Gardener*, Old Forge, Dunmurry, Belfast, was so much obliged to any of our readers for a few seeds of this old Cucumber.

Answers to Correspondents.

THE BOUTOUPE PEA, which "R. D." enquires about (Cly. 200) is a very fine variety. The best specimen was the Mummy Pea. There are two varieties—one white-flowered, the other as dark. B.—I think the Pea your correspondent "R. D." inquires after in yours of February 17 is identical with a French variety—*Pois sans parchemin Turc à fleur rouge*. This is a kind of Sugar Pea, 6 feet high, with a very strong branchless stem, and the flowers crimson and pale pink or white in a normal state. It is a very beautiful variety. Can any of your readers tell me what the "Organ Herb" is? It is puzzled by it. J. Gould. [? Origanum = Marjoram.]

BOOKS: T. F. The last edition of *Parson's Botanical Dictionary* contains many more references than the pocket edition, and is besides the best that you can get.

CAMELLIA: F. A. S. A full-double well-formed symmetrical flower, but rather small, and not very novel in colour—a bright carmine-red, mottled with white.

CATALOGUE: G. T. *Crossford*. We know of no illustrated catalogue that gives descriptions of rustic summer-houses, seats, bridges, gates, and fountains, &c. Mr. J. Caven Fox, Royal Horticultural Society, South Kensington, would be glad to send you a catalogue of summer-houses; for the others consult our advertising columns.

INSECTS: A. P. M. D. The beetles seen are the omnivorous weevil, *Oryctolynchus scabellus*. If you would be a sheet on the ground under your Orchids, they would be easily seen when they fall down on being disturbed by the introduction of a light after nightfall. They are a British species of too common occurrence. I. O. W.

LARCH: Larix. You would do best to consult the chapters on Larch in Grigor's *Arboriculture* (Edinburgh, Edmonston & Douglas), or Town's *Forester* (Blackwood & Sons).

LOBELIA EMPEROR WILLIAM.—Since writing in your last number I have had numerous applications for cuttings. Many of my correspondents I have supplied, and the others shall receive my best attention as soon as I can spare the cuttings. P. Davidson, *The Gardener*, 10, St. James's Place, London, W.

MISTLETOE: R. May. The best scientific account is that by Dr. Harley in the *Transactions of the Linnean Society*. See also Dr. Bull's paper in *Seymour's Journal of Botany*, and numerous references in our back volumes.

NAMES OF FRUIT: D. B. Apple. We do not know the name of the American variety sent. J. Dimmick, York, and I are not now send you a catalogue of small Pear is believed to be Bezi Quessé, but as the fruit was very much bruised and decaying we are not quite sure.

NAMES OF PLANTS: An Old Subscriber. Sparmannia africana.—G. T. We cannot undertake to name garden varieties of flowers, to which class your *Camellias* belong. They were, moreover, sent before our identification of them. H. W. D. Probably a species of Swainsonia. A. B. C. A double form of *Anemone pavonia*.—W. W. 1. *Rivina* sp. 2. *Saxifraga sarmentosa*. 3. *Delandrea Martensii*, probably ? 4. *Senecio (Kleinia) articulata*; 5. *Tradescantia zebrina*; 2, 4, 5, send these again, but not such scrappy specimens. D. D. *Saxifraga*. The variety is *Stenandrium californicum*. *Cypripedium* probably *C. Goveniana*, but send fruit. Send the other shrub again when in flower, and kindly number your specimens.—A. B. *Burrows*. We believe your Begonia are—1, *B. Elmira*; 2, *B. Delandrea*; 3, *B. nitida*. The specimens are not good enough to determine with accuracy.

PARSLEY: Wm. Cochran & Son. The sample sent is very vigorous, and the variety will probably prove to be a useful one for winter work; but we have seen more finely cut-leaved varieties.

PINES: J. H. G. Some of the suckers were quite rotten, and they had the appearance of having rotted by being seized either by hot water or by the hot dung which they may have been laid in.

PLANTING: G. T. *Delandrea*. We would recommend you to plant the trees as you receive them from the nursery, and leave them so until the buds are swelling a little; then cut the shoots back to, say, half their length or so, and water them. Delandrea, B. G., so that no precise rules can be given.

PRUNING VINES. *St. Andreæ.* Cut them back at once to a feet 6 inches, and then trim back the young growths to the required width every autumn, leaving the tops to grow till they attain the desired height.

QUERCUS FORDII. *A Constant Reader.* Probably a hybrid form of *Q. Grammatica*.

RASPBERRY. *J. L.* We will endeavour to meet your wish shortly.

REUSE FOR GASWORKS. *R. V. A.* You can do no harm in using the ordinary law of the **ROCKY MOUNTAIN LOCUST.** *J. S. D.* The best account that we have seen of the Rocky Mountain Locust, *Calopternus asperus*, is that published by Professor W. Riley, in his *Exploring and Collecting Report on the Noxious, Beneficial, and other Insects of the State of Missouri*. You may possibly get a copy from the author, if you write to him at St. Louis, Missouri, or from Mr. John Montross, Secretary to the State Board of Agriculture, St. Louis. We do not know the price.

SOULS. *P. L. N.* We do not care for snap-a-ups as manure for any kind of plant. They will be least injurious—may perhaps do a little good—amongst strong-growing vegetables or Vines, but do not use them for anything tender. Your Strawberry leaves have been attacked with a fungus or mildew, which is now dead. They will be none the worse.

STRAWBERRIES. *G. A. H.* The great point is to secure the runners early, and to get the crowns well ripened and thoroughly established in the pots before winter. It does not matter whether it is the first, second, or third runner that is taken.

VINES. *A Subscriber.* In planting Vines out of pots at this season the soil should be shaken clear from the roots, and they should be spread out carefully in layers amongst the soil.

CATALOGUES RECEIVED.—*Fred. Geo.* (Biggleswade, Beds), Catalogue of Seeds, Plants, Roots, &c.—*R. W. & Co.* (London), Catalogue of Seeds, Plants, &c.—**Catalogue of Hardy Annuals and Herbaceous Plants, Aquatic and Marsh Plants, Bulbous Roots, Violets, Fruit Trees, &c.**—*W. B. Rowe* (65, Broad Street, Worcester), General Catalogue.—*Messrs. W. W. Wright & Co.* (Aurdie, N.B.), Catalogue of Hot-water Apparatus.—*Messrs. W. Clibran & Son* (Oldfield Nursery, Atrincham, Cheshire), Catalogue of Plants and Seeds.—*Messrs. E. G. Henderson & Son* (Pine-apple Nursery, Madia Vale, London, W.), Catalogue of Flower, Vegetable and Agricultural Seedlings.—*Messrs. J. Algate* (Lynn, France), Catalogue of New Plants, Florist's Seeds, &c.—*W. Ford* (Fulmer, Basingstoke), Descriptive Catalogue of Seed Potatoes, Vegetable, Flower, and Agricultural Seeds, &c.—*G. W. Little* (Littleport, Dorset), Descriptive Catalogue of Vegetable and Flower Seeds, Gladioli, &c.—*Messrs. Cole & Brother* (Pella, Iowa, U.S.A.), Catalogue of Vegetable and Flower Seeds.—*Henry Brierley* (Manor Farm, Nursery, St. Leonards, near Witton), Trade List of New Roses for 1897.

COMMUNICATIONS RECEIVED.—*Justitia* (the subject of your letter is not the same with which we cannot interfere).—*L. Sanders*—*J. C. F. D. H.* (many thanks).—*G. W. M.* (please send us the name of the raiser).—*A. D. C.* (We will be glad to see the raiser).—*R. E.* (probably the raiser).—*W. A.* (we will give you a fuller answer next week).—*J. T. B.*—*E. A.*—*W. H. R.*—*R. C. W.*

Markets.

COVENT GARDEN, February 22.

Trade has fallen off again this week, and prices are lower, though superior sorts of Apples are maintaining their full value. Cist Apples are scarcely asked for. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.

Asplen. per dozen	1.0 0-0	Hedera, per doz.	0.6 0-0	Hyacinth, per doz.	0.6 0-0
Begonia, per doz.	1.0 0-0	Hyacinth, per doz.	0.6 0-0	Hyacinth, per doz.	0.6 0-0
Begonia, per doz.	1.0 0-0	Hyacinth, per doz.	0.6 0-0	Hyacinth, per doz.	0.6 0-0
Begonia, per doz.	1.0 0-0	Hyacinth, per doz.	0.6 0-0	Hyacinth, per doz.	0.6 0-0
Begonia, per doz.	1.0 0-0	Hyacinth, per doz.	0.6 0-0	Hyacinth, per doz.	0.6 0-0
Begonia, per doz.	1.0 0-0	Hyacinth, per doz.	0.6 0-0	Hyacinth, per doz.	0.6 0-0
Begonia, per doz.	1.0 0-0	Hyacinth, per doz.	0.6 0-0	Hyacinth, per doz.	0.6 0-0
Begonia, per doz.	1.0 0-0	Hyacinth, per doz.	0.6 0-0	Hyacinth, per doz.	0.6 0-0
Begonia, per doz.	1.0 0-0	Hyacinth, per doz.	0.6 0-0	Hyacinth, per doz.	0.6 0-0
Begonia, per doz.	1.0 0-0	Hyacinth, per doz.	0.6 0-0	Hyacinth, per doz.	0.6 0-0

CUT FLOWERS.

Andros, 12 sprays	0.0 0-0	Lily of Valley, 12 spr.	0.0 0-0
Andros, per doz.	0.0 0-0	Magnolia, 12 spr.	0.0 0-0
Andros, per doz.	0.0 0-0	Magnolia, 12 spr.	0.0 0-0
Andros, per doz.	0.0 0-0	Magnolia, 12 spr.	0.0 0-0
Andros, per doz.	0.0 0-0	Magnolia, 12 spr.	0.0 0-0
Andros, per doz.	0.0 0-0	Magnolia, 12 spr.	0.0 0-0
Andros, per doz.	0.0 0-0	Magnolia, 12 spr.	0.0 0-0
Andros, per doz.	0.0 0-0	Magnolia, 12 spr.	0.0 0-0
Andros, per doz.	0.0 0-0	Magnolia, 12 spr.	0.0 0-0
Andros, per doz.	0.0 0-0	Magnolia, 12 spr.	0.0 0-0

FRUIT.

Apples, per lb.	1.0 0-0	Oranges, per 100	0.0 0-0
Apples, per lb.	1.0 0-0	Oranges, per 100	0.0 0-0
Apples, per lb.	1.0 0-0	Oranges, per 100	0.0 0-0
Apples, per lb.	1.0 0-0	Oranges, per 100	0.0 0-0
Apples, per lb.	1.0 0-0	Oranges, per 100	0.0 0-0

VEGETABLES.		s. d. d.	
Artichokes, per bush	1.0 0-0	Leeks, per bunch	1.0 0-0
Asparagus, Fr. per 20	0.0 0-0	Lettuces, Fr. per doz.	1.0 0-0
Asparagus, Fr. per 20	0.0 0-0	Lettuces, Fr. per doz.	1.0 0-0
Asparagus, Fr. per 20	0.0 0-0	Lettuces, Fr. per doz.	1.0 0-0
Asparagus, Fr. per 20	0.0 0-0	Lettuces, Fr. per doz.	1.0 0-0
Asparagus, Fr. per 20	0.0 0-0	Lettuces, Fr. per doz.	1.0 0-0
Asparagus, Fr. per 20	0.0 0-0	Lettuces, Fr. per doz.	1.0 0-0
Asparagus, Fr. per 20	0.0 0-0	Lettuces, Fr. per doz.	1.0 0-0
Asparagus, Fr. per 20	0.0 0-0	Lettuces, Fr. per doz.	1.0 0-0
Asparagus, Fr. per 20	0.0 0-0	Lettuces, Fr. per doz.	1.0 0-0

SEEDS.

LONDON. Feb. 21.—No great activity is yet seen on the seed market; the recent unfavourable weather and the disastrous exhibitions in the provinces, however, to the high prices of the present season combine to impart a quiet tone to the trade. As previously mentioned, advices from the American seaboard and interior state that the home demand there has now set in. In continuation of this the imports into this country from across the Atlantic have lately been reduced to a very narrow compass—the total quantity arrived in London from New York since the beginning of the present month being only 67½ bags, equal to a small weekly average of 14½ tons. For fine Canadian seed, which the supply in New York is plentiful, long prices are demanded. As regards home-grown seed, the quantity of samples still find their way to Mark Lane, but most of these parcels are brown and weathered, and are consequently sold at irregular rates. For winter Clover the inquiry is limited, and there is at present no response here. The advance reported in Germany. Alsike keeps steady; of choice seed the stock held is small. In Trefoils the business has been limited. In the case of Mustard and Rape seed are scarce, and for such, when forthcoming, buyers are readily found. For fine white Mustard quite a considerable advance has lately been established. Cane and Linseed, as well as Rape, are scarce. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday trade was steady. Fine dry samples of English Wheat were about 1s. per quarter dearer than on Monday's night; but there was a dull market for inferior samples, and no improvement was noticed in foreign Wheat. Barley underwent no particular change in value. Malt was rather firm on the week. Sound Oats advanced 3d. per quarter on the week, but other corn remained at its previous level. Maize had rather improving tendency. Beans and Peas were quoted as before. Flour was without alteration, the tone of the market remaining steady.—On Wednesday trade was quiet, and quotations showed little or no change from Monday. As regards Wheat there was a scarcity of fine dry samples, the market for which had a hardening tendency. Barley and Malt met with slow sale, and rates remained steady. Oats were in moderate request, and sound old corn was perhaps worth a trifle more money. Maize was firm, while previous quotations were supported for Beans, Peas, and Flour.—Average prices for the week ending February 17:—Wheat, 40s. 3d.; Oats, 24s. 0d. For corresponding week last year:—Wheat, 42s. 8d.; Barley, 32s. 0d.; Oats, 24s. 0d.

CATTLE.

At the Metropolitan Market on Monday there was only a short supply of beasts, and trade was more active at the London market. Choice specimens were few and dearer, and an early clearance was effected. The absence of foreign supplies caused the short numbers here. Calves were dear. Quotations: Beasts, 47. 6d. to 55. 4d.; sheep, 45. 0d. to 55. 0d.; pigs, 45. 0d. to 55. 0d.—There was a small supply of stock at Thursday's market, and the few beasts, being of inferior quality, were cleared off readily, at advanced rates. Prime calves firmly uphold their value. Pork quotations nominal.

POTATOS.

The reports from the Borough and Spitalfields markets state that there was a pretty good market for sound Potatoes, whether English or foreign. A considerable quantity was witnessed for inferior kinds. The supplies were ample. Kent Regents, 100s. to 126s. per ton; Essex do., 90s. to 120s.; Scotch, 100s. to 135s. 0d. to 140s.; Victoria, 100s. to 120s.; Kidneys, 100s. to 120s.; Loeks, 75s. to 90s.—The imports into London last week consisted of 26,875 bags from Antwerp, 19,812 from Rotterdam, 28,126 from Ghent, 29,825 from London, 959 from Rotterdam, 661 from Dunkirk, 667 bags 138 barrels from Harlingen, 208 tons 137 sacks from Rouen, and 321 sacks from Boulogne.

SURPLUS NURSERY STOCK
all transplanted, healthy and well-rooted:—
MAULE'S AQUIFOLIA, 9 to 10 inches.
LAURELS, Portugal, 7 to 1½ foot.
ALIVE, 2 to 3 feet.
CHESTNUTS, Scarlet, 6 to 8 feet.
Common Standards, 8 to 10 feet.
LIMES, fine Standards, 8 to 10 feet.
ALIVE, 2 to 3 feet.
HORNBREAST, 3 to 4 feet.
ELGIN HORNBREAST, fine, 1-1/2. Seedling.
Special offers of the above at exceedingly low prices will be made on application to
THOMAS PERKINS, 41, Drapery, Northampton.

American Plants Without Pest.
WILLIAM MAULE AND SONS beg to offer the choicest highly English and Continental RHODODENDRONS, with BELGIC and other AZALEAS, at 2s. per dozen, or 4s. per 100.
The plants are grown in stiff loamy soil, on an exposed and elevated position, and will thrive in almost any soil, free from iron, lime, or chalk.
Handsome Standard RHODODENDRONS, with fine blooms, will be had, at 2s. 2d. per 100, and per each.
Large bushes of PONTICUM, CATALPAEAE, and other Common varieties, at 2s., 7s., and 10s. per 100.
The Nurseries, Bristol.

LEE'S NEW SWEET-SCENTED VIOLET, "PRINCE CONSORT."

As the above beautiful Violet will likely not be sent out, blooms are offered at from 3d. to 6d. per dozen, selected with long stems fit to mix with other flowers for Dinner-table Decoration, or other purposes; where three or more dozen are ordered, postage and package free. Also in flat or round bunches, at from 2s. to 3s. per dozen; carriage and package where three or more dozen are ordered.
Orders will be booked (if optionally) for plants as received, at 10s. 6d. for four plants, and 6d. for package; or four plants per dozen, and 1s. for package. Less than four plants not sent out. **VICTORIA REGINA**, 6s. per dozen plants; not less sent out.

GEORGE LEE, F.R.H.S., MARKET GARDENER, CLEVELDON, SOMERSET.

New Continental Roses for 1897.

H. BENNETT'S own selection, in the best possible Plants, ready in March.

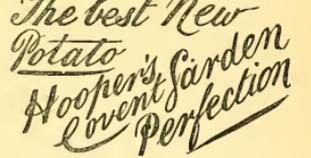
Descriptive LISTS may now be had post-free on application.

MANOR FARM NURSERY, STAPLEFORD, SALISBURY.

AVENUE TREES.

Chestnut, 2 kinds, 8 to 12 feet. Poplars, 3 kinds, 8 to 12 feet.
Elms, 6 kinds, 8 to 12 feet. Sycamores, 3 kinds, 8 to 12 ft.
Oak, 2 kinds, 8 to 12 feet. Sirlens, 3 kinds, 8 to 12 feet.
Laburnum, 2 kinds, 8 to 12 ft. Limes, 6 to 12 feet.

All the above are very fine and very cheap.
CHARLES NOBLE, BAGSHOT.



Mr. SHIPLEY HIBBERD describes it, after two years trial, as "the very model of a gentleman's Potato."
Price 1s. 6d. per lb., 7 lb. 15s.

HOOPER AND CO., Covent Garden, W.C.

LEAMINGTON BROCCOLI

Has proved to be the finest late Broccoli grown. Received First-class Certificate and Two First Prizes from Royal Horticultural Society.
In Sealed Packets only 1s. each, free by post 13 stamps.

FREDERICK PERKINS, Nurseries, REGENT STREET, LEAMINGTON.

New and Choice Seeds for 1897

J. SCOTT'S Priced & Descriptive ILLUSTRATED CATALOGUE of 52 pages will be forwarded to all applicants. It contains much useful and reliable information to Amateurs.

JOHN SCOTT, The Royal Seed Stores, Yeovil.

Special Offer of Surplus Stock
WOOD AND THORNTON offer the following, well grown and well rooted—
BLACKBERRY, 1½ to 2½ feet, nice clean stock, 9s. per 100.
FRUITING, 1½ to 2½ feet, 5 to 6 feet, 30s. per 100.
 7 feet, 50s. and 7 to 8 feet, 60s. per 100.
OAK, Evergreen, 3 to 4 feet, 6 to 14 to 5 feet, 30s. per dozen; 14 to 20 feet, 15s. per 100.
 The Nurseries, Haddington.

Cheap Plants—Special Offer.
WILLIAM BADMAN offers, as under, all the healthy stock on hand—
VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 10s. per 100; well-rooted cuttings, 6s. per 100, 2s. per 100; 12 choice varieties, 10s. per 100.
CALEULARIA, Golden Gem, 3s. per 100, 40s. per 1000.
LOBELIA, speciosa (true), 3s. per 100, 30s. per 1000; Blue-stemmed pom-pom, 10s. per 100, 100s. per 1000.
PELLAS, ANEMONS, Venusium, from stores, 8s. per 100, 75s. per 1000; Jean Sisley, 30s. per 100; Madame Vaucher, 10s. per 100, 85s. per 1000; Master Christine, 12s. per 100; all other single pots, 10s. per 100.
 Tricolor, Mrs. Pollock, 30s. per 100; Crystal Palace Gem, 2s. per 100; Flower of Spring, 12s. per 100; May Queen (true), 15s. per 100.
HELIOTRÖPE, finest dark, good bushy plants, 12s. per 100; rooted cuttings, 6s. per 100.
 Picking included. Terms, cash.
 Cemetery Nurseries, Gravesend, S.E.

To the Trade
A FEW NOVELTIES AND SPECIALITIES WELL WORTHY OF A TRIAL.
J. SCOTT, The Royal Seed Stores, Yeovil, has the great pleasure of offering the following—
NEW SUMMER CABBAGE LETTUCE—"THE FAVORITE"—This is, without exception, the finest Lettuce ever offered. It is exceptionally early, and will stand through the driest summer without showing any signs of bolting—"in fact, no other variety need be sown, as 'The Favorite' is equally fit for use in its young state as when it is fully matured. Price, 6d. and 1s. per packet. Trade prices, per annum.
MELON, DUKE OF EDINBURGH—True, 2s. 6d. per 100 seeds.
SHARPLEY SCOTT'S NEW GIANT—Eggs grown from one of this excellent sort attain the size of from 8 to 10 inches in circumference. They are mild in flavour, and are good and sound till late in the season. Treat the same as Onions. Per 100, 1s.; Trade price, 7s. 6d. per dozen.
"THE MUMMY" PEA—This is a remarkable Pea, and has somewhat a strange history as to its origin. It is said to have been taken from the mummy of a mummy, hence its name. It grows upwards of 11 feet high, branching and bearing from the bottom, and like the Scarlet Runner bears large bearing pods, 4 to 6 inches long, and no uncommon occurrence to see "ripe pods" pods fit to gather, and blossoms on the same branch. Price, 1s. per 2 oz. packet; 1s. Trade price, 6s. per dozen packets.
JOHN SCOTT, The Royal Seed Stores, Yeovil.

Special Offer of Good and Cheap NURSERY STOCK,
 all the whole of the healthy and well-rooted.
ABIES CANADENSIS, 3 feet, 55s. per 100.
 ••••• **NIGRA** and **ALBA**, 1½ foot, 30s. per 100.
 ••••• **WALTERS AND MENZIES**, 9 to 15 inches, 20s. per 100.
 ••••• **DOUGLASHI**, 9 to 12 inches, 15s. per 100; 3 to 6 inches, 10s. per 100.
PINUS PONDEROSA, 2 feet, 22s. per dozen; 6 to 9 inches, 10s. per 100.
 ••••• **MURICATA**, 1½ feet, 22s. per 100.
 ••••• **LARICIA**, 2½ feet, 30s. per 100.
 ••••• **TRICOLOR**, 1½ feet, 30s. per 100.
 ••••• **EXCELSA**, the best of the long-leaved Silver Fines, 2½ feet, 20s. per 100.
 ••••• **WENONENSIS**, 1½ feet, 25s. per 100.
 ••••• **WEINMANNI**, 2 feet, very bushy, 18s. per 100.
TIJUA **HENSCH** (Chinese Arborvitae), 1½, 1½, 1½, 30s. per 100.
 ••••• **LOBELIA**, 1½ to 3 feet, fine, 12s. per dozen.
 ••••• **CANTARIE**, 2 to 3 feet, 12s. per dozen.
 ••••• **ERICOIDES**, 1 foot, 9s. per dozen.
 ••••• **OCCIDENTALIS** (American), 3 to 5 feet, 50s. per 100.
CUPRESSUS LAWSONIANA, nice growth plants, very bushy, and moved last spring, 15s. to 3½ feet, 60s. per 100.
 ••••• **MACROCARPA**, 3 to 4 feet, moved last spring, 24s. per dozen.
CEDRUS DEODARA, 2 feet, fine, 18s. per dozen, 4s. per 100; 1 foot, 60s. per 1000.
Berberis DARWINI, 1 foot, bushy, 12s. per 100.
 ••••• **JARSONI**, 2½ feet, bushy and well rooted, 10s. per 100.
 ••••• (**MAHONIA**) **JAPONICA**, 1 inches, stout, 25s. per 100.
HOLLIES, 1 to 1½ foot, stout, good rooted stuff, 2s. 6d. per 100.
YEW, English, 9 to 12 inches, stout, 90s. per 1000.
YEW, Spanish, 4 to 6 feet, 10s. per 100.
CHESTNUT, Nut, 1 to 2 feet, standard, 18s. per doz.
MAPLE, Norway, 1 foot, 9s. per 100.
SPICE, Fennel, 1 foot, 10s. per 100.
ASH, Flowering, 5 to 6 feet, 12s. per dozen.
OAK, Scarlet, Fraxinus americana, 10 feet, 24s. per dozen.
LAUREL, Common, 2½ feet, 25s. to 50s. per 100.
BROOM, White and Yellow Spanish, 15s. per 100.
POPLARS, of sorts, 8 to 10 feet, 45s. per 100.
ALGERS, mountain and Damianus, strong, 20s. per dozen.
IVIES, Irish, very strong, in pots, 12s. per dozen.
ALGERS, mountain, 10s. per 100, 12s. per dozen.
LIGUSTRUM JAPONICUM, 2 feet, 15s. per 100.
RHODODENDRON PONTICUM, very bushy, 2½ feet, 20s. per 100, 25s. per 1000.

FRUIT TREES, VERY FINE.
PEACHES, dwarf maiden, best known sorts, 75s. per 100.
NECTARINES, dwarf maiden, 75s. per 100.
CHERRIES, dwarf maiden, 75s. per 100.
PLUMS, dwarf maiden, 75s. per 100.
PEARS, dwarf maiden and 2 yr., Souvenir du Congrès, 75s. per 100, 20s. per 1000.
APPLES, dwarf maiden, 9s. per 100.
PEACHES and **NECTARINES**, dwarf-trained, very fine trees, 2s. 6d. per 100, 20s. per 1000.
PEAR, Standard, Williams' Don Christie, from 110s. per 100.
STURGEON, Black, 3-97s. very fine, 12s. per 100.
PLUM, Victoria, bearing pyramid, 25s. per 100.
ROSES, dwarf red Moss, 22s. per 100; Cabbage, 20s. per 100; and Hybrid, 15s. per 100; 12 to 15 feet, 20s. per 100; dwarf H.P., new varieties of 1875, 20s. per dozen.
GEORGE GRAY AND **SON**, Exton, Exton, Chertsey, Surrey.

GEORGE FLOWER, Newark, has a few thousands of Black and Lombardy **POPLARS**, 12 feet; English **YEW**, 10 to 14 feet; Portugal **LAURELS**, common do.; **ACUCIA JAPONICA**, to offer at Cheap rates.

OSBORN AND SONS can now offer the following at greatly reduced prices—
ACUCIA JAPONICA, various sizes.
ARBO-VITÆ, Chateau, 3 to 4 feet.
PORX, various sorts and sizes.
CEBRAS AZULES, 2½ to 3 feet.
CORNUS MAScula VARIEGATA, 4 to 5 feet.
COE-NEASTER SIMMONSI, strong.
PHILLYRIÆ, in variety.
CYDONIA JAPONICA 6 to 7 feet.
ELM, Weeping, very fine heads.
EUNONYMUS, Green and Variegated, small and bushy.
FRAXINUS, 10 to 12 feet.
HOLLIES, Green and Variegated, from 3 feet upwards.
CHESTNUT, Horse, common.
IVIES, in great variety.
LAURELS, Common, various sizes.
LARICIA, 1 to 5 feet.
LARICUM, Common, fine.
LIGNUM, 1 to 5 feet.
LIMES, very fine, 8 to 12 feet.
MAGNOLIA GRANDIFLORA, to some fine specimens.
MILONIA AQUIFOLIUM, 1 to 3½ feet, bushy.
PHILADELPHUS, in variety.
PHILLYRIÆ, in variety.
PYRACANTHA, Red, extra strong.
PRIVET, Oval-leaved, 2 to 4 feet.
RIBES, 2 to 3 feet.
ROBINIA INERMIS, Mop-head Acacia.
SALIX CAPREA PENDULA, Kilmarnock Weeping.
WEINMANNI, various sizes. (Willow)
 Irish, with fine planted golden heads.
HERACIOUS PLANTS in great variety.
 Prices of any of the above application.
 Fulham Nurseries, London, S.W.

Presented (by post) on application.
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MESSRS. CLIBRAN AND SON will have great pleasure in sending their **PRICED DESCRIPTIVE LIST** for this Spring, free by post on application. The list of Florist Flowers, Bedding and Soft-wooded Plants generally, as well as the list of plants in extent or quality, all the newest and best varieties being constantly on hand, and the greatest care being taken to keep the varieties true to name. Another great advantage to Purchasers is that none of the plants offered are taken directly from the works propagating houses and sent off, but are all carefully harvested and most of them potted off singly, and are thereby fitted to travel either by rail or post without the slightest injury. A great proportion are autumn-struck plants, and many of the undermentioned can be sent by post:—
Abutilon, in variety, 3s. 6d. Irisee Lindley, 20s. per dozen.
Adonis, in variety, 3s. 6d. per dozen.
Achimenes, in variety, 3s. 6d. per dozen.
Ageratum, in variety, 6s. per dozen.
Agrostis, 3s. per dozen.
Degeneria, 6s. per 100, 2s. 6d. per 100.
Calliopsis, 4s. per doz.
Calceolaria, Golden Gem, 8s. 6d. per 100.
Camelion, 30s. and 42s. per dozen.
Carnation and **Picotee**, 12 plants, 6s.; 12 pairs, 10s. 6d.
Carex, tree, in variety, 6s. per dozen.
Centaurium rugosum, 3s. per dozen.
Chrysanthemum, near 10,000 combinations, 20s. per 100, 3s. per dozen.
Cineraria, 40s. per 100, 6s. per dozen, 10s. to name, 9s. per dozen.
Clematis, in variety, 60s. per 100, 9s. per dozen.
Coler, in variety, 20s. per 100, 3s. per dozen.
Cyclamen, in variety, 6s. and 9s. per dozen.
Dactylis, in variety, 5s. 6d. per 100, 1s. per dozen.
Dahlia, 25s. per 100, 4s. per dozen.
Delphinium, splendid sorts, 9s. in 2s. per dozen.
Ferns, in variety, 10s. per dozen.
Fragaria and greenhouse, 10s. to 18s. per dozen.
Fuchsia, 20s. per 100, 3s. per dozen.
Garden Florida, 6s. to 2s. per dozen.
Greenhouse, 10s. to 18s. per dozen.
Geranium, Tricolor, 3s. 6d. per dozen.
 ••••• **Bicolor**, 20s. per 100, 3s. per dozen.
 ••••• **Single-edged**, 3s. 6d. per dozen.
 ••••• **Zonals**, 20s. per 100, 3s. per dozen.
 ••••• **Zonals**, for bedding, 15s. per 100, 3s. per dozen.
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Geranium seedlings, 4s. per 100, 3s. per dozen.
 ••••• **French-crown**, 6s. per 100, 3s. per dozen.
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Herbaceous Plants, 20s. to 3s. per dozen.
Hepatica, 20s. per 100, 3s. per dozen.
Helleborus, in variety, 2s. 6d. per dozen.
Helleborus, 4s. per dozen.
 The Oldfield Nurseries, Abchurchhampton.

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WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS, also Plants of all the varieties, with Double PRIMROSES of different colours; also Plants of both Single and Double; with every sort of Early Spring Flower, &c., on application.
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CUPRESSUS LAWSONIANA, 6 to 7 feet, well rooted, 10s. per dozen, 70s. per 1000.
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CHERRY, Ohio Beauty, very fine, half-standard, 12s. per doz.
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To the Trade.
EDWARD HOLMES, Whittington Nursery, Litchfield, offers the following, price on application—
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BROWN'S PEAT, best quality for Orchids, Stone Plants, &c., 2s. 6d. per bush.
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 Fresh and packed, 6s. per sack.
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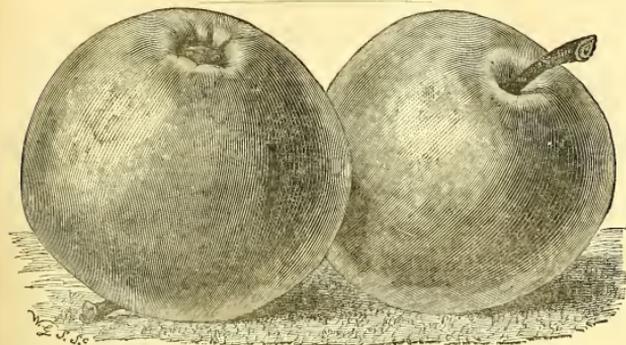
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MANURE, first-class, made from Blood, 100 lbs. 6s.; of animals, 25s. per cwt., 1s. per ton. Samples free.
FINEST KENT PEATS, per sack, ton, or truck.
LOAM, 100 lbs. 6s.; of animals, 25s. per cwt., 1s. per ton.
SILVER SAND, fine or coarse, per bushel, cwt., or ton.
FRESH SPAGNUM, 6s. 6d. per sack.
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SIMPSON'S RED SPIDER, THIRPS, &c. and other insects, which destroy the higher order of vegetation. Per quart, contained, 6s.; per pint, 4s. Supplied to Seedsmen and Chemists.
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For particulars of forthcoming exhibitions, &c., apply as above, also see p. 73 in *Forcing Plants*, by T. Christy, F.L.S., to be had of all Stationers and Booksellers.

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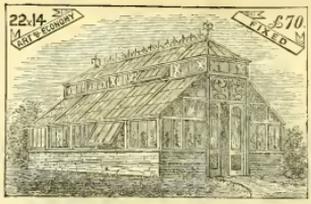


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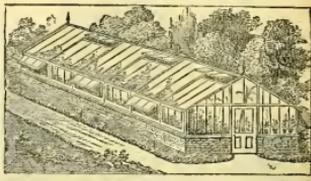


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OF EVERY DESCRIPTION ARE ALWAYS TO BE SEEN AT
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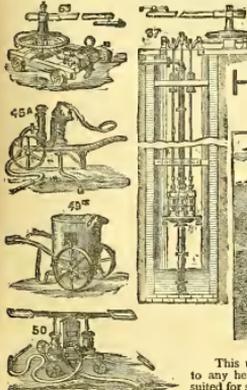
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PHALÆNOPSIS, in variety, can be supplied by the dozen or hundred. A large number of plants now in bloom: an inspection invited.

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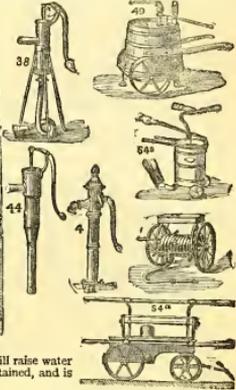


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3 1/2 " " " " " " " " " "	14. 0.	14. 0.	7. 0.
3 3/4 " " " " " " " " " "	18. 0.	14. 0.	7. 0.
3 1/2 " " " " " " " " " "	20. 0.	15. 0.	7. 0.
3 3/4 " " " " " " " " " "	26. 0.	20. 0.	8. 0.
4 " " " " " " " " " "	30. 0.	22. 0.	8. 0.
4 " " " " " " " " " "	33. 0.	24. 0.	9. 0.
4 " " " " " " " " " "	36. 0.	28. 0.	10. 0.
4 " " " " " " " " " "	42. 0.	35. 0.	13. 0.
4 " " " " " " " " " "	42. 0.	35. 0.	15. 0.
4 " " " " " " " " " "	48. 0.	35. 0.	13. 0.
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Do. electro-silvered handles	53. 0.	19. 0.	7. 6.

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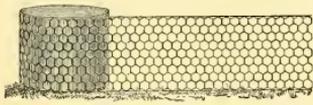


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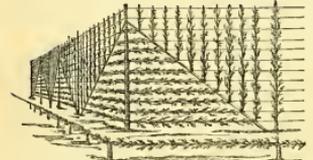
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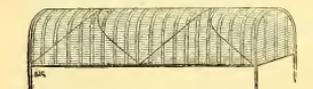
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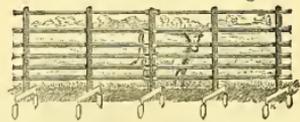
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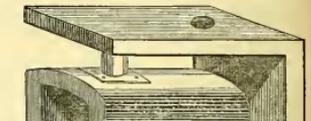
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AN EXTRAORDINARY BOILER.

During the Great Boiler Contest at Birmingham, in 1877, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat, and the water in each pipe, and yet had more than a ton and a half of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners! This was THE CHAMPION, Deards' Patent Close Coil Boiler, for Drawings and Prices of which send two stamps to

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

Sizes.			To heat of 4-in. Pipe.	Price.
High.	Wide.	Long.	Fect.	£ s. d.
20 in.	18 in.	18 in.	300	0 0 0
20 "	18 "	24 "	350	0 0 0
20 "	18 "	30 "	500	0 0 0
24 "	24 "	24 "	700	12 0 0
24 "	24 "	30 "	1,000	16 0 0
24 "	24 "	36 "	1,400	20 0 0
28 "	28 "	60 "	1,800	25 0 0

Larger sizes if required.

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

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 BOOKS of DESIGNS, 2s. each.
 The Extensive Ranges of Metallic Hothouses in the
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 FOR THE
JOINTS of HOT-WATER PIPES.

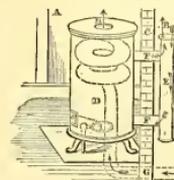


Description of Sketch—
 A. The Rubber Ring as rolled into the Socket.
 B. The Ring before inserted in the Pipe.
 These Rings are made any size to order. All ordinary sizes are
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Illustrated Price List on application.

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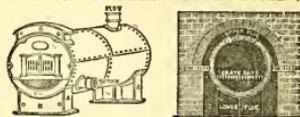


The only Gas Stove
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 Height, 30 inches; dia-
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 It will be found very
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After long experience, has proved the most SIMPLE,
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 All structures specially adapted to the purposes for
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 Wrought-iron Hot-water Boilers,**
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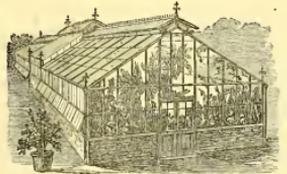
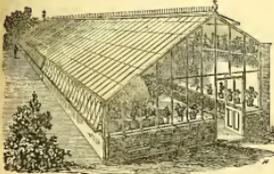
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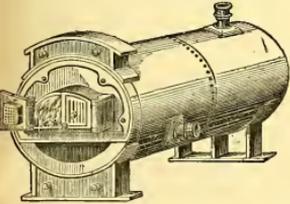
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 The Glass is fixed between two layers of prepared felt. The Ventilators are worked by a simple mechanical contrivance, and
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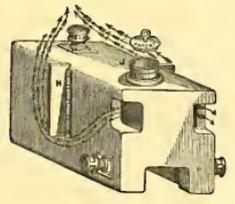
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 Which can be attached to any ordinary Boiler. These Tubes are the greatest Economisers of Fuel and Preservatives of Boilers
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GARDENER (HEAD), to any Nobleman or Gentleman requiring a first-class practical Man.—**W. GRAV**, being liberty early March 19, is open to engage as above; well versed in all branches of the profession, with a thorough knowledge of Horticulture and Gardening. No objection to a Continental engagement. Reference satisfactory.—**Broomfield, Chelmsford.**

GARDENER (HEAD), age 32, married, one child.—**MR. HOSKING**, of the Marquis of Hertford, Ragley Hall, Alcester, can with every confidence recommend the above as a thorough practical Man in all branches of the profession as General Foreman. **FRUIT, FLOWERS, &c.** Vines is open to the services. Full particulars can be had from the above or from the advertiser.—**JOHN SLATYER, 45, Redcliffe Street, Chelsea, London, S.W.**

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GARDENER (HEAD, WORKING).—Age 25; understands Vines, Stove and Greenhouse, Forcing, &c. Can give good references.—**J. T., Post-office, Chigwell, Essex.**

GARDENER (HEAD, WORKING).—Age 32, married; fifteen years' practical experience in all branches of the profession.—**R. SMITH, 3, Canister Place, Fory Hill, Enfield, N.**

GARDENER (HEAD, WORKING), where two or more are kept.—Age 29, married; understands Gardening in all its branches. Can produce good testimonials.—**D. H. SIMPSON, Upper Eryole, Alton, Hampshire.**

GARDENER (HEAD, WORKING), where two or more are kept.—Age 30; can be well recommended.—**W. BREAM, 5, Maidon Cottages, Canterbury Road, Forest Hill, London, S.E.**

GARDENER (HEAD, WORKING), where two or three are kept.—Age 27; understands Vines, Stove and Greenhouse Plants, and Kitchen Gardening, experienced in Fruit Growing. Three years in present situation.—**A. D., 65, Victoria Cottages, Windsor.**

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GARDENER (UNDER).—Age 20; has been accustomed to the Houses. Six years' experience. First-class references.—**W. GRASSING, Ilford, Gloucestershire.**

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JOURNEYMAN.—Age 21; good knowledge of Stove and Greenhouse Plants, Early and Late Forcing, &c.—**A. S., 1, New Cottages, Junction Road, South Crofton, Surrey.**

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Beans, do. .. 3 "	French Beans, do. .. 3 "	Best, Sutton's and other best sorts .. 2 sc.	Borecole, best sorts .. 3 phts.	Brussels Sprouts, do. .. 2 "	Broccoli, best sorts .. 5 "	Cabbage, do. .. 5 "	Carrot, do. .. 6 sc.	Cauliflower, do. .. 2 phts.	Celery, do. .. 2 "	Couve Tronchuda .. 1 "	Cress, best sorts .. 2 "	Endive, do. .. 3 "	Capiscum .. 1 "	Onions, do. .. 1 "	Lettuce, for successions .. 2 phts.	Mustard .. 4 sc.	Melon .. 1 pht.	Onion, Imp'd. Reading and others .. 3 "	Parsley, Sutton's Imperial .. 1 "	Parasnip .. 1 sc.	Radish, best sorts for succession .. 3 "	Savoy .. 1 sc.	Carrot, do. .. 3 pht.	Cauliflower, do. .. 1 pht.	Celery, do. .. 2 "	Couve Tronchuda .. 1 "	Cress .. 3 sc.	Cucumber, best sorts .. 2 "	Endive .. 1 "	Leek, Musselburgh .. 1 "	Tomato .. 1 "	Vegetable Marrow .. 1 pht.	Sweet and Pot Herbs .. 2 "

This Collection will be forwarded, carriage free, to any Railway Station in England, on receipt of Cheque or Post-office Order for 1s.

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Beans, do. .. 3 "	French Beans, do. .. 3 "	Best, Sutton's and other best sorts .. 2 sc.	Borecole, best sorts .. 3 phts.	Brussels Sprouts, do. .. 2 "	Broccoli, best sorts .. 5 "	Cabbage, do. .. 5 "	Carrot, do. .. 6 sc.	Cauliflower, do. .. 2 phts.	Celery, do. .. 2 "	Couve Tronchuda .. 1 "	Cress, best sorts .. 2 "	Endive, do. .. 3 "	Capiscum .. 1 "	Onions, do. .. 1 "	Lettuce, for successions .. 2 phts.	Mustard .. 4 sc.	Melon .. 1 pht.	Onion, Imp'd. Reading and others .. 3 "	Parsley, Sutton's Imperial .. 1 "	Parasnip .. 1 sc.	Radish, best sorts for succession .. 3 "	Savoy .. 1 sc.	Carrot, do. .. 3 pht.	Cauliflower, do. .. 1 pht.	Celery, do. .. 2 "	Couve Tronchuda .. 1 "	Cress .. 3 sc.	Cucumber, best sorts .. 2 "	Endive .. 1 "	Leek, Musselburgh .. 1 "	Tomato .. 1 "	Vegetable Marrow .. 1 pht.	Sweet and Pot Herbs .. 2 "

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Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
 Printed by WILLIAM RICHARDS, at the Office of Messrs. READBURY, NEWBY, & CO., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, February 24, 1877.
 Agents for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & CO., Edinburgh and Glasgow.

THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 166.—VOL. VII. [NEW SERIES.]

SATURDAY, MARCH 3, 1877.

{ Registered at the General Post Office as a Newspaper. } Price 6d.
{ Post Office as a Newspaper. } POST FREE, 51d.

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The "Gardeners' Chronicle" in America.

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THE VEGETABLE COMPANION
VOLUME FOR JULY TO DECEMBER, 1876.
W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY.

South Kensington, S.W.
NOTICE.—SCIENTIFIC, FRUIT and FLORAL COMMITTEE MEETINGS, on THURSDAY NEXT, March 7, at 11 o'clock. GENERAL MEETING for ELECTION of FELLOWS, &c., at 3 o'clock. Board of the Royal Horticultural Society, 11, N.B.—On this occasion the Fruit and Floral Committees will meet in the Conservatory, where Exhibits will also be shown.

THOUSAND-HEADED KALE.—In the extract from Mr. Russell's Paper on GREEN CROPS FOR SHEEP FEEDING, quoted in our advertisement last week (p. 214), the words "best known and most desirable" should read "best known and most desirable."
HURST AND SON, 6, Leadenhall Street, E.C.

NURSERYMEN COMING TO HOLLAND during the International Horticultural Show at Amsterdam, in April, 1877, are kindly requested to Visit my Nursery, A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Deemansvaart, near Zwolle, Netherlands.

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Gentlemen's Gardeners, Amateurs, and Others requiring.
GARDEN POTS of best quality, are requested to send their orders to
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The Best Medium and Late White Kidney Potato IN CULTIVATION,
SUTTON'S MAGNUM BONUM.—
For full particulars see p. 264 of this day's paper.
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FIR, Scotch, 5000 to 6000, 3 feet to 4 feet, forty finest, Scotch, for the odd cheap. Prices on application to ROBERT T. VEITCH, Exotic Nurseries, Exeter.

To the Trade.
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WANTED, Cuttings of GERANIUMS, Vesuvius, Madame Waterloo, Master Christine, any sort Tri-color, and good Bechers, also CALADIUMS and ALCANTARA LOW CUTTINGS, TUBEROSES, LILY OF THE VALLEY CLUMPS, SEEDS, &c., may be had in EXCHANGE.
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Plants elastic, Apollonia lurida, Hardy Palms.
WANTED, nice young Plants of the above, about 1½ to 2 feet high. Address, stating price per dozen or 100, to the
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Winter-spraying Orchids.
CALANTHE VESTITA RUBRA OCULATA. Price, 6s. per dozen, or 5s. 2s. per 100.
S. WOOLLEY, Nurseryman, Cheshunt, Herts.

FUTERPE EDULIS SEEDS, fresh, and newly arrived, 3s. per dozen, 20s. per 100. ALPINE AURICULA SEEDS, very fine strain, 2s. 6d. and 2s. 6d. per packet.
W. GORDON AND SONS, Haymarket, Edinburgh.

Oenothera.
F. AND A. SMITH will send Blooms of the above from their superior Collection to all applicants on receipt of two stamps.
The Nurseries, West Dulwich, S.E.

Grape Vines.
FRANCIS R. KINGHORN has still to offer strong planting and fruiting Canes of most of the leading sorts. Particulars on application.
Seen Nursery, Richmond, Surrey.

Vines, Vines, Vines.
B. S. WILLIAMS begs to announce that his GRAPE VINES this year are unusually fine, and are now ready for distribution.
For Detailed List, see Bull Catalogue, Victoria and Paradise Nurseries, Upper Holloway, London, N.

GRAPE VINES, strong planting Canes of Black Hamburg, Pearson's Golden Queen, Muscat of Alexandria, and other leading sorts, 3s. 6d. to 5s. each.
ERWING, 105, Pall Mall, Station, N.W.

Vines, Vines, Vines.—The Planting Season.
THE COWAN PATENTS' COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent Planting Canes of all the leading varieties for their well known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.

Special Offer for Cash.
PEACHES and NECTARINES, Maiden, 35s. per 100. A few THUJA AUREA, moved last year, 10 to 14 inches. J. AND G. LOUVE, Uxbridge.

SNOWFLAKE POTATOS.—Warranted true and free from disease, in cwt. bags, 5s. bag free, and cartage 1s. to any Railway Station in England on receipt of Post-office Order for Cash.
RANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

To the Trade.
JAMES BIRD, NURSERYMAN, Downham, has to offer extra fine Standard MAYDUKE CHERRIES.

ORCHARD-HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Cherries, Mulberries, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

To Farmers, Market Gardeners, and Others.
G. CAVE, Nobottle Grange, Northampton, has a fine stock of STANDARD FEA (true) to be sold cheap. Simple and price on application.

To the Trade.
H. AND F. SHARPE'S Special Priced LIST of HOME-GROWN ESTABLISHMENT and AGRICULTURAL SEEDS of 1876 quality is now ready, and may be had on application.
Seed Growing Establishment, Wisbech.

POTATOS.—Myatt's Early Prolic, splendid Seed, 2s. 6d. per 100. For Sale; and also about 20 Tons of MANGEL WURZ.
H. CANNELL, Swanley, Kent.

New Ready.
CHARLES TURNER'S Descriptive CATALOGUE of SEEDS, for application.

The Finest Dwarf Marrow pea in the World.
TURNER'S D.R. M.A.C.L.E.A.N. See CATALOGUE, now ready.

New Early Prolic Pea.
ALLAN'S CHAMPION. Full description in CATALOGUE, now ready.

Schoolmaster.
FINEST ROUND POTATO. Description, with testimonials, in CATALOGUE, now ready.
CHARLES TURNER, The Royal Nurseries, Slough.

B. WHITHAM, The Nurseries, Reddish, near Stockport, begs to offer the following fine healthy **MURRAY STYLIS**, 12 in. to 15 in. in fine pyramidal form for Parks, Avenues, &c., as the ground must be cleared in consequence of expiration of lease—
VEWS, English, 9 to 12 inches, each, per 100, 95s. per 1000; 2 to 3 1/2 feet, 12s. per 100, 170s. per 1000; 3 1/2 to 4 feet, 15s. per 100, 142s. per 1000; 4 to 5 feet, 20s. per 100, 180s. per 1000; 5 to 6 feet, 25s. per 100, 250s. per 1000; 6 to 8 feet, 30s. per 100, 300s. per 1000.
CHESTNUTS, Horse, 5 to 6 feet, 20s. per 100, 200s. per 1000; 6 to 8 feet, 20s. per 100, 200s. per 1000.
LIMES, 5 to 6 feet, 20s. per 100, 200s. per 1000; 6 to 8 feet, 30s. per 100, 300s. per 1000; 8 to 10 feet, 40s. per 100, 400s. per 1000; 10 to 12 feet, 50s. per 100, 500s. per 1000.
BEECH, 4 to 5 feet, 20s. per 100, 200s. per 1000; 5 to 6 feet, 20s. per 100, 200s. per 1000; 6 to 8 feet, 30s. per 100, 300s. per 1000; 8 to 10 feet, 40s. per 100, 400s. per 1000.
CURRENTS, Black Naples, 4-yr. old, strong fruiting trees, 12s. per 100, 120s. per 1000.
STRAWBERRY, new seedling, Clarendon, extra fine, prolific bearer, 12s. per 100, 120s. per 1000.
DAISIES, red and white, 4s. per 100.

Hardy Plants, well Set with Buds.
CHARLES VUYLSTEKE, NURSEYMAN, Loozberg, near Ghent, Belgium, begs to recommend his plants for Spring of the following well-shipped, healthy plants for Stock of the following with buds, 2s. per dozen, 24s. per 100.
AZALEA MOLLISS, in 12 named varieties, with buds, 2s. per dozen, 24s. per 100.
 " mixed seedling, strong plants, with buds, 15s. per dozen, 180s. per 1000.
AZALEA, hardy Ghent, 25 named varieties, very strong plants of first quality, covered with buds, 12s. per dozen, 144s. per 1000.
KALMIA LATIFOLIA, strong bushy plants, full of buds, 12s. to 15s. per dozen, 144s. to 180s. per 1000.
RHODODENDRONS, hardy, extra fine, best named varieties, with flower-buds, 20s., 30s., and 40s. per dozen, 240s., 360s., and 480s. per 1000.
 The CATALOGUES and PRICE CURRENT may be had of our Agents,
Messrs. R. SILBERRAD and SON, 5, Harp Lane, Great Tower Street, London, E.C.

Cabbage Plants.
H. I. HARDY begs to offer a quantity of strong Autumn-sown Plants, all true—
ENFIELD MARKET,
ROBINSON'S DRUMHEAD, 3s. per 1000.
LETTUCE PLANTS, Autumn-sown—**CHAMPION** and **SIBERIAN COG,** 3s. per 1000.

Package and carriage free for 5000 upwards (plants equivalent to any Railway Station in England); cash must accompany all orders from unknown correspondents. Post-Office Orders made payable to Bureau.
H. I. HARDY, Stour Valley Seed Grounds, Bares, Essex.

LYE'S FAVOURITE.—The handsomest and best Potato ever offered. Indispensable for Exhibition. This variety will be the greatest Prize Winner of the season. We have purchased the entire Stock of Mr. James Lye, Clyffe Hill, Market Lavington, and parties wishing to grow this remarkably handsome and beautiful variety should act at once, as the stock is getting very limited. It can only be obtained direct from us. Price 2s. per lb. Orders of 500 and upwards carriage free.
DANIELS BROS., The Royal Seedsmen, Norwich.

New Catalogue of Hardy Herbaceous and Ornamental Bedding Plants.
ROBERT PARKER begs to announce that his new CATALOGUE is now published, and will be forwarded to applicants. It contains Select Descriptive and Price Lists of Alpine and Herbaceous Plants, Aquatic and Marsh Plants, Iris, Geraniums (herbaceous), Chrysanthemums (early flowering), bedding plants, Delphiniums, Fruit Trees, Helianthemus, Iris, perennials, miscellaneous Bedding and Decorative Plants, Primula sinensis, Phlox (herbaceous), Potentillas, Pysythrons (double), &c.
 Etcotic Nursery, Tooting, Surrey, S.W.

Special Offer.
GEORGE FARNWORTH has to offer large quantities of the following:
ASH, Mountain, 2 1/2 to 3 feet, 6s. per 100; 4 to 5 feet, 20s. per 1000.
ERBERIS AQUIFOLIA, bushy, 2 to 2 1/2 feet, 40s. per 1000; 3 to 4 feet, 5s. per 100.
CHESTNUT, Horse, 2 to 3 1/2 feet, 20s. per 100.
LIMES, 5 to 6 feet, 20s. per 100, 200s. per 1000; 6 to 8 feet, 25s. per 100, 250s. per 1000; 8 to 10 feet, 30s. per 100, 300s. per 1000.
LAUREL, Common, 2 to 3 1/2 feet, 90s. per 1000.
POURTALE, Italian, 2 1/2 to 3 1/2 feet, 12s. 6d. per 1000; 4 to 5 feet, 15s. per 1000; 5 to 6 feet, 20s. per 1000; 6 to 8 feet, 25s. per 1000; 8 to 10 feet, 30s. per 1000; 10 to 12 feet, 40s. per 1000.
Black Italian, 2 1/2 to 3 1/2 feet, 12s. 6d. per 1000; 4 to 5 feet, 15s. per 1000; 5 to 6 feet, 20s. per 1000; 6 to 8 feet, 25s. per 1000; 8 to 10 feet, 30s. per 1000; 10 to 12 feet, 40s. per 1000.
RYE GRASS, 2 to 3 feet, 20s. per 1000; 3 to 5 feet, 30s. per 1000.
 Also other Nursery Stock as per LIST, The Nurseries, Malton.

MESSRS. JNO. STANDISH AND CO'S CATALOGUE for Autumn, 1876, and Spring, 1877, is now ready, and may be had, post-free, on application.
 It contains the following—
 Plants of Recent Introduction. Conifers.
 Stone and Greenhouse Plants. Hardy Climbers, Clematis, &c.
 Plants for Winter Forcing. Rhododendrons, Azaleas,
 Anas indica and Camellias. Kalmias, &c.
 Tree Caranations and Ericas. Roses, Standards and Dwarfs,
 Ferns and Lycopods. Also in pots.
 Hardy Trees and Shrubs. Fruit Trees,
 Transplanted Forest Trees. Grape Vines,
 Dutch Bulbs, Flower Roots, &c.
 Royal Nurseries, Acton, Middlesex.

ALTERNANTHERAS, by the 100 or 1000, from Stores, including the following varieties—*amoena*, *areola*, *speciosa*, *umbellata*, *latifolia*, *magnifica*, *paronychioides*, *aphylla*, *tricolor*, *versicolor*, &c. per 100, 20s. per 1000. For Cash with Order, package included. Special arrangements for large quantities. Stock plants of all the above that would produce an abundance of Cuttings. All other plants suitable for CARPET BEDDING, as used on the West Brighton Estate, and other Public Grounds, at the above Price.
WILLIAM MILLS, West Brighton Nurseries, near Cliftonville Station, Sussex.

SURPLUS NURSERY STOCK, all transplanted, healthy and well-rooted—
MAHONIA AQUIFOLIA, 9 to 12 inches, 10s. per 100, 100s. per 1000.
LAURELS, Portugal, 2 to 3 1/2 feet, 10s. per 100, 100s. per 1000.
CHESTNUTS, Scarlet, 6 to 8 feet, 20s. per 100, 200s. per 1000.
 Common, Standards, 8 to 10 feet, 20s. per 100, 200s. per 1000.
LYE'S, fine Standards, 8 to 10 feet, 20s. per 100, 200s. per 1000.
ALDER, 2 to 3 feet, 10s. per 100, 100s. per 1000.
HORNHEAM, 3 to 4 feet, 10s. per 100, 100s. per 1000.
BLACK THORN or **SLOE**, fine, 2-yr. Seedling, Special offers of the above at exceedingly low prices will be made on application to
THOMAS FERKINS, 42, Drapery, Northampton.

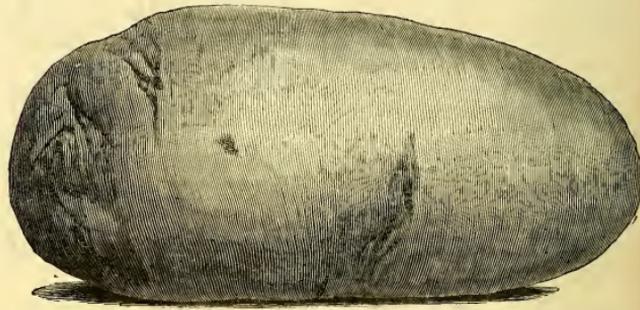
GREEN TREE BOX.—The hardest evergreen, exclusive of the Conifers, thrives in almost any soil, especially on chalk. The wood is very valuable, and, on account of its being applied in increasing quantities to new uses, is rapidly rising in price. A few acres of Box trees planted now would in a comparatively few years be worth an almost fabulous amount of money. Very bushy and extra well-rooted plants can be supplied.
 1 1/2 to 2 feet, 4s. per dozen, 48s. per 100, 480s. per 1000.
 2 to 2 1/2 feet, 6s. per dozen, 72s. per 100, 720s. per 1000.
 2 1/2 to 3 feet, 9s. per dozen, 108s. per 100, 1080s. per 1000.
CATALOGUES OF ROSES, FRUIT TREES, and General NURSERY STOCK, free.
EWING AND COMPANY, Eaton, Norwich.

From Paris.—Roses, Primroses, Camellias.
L'ÉVÈQUE AND SON, NURSERYMEN, 26, Rue du Liégar, Ivry-sur-Seine, near Paris, have many thousand ROSE TREES, Standards, Half-standards, Dwarf, and on our new—New and Old sorts.
L'ÉVÈQUE AND SON respectfully solicit Gentlemen and Nurserymen visiting Paris to inspect their stock, the largest in Paris.
SPLENDID PYRAMID CAMELLIAS, price 12s. to 50s. each; small, 2s. to 10s.
CATALOGUES and LISTS on application.

From Paris—Large Bulbs of Gladioli, Seedlings and Named Sorts.
L'ÉVÈQUE AND SON, NURSERYMEN, 26, Rue du Liégar, Ivry-sur-Seine, near Paris, have many thousand strong, healthy Flowering BULBS of GLADIOLI. The Seedling Bulbs are particularly recommended—their flowers equal to the named sorts (seeds have been taken from the best sorts of the collection). GLADIOLI Seedlings, 4s. per 100, 40s. per 1000; 4s. per 1000; mixed white, red, pink. Separate colours, 12s. to 20s. per 100; yellow, 24s. per 100. Named sorts per 100, 10s. to 100s. 15 white, 20s.; 30 or 100 sorts (the best), from 25s. to 26s. less or more, according to the novelty. All good flowering bulbs. English Cheques on London, or Post-office Orders on Paris, accepted in payment.

THE BEST MARKET POTATO IN THE WORLD.

Opinion of **SHIRLEY HIBBERD, Esq.,** Editor of the "Gardeners' Magazine."



SUTTON'S MAGNUM BONUM.

From the "Gardeners' Magazine," February 24, 1877.
 "Sutton's Magnum Bonum Potato was selected by Mr. Martin Sutton from a set of seedlings raised by Mr. Clarke, of Cranmoor, and subjected to proof of quality and distinctness in Mr. Hibberd's trial ground at Stoke Newington. This variety proving of excellent quality and remarkably productive was secured by Messrs. Sutton for trade purposes. The entire stock was purchased by them, and in anticipation of a large sale they withheld it for a season, in order to raise a sufficient quantity. The heavy crop produced in 1875 enabled them to send it out in 1876, and one season's experience of it by cultivators sufficed to establish its fame. These facts will have some interest for those who are enquiring into the history of this useful variety."

From the "Pictorial World," February 24, 1877.
 "In our opinion the best market Potato in the world, all points considered, is Sutton's Magnum Bonum. It is not a perfect beauty, and therefore does not shine as an exhibition Potato. But it is a good-looking market root, and cooks well, the flesh being white, mealy, and of excellent flavour. None but a fastidious amateur, such as the undersigned, would wish for a better Potato than Magnum Bonum, and being of good quality and appearance the next question is as to its cropping capabilities. Well, what do you think of lifting stools of 5 lb. to 10 lb. weight of ware Potatoes? Such is the capability of this sort that a set weighing 6 ounces will in a good soil, with the aid of a good season, swell up a heap of handsome tubers weighing as much as 12 lb. We speak from knowledge, and will add, that with good cultivation this sort may be expected to produce stools averaging 5 lb. to 7 lb. at the very least, and therefore it must be a profitable Potato. This variety requires extra space to grow in, and the best way to do it is to put the rows 4 feet asunder, and dib in some kind of winter greens or Broccolis, or some other crop that will pay for the extra space required by the vigorous haulm of this productive Potato." S. H.

Price, 5s. per Peck.
 No customer can be supplied with a larger quantity than One Peck.

SUTTON'S Priced Descriptive LIST of other Choice POTATOS
 GRATIS and POST-FREE ON APPLICATION.

THE QUEEN'S *Sutton's* **READING, BERKS.**
SEEDSMEN, *Sutton's*

Shallot Seed.

DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild; with ordinary treatment bulbs have been grown to 22 inches in circumference—by far the best method of growing the Shallot. Treatment same as Onions. Price 2s. per packet. May be had of all Seedsmen in sealed packets, and Wholesale of Messrs. HURST AND SON, 6, Lendalhall Street, London, E.C., or
B. R. DAVIS, Nursery and Seed Warehouse, Yeovil.

EWING AND COMPANY'S

LIST OF NEW ROSES FOR 1877 is now ready, and may be had gratis. Additional Houses have this year been built especially to extend the Preservation and Growth of NEW and TEA ROSES. The plants are making vigorous, strong growth, and will be unusually large and fine. Their GENERAL LISTS of Roses, Fruit Trees, Ornamental Trees for Avenues, Conifers, Evergreens, Clematis, &c. (see pages), with full descriptions given, near Norwich. The Royal Norfolk Nurseries, Eaton, near Norwich.

CRANSTON AND COMPANY

have to offer :—
PEARS, Pyramid, on Quince trees, among bearing trees, 3 to 4, 4 to 5, and 5 to 6 feet, all the leading kinds.
PEARS, Dwarf trained, for Espaliers and Walls, well furnished, in the best late kinds.
PEACHES, NECTARINES, and **PLUMS**, Dwarf trained, PEACHES, Standard, beautiful trees, double worked.
CHERRIES, Standard, 5 to 6 feet, extra.
APPLES, Standard, for the Garden and Orchard.
" Cedar, Standard, twenty to thirty of the best Herefordshire kinds.
Descriptive Lists, with Prices, on application. King's Acre Nurseries, near Hereford.

To the Trade.

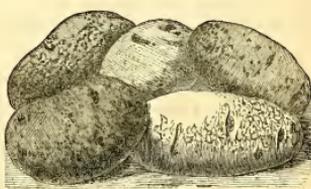
BOLTON AND CO. have to offer **Seed Potatoes** of the celebrated **GATE POST MANGEL**, perfectly true. The large weight per acre which it produces makes it a most valuable variety.
E. & Co. also offer an improved stock of **LONG YELLOW** and the **BERKSHIRE PRIZE YELLOW GLOBE**, both of which are very superior Mangels. Prices on application to **BOLTON AND CO.**, Seed Merchants, Wood Green, London, N.

SURPLUS NURSERY STOCK.

TAMARIX, two sorts, 2 to 3 feet, 12s. 6d. per 100
SPICE POTINER, 14s. per 100
FUCHSIA GRACILIS, 20s. per 100
YEW (English fine), 1/5 to 2/5 feet, 25s. per 100
PINUS INSIGNIS, 6 to 12 inches, 20s. per 100; 12 to 18 inches, 30s. per 100
BERRIES DAKWILL, 1/5 to 2 feet, 16s. per 100; 2 to 2 1/2 feet, 18s. per 100
COTON EASTLER MICROPHYLLA, 3 to 5 feet, 16s. per 100
BUDDLEA GLOBOSA, 2 1/2 to 4 feet, 16s. per 100
DRAECENA INDIANA, about 1 1/2 feet, 10s. per dozen, 10s. per 100
CISTUS, strong, many sorts, 4s. per dozen
CLIANthus PUNICEUS, strong, 5s. to 12s. per dozen
CEANOTHUS, many sorts, 6s. to 12s. per dozen
MUHLENBECKIA COMPLEXA, 6s. to 12s. per dozen
POPLAR, Lombardy, 3 to 4 feet, 25s. per 1000
" Canadian, 4 to 5 feet, 32s. per 1000; 5 to 6 feet, 50s. p 1000
" macrophylla, 5 to 6 feet, 50s. per 1000; 6 to 10 feet, 100s. per 1000
PRIVET, Evergreen, 3 to 4 feet, 30s. per 1000
SWAMORE, 3 to 4 feet, 20s. per 1000
KOEGER MCELLELAND AND CO., 64, Hill Street, Newry.



DANIELS' SEED POTATOES.



Our Stocks of **POTATOES** are warranted True to Name and Free from Disease, all being carefully selected at the time of growth, and afterwards passed through the hands at least three or four times before being sent out, and all inferior, misshapen and forked tubers carefully discarded.

To improve the culture and encourage the diffusion of really good varieties, we have determined to offer at the lowest possible rates **COLLECTIONS OF POTATOS FOR EXHIBITION PURPOSES**, and trust our efforts in this direction will meet a want so much felt by our Customers and the gardening community generally. The selection in all cases must be left to us; it will be very carefully made, and only those of known excellence and superior qualities included.

COLLECTIONS.

	r lb. each.	7 lb. each.	12 lb. each.
	<i>x. d.</i>	<i>x. d.</i>	<i>x. d.</i>
12 varieties	3 6	17 6	34 0
18 "	5 0	25 0	48 0
24 "	7 6	38 6	63 0
30 "	10 6	50 0	95 0

All carefully labelled and packed.

The above are net prices for cash, with no charge for packing.

Send Orders of the value of 20s. and upwards, including Potatoes, carriage free to any Railway Station in England or Wales.

Price Lists on application.

Special Quotations given for large quantities.

Our Stock of Potatoes is the most complete in the Kingdom, and consists of upwards of eighty varieties.

VALUABLE LILIES.

MR. J. C. STEVENS will **SELL BY AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **MONDAY**, March 5, at half-past 12 o'clock,

1500 LILIUM KRAMERI,

and good Bulbs of the beautiful **LILIUM NEILGHERRENSE**. The white flowers of this magnificent Lily are deliciously fragrant, and of great substance; it bears several flowers on a stem, each flower nearly a foot long. Also some excellent Bulbs of the following new varieties of **LILIUM neilgherrense**, viz. :—

- LILIUM NEILGHERRENSE ROSEUM**—the exterior of the flower-tubes of this variety is pink, the interior white.
- LILIUM NEILGHERRENSE FLAVUM**—a handsome light yellow-coloured form of this charming Lily.
- LILIUM NEILGHERRENSE TUBIFLORUM**—a magnificent pure white Lily, with very long flowers; figured in Wight's *Icones Plantarum India Orientalis*.
- LILIUM NEILGHERRENSE TUBIFLORUM LUTEUM**—a very handsome yellow-flowered variety of tubiflorum. And some

Splendid flowering Bulbs of other choice **LILIES**, including **BLOOMERIANUM OCELLATUM**, **PURPUREUM**, **HUMBOLDTII**, **PARDALINUM**, **PARVUM**, **CALIFORNICUM**, and **WALLICHIANUM**; also a quantity of choice Bulbs and Tubers from California, including **CALOCHORTUS**, **CYCLOBOTHRAS**, **BRODLEAS**, **TRITELEIAS**, **CALLIPHORAS**, **ERYTHROLIUS**, **BLOOMERIAS**, &c.; and some fine blooming Bulbs of the handsome **CRINUM BRACHYNEMA**, **C. AUSTRALE**, **C. PRATENSE**, **CANALICULATUM**, tuberous-rooted **BEGONIAS**, **PANCRATIUMS**, **AMARYLLIS**, North American **CYPRIPEDIUMS**, with a variety of other Bulbs and Tubers.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

SPLENDID NEW MELON, 1877.

CHARLES LEE & SON

(Successors to Messrs. J. & C. LEE)

Have the pleasure to announce that they have purchased the entire Stock of

MANN'S HYBRID GREEN-FLESH MELON,

Which they now offer for the first time.

It has already earned a high reputation in London and the provinces for its many excellent qualities, which may be mentioned a remarkably high and exquisite flavour at all seasons of the year—perfection of shape and size for dessert—a thin rind and melting flesh, with an overflow of perfumed juice. It is also a heavy cropper, and forces well.

Dr. Hogg has spoken of this excellent Melon in the highest terms, and after tasting it pronounced it a fruit of the highest merit.
Mr. CULVERWELL, of Thorpe Perrow, fellow judge with Mr. FOWLER, of Harewood House, at the Leeds Horticultural Show, where they awarded a First-class Certificate to "Mann's Hybrid Green-flesh Melon," speaks of it as "an exceedingly fine Melon, especially at that early season—the early part of June."

Mr. INGRAM, of Belvoir Castle, writes, in the third week of October, "that in spite of the disadvantage of a long term of gloomy weather, at that season of the year, 'Mann's Hybrid Green-flesh Melon' was sweet, tender in flesh, very juicy, and distinct in character."

Messrs. Charles Lee & Son are now prepared to offer this very useful and delicious new Melon in Sealed Packets, at 3s. 6d. per Packet.

CHARLES LEE AND SON, HAMMERSMITH, W.

DANIELS' ILLUSTRATED GUIDE FOR AMATEUR GARDENERS.

The most complete, useful, and beautiful Seed Catalogue ever published.

Price 1s. post-free. Gratis to Customers.

The "Illustrated Guide for Amateur Gardeners" contains 112 pages of beautifully illustrated Letterpress, with two superbly finished Coloured Plates, Original Articles on the Rearing and Cultivation of various Garden Crops and Flowers, and complete Instructions for the successful Management of the Kitchen and Flower Gardens throughout the year, together with a Select List of choice Kitchen Garden and Flower Seeds, Seed Potatoes, &c.

The most practical and comprehensive Guide for the Amateur yet issued, and should be read by every Horticulturist.



BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £7 per 100, and 18s. to 20s. per dozen.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or £5 per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded, £5 to £7 10s. per 100, or 18s. per dozen.

ANTHONY WATERER,

KNAP HILL NURSERY, WOKING, SURREY.

RICHARD SMITH'S

GUINEA COLLECTION OF VEGETABLE SEEDS

Contains the following excellent sorts (Carriage Free)—

- PEAS, Ringleader 1 quart
Improved Sangster's 1 quart
Vetch's Perfection 1 quart
Foryfold 1 quart
Prestaker 1 quart
Blue Scimitar 1 quart
BEANS, Johnson's Wonderful Broad Windsor 1 pint
Dwarf French 1/2 pint
Scarlet Runner 1/2 pint
BET, Nutting's Red 1 pkt.
KALE, Asparagus 1 pkt.
green curled 1 pkt.
BRUSSELS SPROUTS 1 pkt.
BROCCOLI, Adams' Early Snow's Winter White 1 pkt.
Purple Sprouting 1 pkt.
Walcheren 1 pkt.
CABBAGE, Early Nonpareil 1 pkt.
Kendal Market 1 pkt.
Worcester Incomparable 1 pkt.
Red Pickling 1 pkt.
CARROT, Early Horn 1 pkt.
Janet's Intermediate 1 pkt.
Improved Altringham 1 pkt.
CULIFLOWER 1 pkt.
CELERY, Eye Red 1 pkt.
White 1 pkt.
CRESS, Broad-leaved 2 oz.
Curled 2 oz.
Australian 1 pkt.
CUCUMBER 2 pkts.
ENDIVE, Moss Curled 1 pkt.
LEEK, Musselburgh 1 oz.
LETTUCE, Paris White Cos Drumhead 1 oz.
Worcester Cabbage 1 oz.
MUSTARD 4 oz.
MILON 1 pkt.
ONION, White Spanish 2 oz.
James' Keeping 1 oz.
PARSLY, Extra Curled 1 oz.
PARSNIP, Hollow-crowned RADISH, Wood's Easy Frame 1 oz.
Long Scarlet 1 oz.
Red Turnip 1 oz.
White Turnip 1 oz.
SAVOY, Green Curled 1 pkt.
SPINACH, Romed 2 oz.
Frisch 2 oz.
TURNIP, Early Snowball 1 oz.
Early Red 1 oz.
TOMATO, Large Red 1 pkt.
VEGETABLE MARROW 1 oz.
SWEET FENNEL 1 oz.
SWEET MARJORAM 1 oz.

SEED WAREHOUSE, 61, HIGH STREET, WORCESTER.

THE NEW PLANT and BULB COMPANY

Do get to call special attention to their NEW LIST (No. 31), just published.

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NEW HARDY BULBS,
NEW and RARE LILIES,
NEW HARDY CYRIPEDIUM,
NEW FERNS,
SEEDS of NEW HARDY FLOWERING PLANTS, &c.;

All of sterling merit, and at low prices. Post-free on application.

LION VALE, COLCHESTER.

STOCK VERBENAS.

JOHN KEYNES'

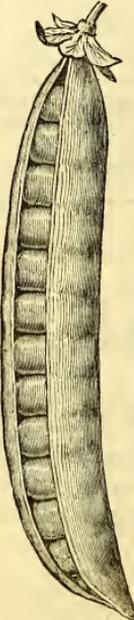
STOCK PLANTS are now ready. Very fine and clean.

CASTLE STREET NURSERY, SALISBURY.

TO THE TRADE ONLY.

HURST & SON

Can still supply the following NEW PEAS:—



MARKET FAVOURITE.

This variety was tested last season by a number of practical growers in various parts of the country, and, notwithstanding the unfavourable season, it was proved to be one of the most useful for Market Gardeners, as it is not subject to mildew in wet seasons, and was able to withstand the drought of last summer. It is Second Early, and of excellent flavour, medium height, and producing a most abundant crop of large, broad, well-filled pods. Highly commended by all who have tested it.

Price per Bush on application.

- Laxton's Filbasket
Laxton's Splunderer
Dr. Maclean,
Allen's Champion,
Balmoral Castle,
Cullingford's Magnanimous,
Giant Emerald, &c.

Orders despatched without delay.

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VINES, VINES, VINES.

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SEED MERCHANTS, GARDEN FURNISHERS, And Horticultural Decorators.

PRIZE MEDAL SEEDS.



Complete Collections of Vegetable Seeds. No. 1.—Suitable for a very Large Garden £3 3 0 No. 2.—Suitable for a Large Garden 2 0 No. 3.—Suitable for a Medium-sized Garden 1 3 0 No. 4.—Suitable for a Small Garden 10 6 Carriage free on per terms of Catalogue.

Choice Collections of Flower Seeds. Containing only popular kinds of easy growth, which will make a pretty and effective show during the summer months. 5s. per doz., 11s. and 2s. each. All Flower Seeds sent post-free.

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GOETZIA, LADY ALBEMARLE.

First-class Certificate Royal Horticultural Society, August 2, 1876.



A most fine new variety, growing 1 foot high. Flowers 1 1/2 to 4 inches across, and of the most intense glowing, carmine-crimson colour, which being produced in wonderful profusion give the plants the most charming appearance. This is the finest annual ever sent out, and being extremely hardy and easy of culture, should be in every garden.

Seed, with full cultural directions, per packet, 1s. 6d. post-free. "We have scarcely any plant of such a lovely shade of colour."—The Veget. Gardener, September, 1876. "An extremely beautiful variety bearing flowers quite 4 inches in diameter, of a glowing crimson colour."—Gardener's Magazine, August 5, 1876. "A remarkable and splendid variety, far superior to any other of the family."—Journal of Horticulture, Aug. 3, 1876. May be had of all Seedsmen, and Wholesale and Retail of DANIELS BROS., THE ROYAL NORFOLK SEED ESTABLISHMENT, Norwich.

Offer the following in Seed, of quality the best that can be had, at per packet:—

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- ALONSO ALBIFLORA.—New distinct species from collector, flowering freely, from 10 inches up to a feet in height, producing long terminal spikes of pure white flowers with yellow eye. It is recommended for pot-culture, as in the conservatory it will produce a succession of its flowers throughout the autumn and winter. See Catalogue for a desirable and useful substitute for Lily of the Valley as used in our bouquets with so charming an effect when arranged so as to overtop the other flowers by its spikes. BROWALLIA ROZELI, 2s. COBEA HIRSUTA, 2s. 6d. HUMEA ELEGANS ALBA, 1s. AGERATUM SNOW-FLAKE, 1s. MIMULUS BRILLANTISSIMA, scarlet seed, 1s. MENTZELIA ORNATA, fine plant (see description in Catalogue). TORRENIA FOURNIERI, new annual form of this beautiful collection, 1s. ERYNGIUM LAEVENWORTHII, ornamental plant, 1s. PYRETHRUM AUREUM CILINIATUM, fringed-leaved Garden Daisy, 1s. ASTER, Freight, most beautiful and brilliant new quilled variety, 1s. SAKIYA NEPALENSIS, fine ornamental species for pot culture, 1s. PAFAGA, New Zealand, showy flowers, 1s. LIATRIS PNCYNOSTACHYA, 1s. CANTERBURY BELLS, double filled flowers, beautiful variety, 1s. CUPHEA ROZELI, 1s. BAMBUA GRACILIS, 1s. PINE-APPLE NURSERY, MAIDA VALE LONDON, W.



G. GLENNY, Esq., reports H. Cannell's "Floral Guide" thus:—

"The most important feature in this work is a vivid description of the subjects he has grown and proved. Cannell in floriculture is what Loudon was in general gardening, his research is somewhat astounding. It contains a mass of information from which the amateur may learn much."

SHIRLEY HIBBERD, Esq., the Editor of "The Gardener's Magazine," also reports it thus:—
"Literature.—This is something more than a trade list: it is a book, and requires to be dealt with as such. It differs materially from trade lists generally, and instead of giving lists of all the florists' flowers that are cultivated, gives a few only of the best and most distinct in the several classes, accompanied with wonderfully full and accurate descriptions. The cultural and other notes are remarkable for their freshness and originality, and should be read by all."
The EDITOR of "The Floral World" also speaks of it thus:—
"Cannell's Illustrated Floral Guide refers to flowers and bedding plants, and their seeds solely, and may be considered the most complete representative Catalogue of its kind published."

H. C.'s Seed List is also by far the most valuable ever issued; sent post-free to all applicants.

SWANLEY, KENT.

NEW FUCHSIA, EARL OF BEACONSFIELD.

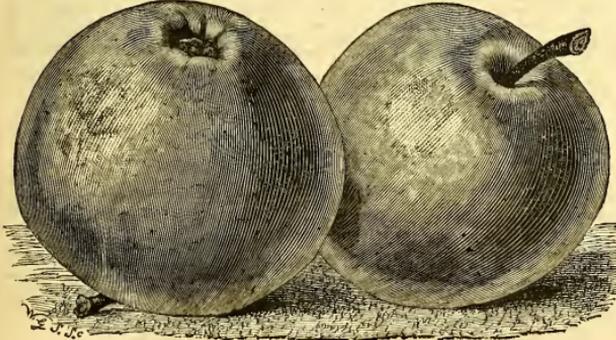
Vigorous growing, free flowering, beautiful habit, quite distinct, and described by Dr. Masters as one of the best hybrid varieties of Fuchsia. The blooms, 3 inches in length, are of great substance. The tube and sepals are of a light rosy carmine, corolla deep carmine.

This is a valuable decorative plant. It was awarded First-class Certificates at the Crystal Palace and Royal Botanic Society, Regent's Park, and is figured in the *Floral Magazine* for February.

Orders executed after the 15th March. Price, 5s.

JOHN LAING & CO., STANSTEAD PARK, FOREST HILL, LONDON, S.E.

NEW LATE-KEEPING HIGH-FLAVOURED APPLE.



COX'S REDLEAF RUSSET.

FIRST-CLASS CERTIFICATE FROM THE ROYAL HORTICULTURAL SOCIETY

WM. PAUL & SON,

Having the entire Stock of this valuable, high-flavoured, late-keeping Apple, are now prepared to sell trees from 5s. to 7s. 6d. each.

Coloured lithographs (the original drawings by Fitch), as figured in the *Florist* for October, 1876, may be had free by post, price 6d. each.

*. A large Stock of GRAPE VINES and FRUIT TREES generally, in splendid condition.

WM. PAUL & SON,
PAUL'S NURSERIES, WALTHAM CROSS, HERTS.

CATALOGUES.—His Excellency Pierre Wolkowstein will feel greatly obliged if Nurserymen and Seedmen will kindly send him their Catalogues. They should be forwarded (by post) to
S. E. PIERRE WOLKOWSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

SURPLUS STOCK.

- CUPRESSUS LAWSONIANA, 6 to 7 feet, well rooted, 12s. per dozen, 70s. per 100.
- HOLMIA, Green, 1 1/2 to 2 feet, 4s. per dozen, 35s. per 100.
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Cheap Plants—Special Offer.

- WILLIAM BADMAN offers, as under, all healthy strong
- VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 20s. per 100; well-rooted cuttings, 6s. per 100, 20s. per 1000; 12 Choice named sorts, 8s. per 100.
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- Packing included. Terms, cash.
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120,000 Venusium Geraniums for Sale.

F. C. WOOLVEN, Langhedge Nurseries, Church Road, Upper Edmonton, London, N., has strong Autumn-stocked Plants of the above to dispose of, at 8s. per 100, packed and forwarded to any London Railway Station gratis, on receipt of Post-office order number required, payable at the Upper Edmonton Post-office, London, N. Also several thousands of CHRISTINE and Double GERANIUMS at the same price.

American Plants Without Freight.

WILLIAM MAULE AND SONS beg to offer the choicest hardy English and Continental RHODODENDRONS, with BELGIC and other AZALEAS, at 30s. per dozen, or 40s. per 100.
The plants are grown in stiff, loamy soil, on an exposed and elevated situation, and will thrive in almost any soil, free from too, lime, or chalk.
Handsome Standard RHODODENDRONS, with fine heads, well set with flowers, at 6s. per 100, and upwards.
Large bushes of PONTICUM, CATAWBIENSE, and other common varieties, at 50s., 75s., and 100s. per 100.
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J. SCOTT'S Priced Descriptive ILLUSTRATED CATALOGUE of 52 pages will be forwarded to all applicants. It contains much useful and reliable information to Amateurs.

JOHN SCOTT, The Royal Seed Stores, Yewell.

The best New Potato
Hooper's Garden
Perfection

Mr. SHIRLEY HIBBERD describes it, after two years' trial, as "the very model of a gentleman's Potato."
Price 2s. 6d. per lb., 7 lb. 15s.

HOOPER AND CO., Covent Garden, London, W.C.

AVENUE TREES.

- Chestnut, 2 kinds, 8 to 12 feet.
- Elms, 6 kinds, 8 to 12 feet.
- Oaks, 5 kinds, 8 to 12 feet.
- Larburnum, 4 kinds, 8 to 12 ft.
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All the above are very fine and very cheap.
CHARLES NOBLE, BAGSHOT.

New Continental Roses for 1877.

H. BENNETT'S own selection, in the best possible Plants, ready in March.

Descriptive LISTS may now be had post-free on application.
MANOR FARM NURSERY, STAPLEFORD, SALISBURY.

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BEST SECURED BY THE USE OF

CARTER'S
COLLECTIONS OF
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PRODUCE A CONSTANT SUPPLY OF THE BEST VEGETABLES ALL-THE-YEAR-ROUND.

№1	12/6
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SPECIALY ADAPTED FOR COTTAGE, VILLA, MEDIUM or LARGE GARDENS.

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CARTER'S GUINEA FLOWER SEED PACKET,

- AS SENT, POST FREE, CONTAINS:
- 12 choicest varieties FRENCH ASTER, an assortment of
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 - 3 choicest EVERLASTING FLOWERS for Winter Bouquets.
 - 3 ORNAMENTAL GRASSES for Winter Bouquets.
 - 12 SHOWY HARDY ANNUALS, for Bedding and Borders, including King of Tom, Thumb Nasturtium, Saponaria, Blue Nemophila, Vinca cardinalis, Forget me not, and Silene composita.
 - 6 GREENHOUSE SEEDS, including Calceolaria, Chrysanthemum, and Primula.
 - 6 varieties SUBTROPICAL ORNAMENTAL FOLIAGED PLANTS, including Camellia and Ricinus.
 - 11 varieties SHOWY FLOWERS (to be sown in Frames and then transplanted or sown in the open borders at the end of April) for Summer and Autumn Blooming, including choice Phlox Drummondii, Balsam, Celosia, Amaranthus ruber, Petalidium, and Zinnia.
 - 6 HARDY PERENNIALS, for Autumn and Spring Blooming, including Wallflower, Tom Thumb Golden, Alyssum saxatile compacta, Chrysanthemum, and Delphinium, new seedling varieties.
 - 1 oz. MIGNONETTE, New Crimson Giant.
 - 2 oz. SWEET PEAS, mixed.
 - 1 oz. SWEET PEAS, Scarlet Inevitable.
- Other Collections, price 10s. 6d., 12s., 25s., 42s., 62s., 63s., and 84s., all post-free.

BETTERIDGE'S New Prize Exhibition Asters for 1877

- Blushing Bride**—A perfect gem—the outer ring of the flower of a pretty pink colour, gradually shading off to a centre of the purest snow-white; pale s. d. salmon guard-petals. *Per packet 2 6*
- Bridgetrou**—Outer ring of the flower of a delicate lavender, shading to a clearly-defined and even-formed pure white centre. *Per packet 2 6*
- Prince Albert Victor**—Petals peculiarly flaked, or alternated with deep purple and white. A splendid exhibition Aster. *Per packet 2 6*
- The Collection of Three Varieties**, price *6 0*

CAUTION:
The entire Stock of these superb Asters is in our hands.

FOR FULL DESCRIPTIONS SEE
Carter's Illustrated Vade Mecum.
It is the handsomest Seed Catalogue and most comprehensive Guide to the Amateur grower yet published. Price 2s. post-free 2s. 3d. Grants to purchasers on application.

Carter's

The Queen's Seedsmen,
237 and 238, HIGH HOLBORN, LONDON, W.C.

NEW PLANTS, 1877.

CHARLES LEE & SON, SUCCESSORS TO Messrs. JOHN & CHARLES LEE,

OF THE
ROYAL VINEYARD NURSERY, HAMMERSMITH, near LONDON,
Have the pleasure to offer the following very beautiful and interesting

NOVELTIES, NOW OFFERED BY THEM FOR THE FIRST TIME:—

BEGONIA COLTONI.
This distinct and beautiful Begonia was raised at the Royal Vineyard Nursery. The colour of the flowers is quite new in Begonias, being of an orange-crimson. It is a most abundant bloomer, and the flowers are of the largest size.
It received a First-class Certificate from the Floral Committee of the Royal Horticultural Society in 1875.
Good Plants, price 10s. 6d. each.

BEGONIA RODWELLI.
This lovely Begonia was also raised at the Royal Vineyard Nursery. The flowers are of a bright vermilion-scarlet, and of the largest size; and the plant is a very abundant bloomer.
It received a First-class Certificate from the Committee of the Royal Horticultural Society.
Good Plants, price 10s. 6d. each.

CORNUS MASCULA AUREA ELEGANTISSIMA (J. & C. Lee).
This elegant and lovely hardy shrub was raised from seed in our Isleworth Nursery, and has been proved to be perfectly constant in its beautiful variegation.
A broad margin of pure gold surrounding a bright green centre is of itself a sufficient attraction, but when in July the tips of the leaves become suffused with the brightest carmine, it is impossible to give an idea of the beauty and elegance of the plant, which will bear a favourable comparison with the best variegated stove or greenhouse exotics. Suffice it to say, that it has been seen and admired by many amateurs and nurserymen, and has been awarded a First-class Certificate at South Kensington.
The habit of the plant is semi-pendulous, and very graceful.
Price of Maiden Plants, 15s. each; Larger Specimens, 21s. each.
A Coloured Plate may be had on application for 1s.

JUNIPERUS VIRGINIANA ELEGANS (J. & C. Lee).
This very elegant variety of the Red Cedar was raised from seed in our own grounds in 1869. It is scarcely necessary to remark upon the hardness of this plant, but it is due to its character to state that the elegant cream-coloured variegation with which the whole plant is suffused is perfectly constant, and has never been injured by frost or burned in the least degree by the hottest sunshine, although fully exposed in the open air.
The plant is of neat and free growth, and received the honour of a First-class Certificate from the Floral Committee at South Kensington, in July, 1875.
Price 15s. each; Larger Specimens, 21s. each.
A Photograph of the Plant may be had on application for 1s.

POPULUS CANADENSIS AUREA VAN GEERTI (1876).
The golden variety of this noble Poplar sent out in February last by Mr. Charles Van Geert, of Antwerp, has fully borne out in our Nurseries the description he gave of it, and has retained its golden colour much better than either the Golden Catalpa or the Golden Oak during the last tropical summer.
Extract from Mr. Van Geert's Description:—
"We have the pleasure of offering an extremely remarkable variety of the Canadian Poplar, with a foliage which presents during the whole summer the finest hue of golden-yellow."
"It is in our opinion a most valuable acquisition, and has been pronounced so by every connoisseur who has admired it in our nursery, for the coloured foliage now so frequently met with among low shrubs falls almost entirely among the larger trees. The Catalpa aurea and the Quercus Robur concordia are the only trees known as possessing the same golden foliage; but the former is only a second-sized tree, and the latter has not the vigour of the common Oak."
"Our golden Poplar, on the contrary, is a first-sized tree, of rapid and vigorous growth."
"Its leaves are quite as large as those of the common Canadian Poplar, and the yellow hue, instead of looking sickly, has a warm and vigorous tint. The better nourished the tree is, and the more it is exposed to the sun, the more vivid is the golden hue."

Having received in February last a large consignment of this magnificent novelty from Mr. Van Geert, we are enabled to offer
Nice Plants at 7s. 6d. each.

ABIES EXCELSA AUREA (J. & C. Lee, 1875).
This is decidedly the finest golden Conifer of large growth yet introduced. It is of free growth, and requires to be planted in the full sunshine. In such a position the whole tree is suffused with the richest gold.
A First-class Certificate has been awarded to this valuable tree at South Kensington.
Price of Nice Plants, 15s. each; Larger Specimens, 21s. each.

LAURUS CAMELIFOLIA (Wood, 1875).
We can still supply a few hundreds of this extraordinary and elegant Laurel.
Price 2s. 6d. each; per dozen, 18s.

CHARLES LEE & SON, HAMMERSMITH, W.

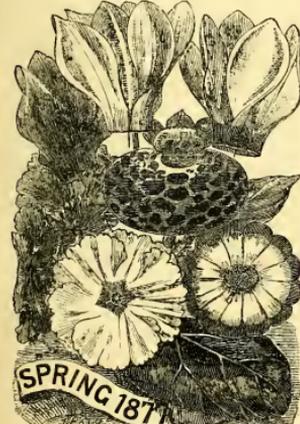


CHOICE

FLOWER and VEGETABLE SEEDS FOR 1877.

BALSAM, Williams' Superb Strain .. 2s. 6d. and 1s. 6d.	Per packet .. s. d.
BEGONIA FRIEBELII	1 6
BEGONIA SEDENI SEMI-FLENA	2 6
BEGONIA, Hybrid, finest mixed	2 6
CYCLAMEN PERSICUM GIGANTEUM.—This is a great improvement on the old type, the flowers being thrown well above the foliage, each flower measuring from 2 to 2½ inches in length; pure white with a fine bold violet-purple eye	6 6
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PYRETHRUM GOLDEN GEM	3 0
SOLENUM, Williams' Improved Hybrid	3 0
STOCK, Williams' Improved Giant Scarlet Brompton 1 6	6
WALLFLOWER, Harbinger, Autumn and Winter flowering	3 0

Packets of Flower Seeds, excepting heavy kinds, Free by Post.



SPRING 1877
VEGETABLE SEEDS.

BEANS, Williams' Early Pacific Dwarf French—per gal. 3 0	Per packet .. s. d.
BRUSSELS SPROUTS, Welch's Giant, one of the finest in cultivation	1 6
CUCUMBER, Walker's Heir (New)	2 6
Onionman Manor	1 6
KNIFE, Williams' Gloria (new)	1 6
MELON, Onionson Manor Hybrid	2 6
" Laura's Beauty, (New)	1 6
Surprise (New)	2 6
ONION, Williams' Magnum Bonum	1 6
PEA, Williams' Emperor of the Marrows .. per quart 2 6	6
TOMATO, The two Days	1 6

All seeds amounting to 20s. will be delivered free of cartage to any Railway Station in England.

ILLUSTRATED SEED CATALOGUE gratis and post-free to all applicants.

SUTTONS
COMPLETE COLLECTIONS
CHOICE VEGETABLE SEEDS
BEST QUALITY

SPECIALY ARRANGED FOR
LARGE, MEDIUM & SMALL
GARDENS
FOR A SUPPLY OF
THE BEST VEGETABLES
ALL THE YEAR ROUND.

CARRIAGE FREE
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5 PER CENT DISCOUNT FOR CASH
CHEQUES & P.O. ORDERS TO BE MADE
PAYABLE TO

Suttons Sons
THE QUEEN'S SEEDSMEN
READING, BERKS.

SUTTONS
COLLECTIONS OF CHOICE FLOWER SEEDS,

To produce a beautiful and continuous display during Summer and Autumn.

No. 1 Collection of Flower Seeds	2 0
No. 2 Collection Ditto	1 1 0
No. 3 Collection Ditto	1 1 0
No. 4 Collection Ditto	0 15 0
No. 5 Collection Ditto	0 10 6

Small and useful Collections can also be had, from 2s. 6d. to 7s. 6d., free by post.

Full particulars may be had, gratis and post-free, on application.

TO OBTAIN THE
Best Garden Lawns and Croquet Grounds
SOW

SUTTONS
LAWN GRASS MIXTURE,

Which forms a close velvety turf in a very short time.

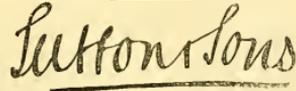
For making New Lawns or Croquet Grounds 3 bushels, or 60 lb., is required per acre, or 1 gallon to every six rods (or perches) of ground.

For improving those already in turf, 20 lb. should be sown per acre.

Match, April, and May are the best months for sowing.

Price, 1s. 3d. per lb., 22s. 6d. per bushel, carriage free.

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds
Gratis and post-free.



SATURDAY, MARCH 3, 1877.

YELLOW GRAVEL.

THERE are some kinds of gravel that recommend themselves to our notice on account of certain inherent qualities which they possess, among which we reckon that of strength to stand the wear of traffic; that of binding, to carry a good face after the roller; and last, but not least, to be of an agreeable colour, so as to harmonise with the green of the lawn and the foliage of the flower-beds. The celebrated Kensington gravel was always considered the very perfection of gravel, and other kinds were valued according to their resemblance to Kensington gravel. Now, as I lived in the parish of Kensington, and trod the walks of Kensington Gardens, I may be allowed to speak of the article with some kind of authority, for the trade in gravel in my time was great, and we can form some idea of the statistics of the trade when a ton of coals and a ton of gravel from Kensington gravel-pits were the same price in Edinburgh, whither the gravel was conveyed for important purposes.

When the elder Nesfield designed a monogram to be worked in Box embroidery and yellow gravel at Alton Towers, we had recourse to baked fire-clay of a light yellow colour, got from the Staffordshire potteries, called by the workmen "grog," being "sagers" pounded and riddled, these sagers being the outer cases containing the ware when in the oven, and this grog is a regular article in the business of the potter.

I have mentioned these two kinds of road-stuff in order to contrast them with an article very superior to either, the price of which, including cartage 5 or 6 miles, is 10s. per ton. I have used several tons of it, and find that it binds firmly, is clean from sand or small particles, and is of a rich yellow colour, with a dash of brown, perhaps from iron ore; it was obtained for me by the good offices of a jobbing gardener, and comes from a place called "Fool's Neuk," near Macclesfield, Cheshire. I have often been astonished to see asphalted paths in front of the principal windows of gentlemen's villas done up in true coffin colours—white tears upon a black ground. In the North we frequently see a black coffin studded with white commas, called there tears, and it is very becoming in that case to give a place for tears for those who have died young, but the taste is very doubtful to put gas-tar and Derbyshire spar side by side on a walk or terrace in front of a gentleman's house, for as long as blue and yellow colours when mixed make green, so long will yellow gravel harmonise with green grass; and this rule is not subject to caprice, for it "altereth not."

Mr. Nesfield was a landscape painter of the highest order, and designed many beautiful gardens, but he confessed that he was neither botanist nor gardener, but, relying on the "brush," he doled out in his parterres, panels, &c., many strange colours, for if I recollect aright coloured glass broken fine made up part of the patterns in the garden of the Horticultural Society at Kensington, and in the garden designed by Nesfield at Alton Towers some twenty or thirty circular beds were paved with white pebbles, which could not be endured, and were planted with exotics warm and bright. Neither white pebbles nor white spar are ever likely to give any good effect in a flower garden, and the same may be said of red brick pounce.

Cracked limestone, when of a bluish tint, makes the carriage-way as good as it can be; and, for the reasons given above, the blue tinge harmonises with the greensward just as the yellow does. I have no interest whatever in praising the gravel from Maclesfield. I was agreeably surprised to see its fine colour and other fine qualities, and therefore resolved to send a paragraph to the *Gardeners' Chronicle*, in order that those who do the asphaltting on the coffin pattern may have no excuse if they do not finish with yellow; for be it observed that this fine gravel is not in egg-sized pebbles and made up with foreign matter, as clay and sand, such as we see everywhere, but confined to the size of one-inch pieces and down to that of Kidney Beans, so that a ton would cost a large surface of asphalted walk, and it is equally available for any ordinary gravel walk, especially where clay predominates.

For asphalt the gravel should be thoroughly dry, for one of the many odd properties of gassar is that it is not soluble in water and does not take kindly to wet substances. For facing ordinary gravel walks the gravel should be put on wet, and treated as if they were puddle, for you may water ordinary garden earth to any extent so long as you do not tread upon it, but if you poach it you make puddle of it, and although a headland in a cornfield may be poached and yet recover itself and bring a good crop, it is not so in gardening operations, and soil that has been puddled will take a long time to recover a healthy open texture. Let no one despise these practical hints, for the loss of one spoke in the wheel ruins the "turn." I recollect setting a gentleman right as to how he was to roof a building with paper and gas-tar and lime, and when I met him after, he said he had tried it and it was a failure, but when he detailed the process he said "I slaked the lime." That was sufficient; he had added water, which he should not have done, and the lime should have been fresh and pounded to powder. He thanked me, and we parted; but the next time I saw him he pointed out a building nicely roofed in this way, and laughed heartily at his blunder in not knowing water when it was apparently dry in powder lime; but all doubt on that score is powdered when you see a man put a hoghead of water to a cartload of lime, and though the mixture is dry as dust it is useless to say that there is no water there when you have just added twice the bulk of the lime in water.

The prevalence of weeds on walks is frequently owing to the prevalence of dirt in the gravel, which acts as a seedbed for grass, and this gravel, being clean and very likely highly charged with iron, from its appearance, is not likely to feed weeds of any kind. If used with judgment and discrimination it will brighten many a dull walk and terrace at little cost, and its brightness will remain after the flowers have faded, for it will exhibit itself all the year round "a thing of beauty," which, if not "a joy for ever," will, with its face of iron and its heart of stone, have a long lease. *Alex. Forsyth.*

MELONS FROM CENTRAL ASIA.

In the course of last year we received at Kew from Dr. King, Superintendent of the Royal Botanic Garden, Calcutta, a collection of Melon seeds brought from Yarkand and Kashgar, in Western Turkestan. Anything from a country so little known botanically could not fail to have some interest, and Dr. King especially directed our attention to these Melons, as likely to be of some horticultural value. He remarked, in an accompanying letter, "Mr. Scully brought me the seed, and he tells me some of the Melons are very fine. They will probably be worth cultivation in Europe, and though not quite in your way may be of some use. Should you have to refer to them, kindly quote the numbers on the packets." We divided the seeds, of fifteen kinds, between the Royal Horticultural Society and M. Naudin, the well-known

monographer of Cucurbitaceæ. I believe that some at least of the kinds fruited at Chiswick, but I have not obtained any reply in answer to my inquiries, nor do I find any notice of the Melons amongst the reports in the recently published number of the Society's *Journal*. M. Naudin has, however, most kindly sent me the results of his trials at Calouire. This note may probably meet the eye of Dr. King, and I therefore mention that, perhaps because I forgot to ask that it might be done, M. Naudin has unfortunately not preserved Dr. King's numbers. He, however, has been careful to give the native name, which may answer the purpose equally well. The result is somewhat disappointing. This is M. Naudin's report:—"I send you seeds of the eight best of the Melons from Central Asia. All belong to the same race; they are small, round in form, more or less depressed, with a few are oval. Speaking generally, their quality is moderate, but perhaps they may improve on cultivation, and even serve for the production of new and more valuable varieties by crossing with older kinds. Your skilful horticulturists will be able to exercise their industry on these novelties."

No. 1. Bajin Koghun.—Oblong, slightly netted, without ribs; flesh white, sugary. This is one of the best of the collection; Yarkand.

No. 2. Jori-Kand.—Round, depressed—tolerably good; Kashgar and Yarkand.

No. 3. Jori-Kand.—Ovoid, netted, without ribs; flesh entirely white, with the odour and taste of white Sugar-Melons. Another form with the same name as the preceding, but quite different.

No. 4. Topkin.—Ovoid, without ribs, slightly netted, small, odour none; flesh pinkish, delicate, melting, slightly sugary—seems a late variety; Yarkand.

No. 5. Lobiari.—Small, round, depressed, ribs imperceptible; flesh sugary, tolerably good—might probably be improved by cultivation; Yarkand.

No. 6. Au-Nabat.—Small, round, ribless; flesh reddish—tolerably good; Yarkand.

No. 7. Na-Shakar.—Small, round, depressed, sugary and good; Yarkand.

No. 8. Bihiki.—Small, round; flesh of no great thickness, and but slightly sugary—quality moderate; Kashgar and Yarkand.

Following M. Naudin's suggestion we have distributed the seeds to Mr. Gilbert of Barghley House, Mr. Speed of Clatsworth, and Mr. Woodbridge of Sion House, at whose hands their horticultural capabilities will no doubt have a fair trial.

It is worth mentioning as a curious contrast to the weather that we have had this winter in England, that M. Naudin informs me in his letter that since October 20, that is during 115 days, there has only been a single shower at Collioure (Eastern Pyrenees) of about half-an-inch—a rainfall, as he remarks, altogether insignificant. *W. T. Thistleton Dyer.*

CENTROPOGON LUCYANUS.

I DO not remember to have seen any notice of this Centropogon, and as I have found it one of the most showy and useful among the few really good winter blooming plants, I am induced to bring it before the notice of your readers, many of whom, although greatly put to for flowers at that dull season, may not have met with it as yet. *Centropogon Lucyanus* is one of those good things that you may cut and come again, for after the terminal head is severed, or without lifting on the plant, it starts again from the soil of almost every leaf down the whole of the stems, and forms laterals, all of which bloom in succession, thus keeping up a continuous supply for a long period of time. And another equally good quality pertaining to it is that it lasts well in water when cut, which is a great consideration, taking into account how ephemeral many flowers are that are forced or come in naturally during the short days, when there is very little sun or light to aid in giving substance to the petals, whereby alone they are able to endure the dry air of a room, unless they happen to be borne on soft porous stems that take up water freely, which this Centropogon does, and thus maintains its freshness. Its habit, too, is such, that it is admirable subject for decaying ferns, or hall vases, as it is naturally somewhat pendulous, so that it may be arranged to droop naturally over the sides, in which position it shows off its bright *Æschynanthus*-like flowers to the greatest advantage.

Small plants obtained now will come in admirably for working up a stock, as they propagate most readily and make excellent plants by the autumn if treated liberally during the summer, by growing them on a bed without check. The soft young side shoots should be chosen for cuttings, and taken off with a heel, and if then inserted in sandy soil in a brick heat they will soon root and be ready for potting off, which should be done either in peat and loam in about equal parts, or leaf-soil and the latter in the same proportion, with just sufficient sand to keep it open and porous, as it is a plant that delights in vegetable matter and a somewhat loose medium for its roots to ramble in, with the addition of a plentiful supply of water when growing. From March to the end of May they should be pushed on in stove-heat, standing them in a nice light position near the glass, where they can be kept well syringed and otherwise attended to according to their requirements. In June, and for the remainder of the summer months, the best situation for all plants of this class is a deep pit, where they can be plunged in a bed of gently fermenting leaves or tan, as here they are under control, and can be kept more uniform, both in regard to heat and moisture, than when treated with the ordinary occupants of the stove. By the end of July they should receive their final shift into 6-inch or 8-inch pots, according to their size and strength, and all the after-treatment they will require during the summer, in addition to the requisite watering and a very thin shade for an hour or two in the middle of bright sunny days, is a good damping overhead both morning and afternoon, closing them up immediately after the latter application, by which means their growth will be most rapid.

Towards the autumn fall exposure to sun, with an abundant supply of air, will be necessary to consolidate and ripen the young wood so as to induce a free-flowering habit, and by the end of September they should be again introduced to mild stove heat, where by Christmas, or before, they will be in full beauty, and last in that condition for at least two months if kept in a moderately cool temperature, from which they may be removed to use in vases for dinner-table decoration, or for purposes for which their bright colour and scented, or scitiferous habit render them particularly valuable. Not only are they most valuable as pot-plants, but they are alike suitable for baskets on account of their drooping habit, and when seen suspended from the roof they have a very bright, cheerful appearance. Whichever way they are grown, the shoots should not be stopped, but allowed to grow naturally to their full length, as the plants start freely from the crown, thus affording plenty of flowering wood; and as all of this makes laterals freely, as before observed, the longer it is the better effect it has, especially if depending over the sides of ornamental baskets. The treatment requisite after introducing them to the light, and in an intermediate-house temperature till the end of April, when the old shoots should be shortened back, and the plants shook out and repotted in smaller pots in the same kind of soil as that advised for growing them in.

Existing greenly, they are fortunately not subject to insects, which is a great point in their favour. 7. S. [This is a beautiful hybrid, too little known. It was raised at Marseilles in 1856, between *Siphocampylus betulinifolius* as the pollen parent, and *Centropogon fastuosus* as the female parent. Eos.]

FERTILISATION OF PLANTS.*

(Continued from p. 204.)

MR. DARWIN has been good enough to notice one of my criticisms and to explain it as due to a misprint of "self-fertilised" for "crossed," so that the sentence on p. 275 now runs as follows:—"The most probable explanation [of the ratio 100 : 131] is that the seeds from which the crossed plants of the third generation were raised were not well ripened [i.e., this will account for the self-fertilised beating the crossed], for I observed an analogous case with *Theris*. Self-fertilised seedlings of this latter plant, which were known to have been produced from seeds not well matured, grew from the first much more quickly than the crossed plants, which were raised from better matured seeds; so that having thus once got a better start they were enabled ever afterwards to retain

* *Cross and Self Fertilization of Plants.* By C. Darwin. (Macmillan.)

their advantage . . . and when in full flower were 5 to 6 inches higher than the crossed" (p. 103). So that if I were hypercritical in detecting an error due to the misprint, my inference is not altered, viz., that Mr. Darwin attributes the inferiority of the crossed *Petasia* to unripened seeds, and the superiority of the self-fertilised *Iberis* to the same cause! So that the case of *Iberis*, though in harmony with the original misprint, is no longer analogous, but exactly the reverse. I echo Mr. Darwin's hope that any reader who is interested in the subject will not take my interpretation of his statements without consulting his book.

After having devoted seven chapters to the details of the experiments, and to tables and summaries of the results, Mr. Darwin, in the eighth and ninth, deals with the comparative advantages and the reverse of crossing and of self-fertilisation respectively. Then follow two chapters on "the means of fertilisation and the habits of insects in relation to the fertilisation of flowers," and the last (twelfth) is devoted to general results.

Mr. Darwin commences the eighth chapter by observing that, "as the seedlings were planted on opposite sides of the same pot, they had to compete with one another, and the greater height, weight, and fertility of the [inter]crossed plants might have been expected," that the [inter]crossed plants did not exceed in height the self-fertilised. He notes that whilst very young—*i.e.*, before competition began—they were, with some exceptions, of equal height; but afterwards the intercrossed exceeded the self-fertilised. He next observes (p. 286), "that the [inter]crossed plants have an inherent superiority independently of competition, was sometimes well shown when both lots were planted separately in good soil in the open ground." But the word "sometimes" I have italicised is rather misleading, for on p. 288 the force of this sentence is reversed, where he says of plants thus grown—"The result was in several cases (but not so invariably as might have been expected), that the [inter]crossed plants did not exceed in height the self-fertilised in nearly so great a degree as when grown in pairs in the pots."

The sentence in brackets is an important admission in favour of self-fertilised plants when they can grow freely; and agrees with the tables, which clearly show such to be the case (*vide, &c.*, A. Vandellia, Eschscholtzia, *Reseda*, *Petasia*, 5th gen.; *Beta*, B., *Reseda* lutea, & C., *Nicotiana*). The rule, therefore, appears to be that when self-fertilised plants are compared with intercrossed in open ground, the vigour of the former often evinces itself either in an equal degree to or in a higher ratio than the intercrossed. Mr. Darwin's later experiences as detailed in this book thus corroborate his statement given in 1868: "If [the seeds are] sown in ample and good soil, there is often but little difference in their growth." Nevertheless as plants for the most part are certainly compelled to compete with one another in Nature, the superiority of intercrossed and crossed plants is specially shown in that capacity. Mr. Darwin next observes that "the innate power of the [inter]crossed plants to resist unfavourable conditions far better than did the self-fertilised plants, was shown on two occasions in a curious manner . . . when both sets were grown under extremely unfavourable conditions."

He here refers to seedlings of the plants of *Petasia* and *Iberis*, referred to in the last paper, of which when sown in sand and burnt earth, *i.e.*, without any organic matter, the intercrossed without the self-fertilised in height until they all died: a fact obviously of no great trustworthiness for deducing a general result, especially as the seeds were in an abnormal condition. Mr. Darwin refers to some analogous case with the first generation of *Nicotiana*. Unfortunately he does not appear to have recorded it, for his other observations on that plant are all in favour of the self-fertilised, not only in the first year during which he says "the self-fertilised were greatly superior to the [inter]crossed," but also mostly in the two following generations!

The stronger constitution of the intercrossed was also seen in withstanding sudden changes of temperature—*i.e.*, from the house to the open ground—as well as in resisting cold and intermediate weather. He illustrates this fact with *Ipomoea*, *Mimulus*, *Viola*, and *Sarothamnus* and *Nicotiana*; and *Eschscholtzia* formed an exception. There appears, on the other hand, however, to be some correlation between a

reduction of temperature and self-fertilisation. Several observations have led me to draw the conclusion that flowers, perhaps usually intercrossed, become self-fertilised not only, as has been by others inferred, in the absence of insects; which is apparently another and distinct cause, as, *e.g.*, in *Pisum sativum* and *Lathyrus odoratus* in England; but when the autumn draws on, and habitually in winter for such of our wild flowers as blossom in that season: several cases are mentioned incidentally by Mr. Darwin, which corroborate my observations. Thus he speaks of *Reseda odorata*, that while some plants were quite sterile in one year, three other plants in the next "became loaded with capsules, especially during the early part of the summer; and this fact indicates that temperature produces some effect." What that effect is I think I have discovered, and will explain hereafter.

Another fact in favour of intercrossing is that the intercrossed are less liable to premature death, independently of any apparent external cause. The self-fertilised plants often germinated sooner, but the seedlings often died than their competitors. They also arrived at maturity quicker, and began to wither sooner than the intercrossed; just as these latter did before the offspring of a cross with a fresh stock.

Lastly, the intercrossed often threw up a larger number of stems, and the result probably of greater vigour, and showed a tendency to flower before the self-fertilised. Mr. Darwin gives lists of species which flowered first. Thus forty-four intercrossed flowered first, either in a majority of the pots or in all. In nine cases a self-fertilised plant flowered first; in five the two lots flowered together. In the case of *Cyclamen* the intercrossed actually flowered some weeks before the self-fertilised.

"On the whole," concludes Mr. Darwin, "there can be no doubt that the [inter]crossed plants exhibit a tendency to flower before the self-fertilised, almost, though not quite so strongly marked as to grow to a greater height, to weigh more, and to be more fertile." *George Huxley.*

(To be continued.)

ORCHIDS IN FLOWER AT KEW.

This fine display of good ornamental kinds is at present chief attraction to professional and other visitors. Dendrobiums are in strong force; a fine specimen of the primrose-coloured form of *D. Hillii* has seventeen spikes, and smaller plants of the pure white have spikes 15 inches long, producing a considerable show of this species alone. It should perhaps be considered as a well marked variety of the old *D. speciosum*, with which, as it also is in bloom, comparison can be made, and doubtless from a horticultural point of view *D. Hillii* will be considered the best. As a fine variety and well flowered, *D. crassinode* may be mentioned as one of the most attractive; the curious stems along their whole length are laden with flowers of the brightest colour. Of *D. Wardianum* are several plants in pots, of different shades, and there is one of splendid size and colour, suspended in a basket. *D. primum* is very select, having delicately coloured flowers of crystalline appearance, and quite distinct. *D. heterocarpum* presents an uncommon colour among Orchids, and its strong perfume at once arrests attention. A hybrid from this with *D. japonicum* was recently exhibited by Messrs. Veitch, as *D. endocharis*. The flowers are intermediate in size, having chiefly the colour of *D. japonicum*, but with a decided touch in the lip from *D. heterocarpum*. Of *D. nobile* are several forms, including the varieties *pendulum* and *elegans*; the latter is beautifully coloured. *D. moniliforme* and *D. gratioissimum* have flowers most delicately tinted, and the rare *D. linguiforme* unites its starry white blooms with curious tongue-like leaves. *D. hirsutum* has been in flower for the last two months; it has white sepals and petals, with an orange-coloured fringed lip. The Australian *D. gracilicaule* and others of botanical interest are also in bloom. The graceful *Dendrobium glaucum* is represented by a fine plant having fifteen spikes. There are good spikes of *Vanda nasutus* and *V. tricolor*, and a solitary flower of the rare *V. Cathartii*. The *Saccolabium* are *S. giganteum*, and *S. Harrisonianum* with white flowers of pleasing perfume. *S. distichum* of the Himalayas is indeed curious; it has a trailing

habit, and the leaves, stems, and flowers are all green. The species of *Phalænopsis* are *P. rosea*, *P. grandifolia*, and *P. Schilleriana*. The curious genus *Mormodes* is illustrated by *M. hucatorum*. *Angreum sesquipedale* and two others, *A. eburneum* and the variety *vires*, are considerably ornamental; the curious *A. distichum* is pretty, from its habit of growth and number of small flowers. The *Cypripedium* are not only always in flower, but ever present some of their choicer kinds. There are at present the rare *C. pardinum*, the stock of which was distributed from Kew some years ago, and two of Mr. Dominy's hybrids, *× C. Harrisonianum* and *× C. Dominicanum*. There are also *C. venustum*, *C. hibernum*, *C. barbatum*, *C. insigne*, and its variety *Maclei*.

Among terrestrial Orchids the most handsome is *Stenorhynchus speciosus*, which is not often seen out of Kew. It has a tuft of dark green ovate-lanceolate spreading leaves, from which rises a scape bearing crimson flowers, springing from bracts of the same colour. The spotted variety, frequently known as *Neottia maculata*, is also in bloom. Other terrestrials are *Bletia* and *Wittichia*, *Phycanthus*, whose flowers come with the light green leaves, and the not very ornamental *Sauroglossum elatum* and *Prescottia gigantea*. Many *Odontoglossum* are showing for bloom, and of those already in flower are *O. pulchellum*, *O. crispum*, *O. coccineum*, *O. colobium*, *O. triumphans*, *O. Rossi* and the variety *superbum*, *O. gloriosum*, *O. nelusolum*, *O. lato-purpureum*, and *O. odoratum*. *Restrepia elegans* is a pretty member of a curious genus; it is like a small edition of *R. antennifera*, but much more richly coloured. A few Orchids are suggestive of *Stipelia*, but scarcely any more so than *Trias picta*, which by its marking, flat form, and somewhat regular outline, allows of no difficulty in forming a comparison. *Oncidium cheiranthum* is a beautiful and elegant plant, a multitude of bright yellow flowers on slender stems. It figured in the *Botanical Magazine* for the last month, where it is described as a charming, very sweetly-scented little species. Others are *O. flexuosum*, *O. pulchellum*, *O. reflexum*, *O. cucullatum*, *O. triquetrum*, *O. anomalum*, and the remarkable *O. abortivum*. *Lycaste linguella* has seventeen flowers growing from a single bulb; the sepals and petals are greenish, and the lip white; there are also light and dark forms of *L. Skinneri*. The smaller *Mixilabium* are here grown on Tree fern stems, a method found both convenient and graceful. The kinds in flower are *M. punctata*, *M. variabilis*, *var. lutea*, and the variety *idea*. *Kefersteinia graminea* is an interesting species, with narrow grassy leaves and small yellowish flowers, with transverse markings. The *Mixilabium* are *M. gibberosa*, *M. ignea*, and *M. ochthodes*, which, in a famous London collection, has been said to flower continuously for eleven years. Among *Epidendrum* are several of interest: *E. xanthinum* has bright yellow flowers; *E. stratum* purple ones, and less ornamental species are *E. fragrans*, which is worth growing on account of its sweet perfume and free flowering habit, and *E. cochlearium*, with a dark purple lip. *E. saphronites* is extremely curious, the leaves are more densely covered with white meal than any other Orchid we remember, and if protected from moisture are almost like an *Echeveria farinosa*. The flowers are large in proportion to the size of the plant, green in colour and marked with purple. A large plant of *Lelia superbiens* has three fine spikes, while a smaller specimen has still more. *Cattleya* *tricolor* is showy in light and dark forms; one plant has eight large flowers of rich colour, *C. quadricolor* is also in bloom. *Calanthe viridi-virens* is quite unlike the more familiar species; the sepals and petals are yellowish-brown, twice the size of the lip, and the petals are much reduced in size. *Eria obesa* is a pretty deciduous species, with white starry flowers in dense clusters. Showy well-known plants are *Ada aurantiaca* and *Sophrontes grandiflora*. *Rodriguezia crispata* has pale yellow flowers of pleasing perfume. *Cymbidium sinense*, *Brassavola cordata*, and several others of various genera, are also in bloom.

New Garden Plants.

LELIA ALBIDA STOBARTIANA, *nov. var.*

This is a very pretty novelty, sometimes with very large flowers. The sepals and petals have beautiful purplish large tips, and the borders of the anterior lacinia of the lip is deep purplish. It looks in colour just like *Chysis Limningheii*. What a curious fact that amidst the *Lælias*, usually so constant in colour, and with white variegated varieties of purple-flowered species, there is one single species so very unusual. These are, however, I think, of great pleasure, of the beautiful introductions made once by Mr. Low—the magnificent purplish *var. Tuckeri*, the brown *var. brunnea*, and the ochre-coloured *var. ochracea*—genus, which appear not to have been sailing to England

* *Animals and Plants under Domestication*, vol. ii., p. 128

* Mr. A. Bennett has also observed the same fact. *Nature* 1869, p. 12.

since 1868. I believe it is well known that a fabulous immense mass of the old *Laelia albida* exists in the wonderful collection of Mr. Day. Now our latest novelty was sent to me by Mr. L. Hartley, gr. to William C. Stobart, Esq., Etherley Lodge, Darlington, to whom it is dedicated. I obtained later several flowers from Messrs. Veitch, and there is just at hand a flower from Messrs. Haage & Schmidt, Erfurt. *H. G. Rehb. f.*

*MASDEVALLIA VESPERTILIO, Rehb. f.**

This rather modest and yet pretty species of the Chimera group I had hitherto only known in a dried state, from specimens collected by Messrs. Wallis, Roezl, Chesterton, and Patin. It is much in the way of *M. Nycteria*. The sepals are pallid yellow, blotched with brownish purple; the petals small, yellow with brown, and the lip extended in a very broad transverse epichile without any keel, when the small hypochile shows a nearly horse-shoe-like, more angular, blunt keel. Column white, beaked, in a fringed appendage over the anther. Sepals inside with numerous yellow bristles, and with yellow tails longer than their bodies. The six crenate hooker-green wings of ovary are very peculiar. A very small bud is observed at the base of the pedicel, wrapped round by the bract. The habitat is New Grenada. The first fresh flower I ever saw is just at hand from Sir Trevor Lawrence, who purchased it as *M. Houtteana*, a nice white-flowered species, with purplish tails. *H. G. Rehb. f.*

CYPRIPEDIUM HAYNALDIANUM, Rehb. f.†

Laber improbus omnia vincit! For years and years an object of my greatest interest was to ask after the health of the Philippines *Cyripedium* Lowei when I went to Messrs. Veitch's nursery. They were very few plants, and since they suffered very much by most accidentally travelling twice the usual time, they were for a time near to breathe out their last. All medications a good grower thinks of were applied—changes of air, change of light, change of soil, various quantities of beverage. Such tender care was finally well paid for, and if we consider the sufferings of the endless travelling we may believe the species as strong as *C. Lowei*, which is regarded—I don't know whether British orchidists are of same opinion—as much stronger than *C. Stonei*; finally, it has just flowered. I knew well before that it was a highly curious beauty, having seen a photograph and obtained dry flowers of it. It is very near *Cyripedium Lowei*, Lindl., so near that a casual observer might confuse the two. There are, however, judges who prefer the new one, not alone because it is new, but also for its far richer blotches spread over all the flowers excepting the lip. I write this having at hand five flowers of the new one (two fresh ones), and thirty-five flowers of the old one, and several sketches and analyses prepared from living specimens. The chief differences in the shape are the following—The staminode is much narrower and most distinctly bilobed, and the lobes are contiguous and bent down, quite covering a small tooth between them. In *C. Lowei* there is a much broader staminode, with three flat, equally expanded, not touching lobes, the middle one acute, centiform, the lateral ones blunt, all straight. The side lobes of the lip are much more prominent in the new one, and in their sinus with the channelled nail there is but a small entire keel. In *C. Lowei* those lobes are blunt and shorter, and the keel in the sinus has several teeth. The stigma is round and bent in *C. Lowei*, blunt, pentagonal, straight in the new one. The inferior sepal is broader, and much shorter in the new one. Now, speaking of colour, the upper sepal of *C. Lowei* is yellowish green, and the inferior sepal too. There are purplish lines and very small punctiform dots on the inner base of the superior one. In the new one the upper sepal is white at the tip, pallid green, with large, beautiful brown spots in the inferior part, when the borders are broadly violet. The inferior sepal is pallid green, with some brown spots. The colours of the petals and of the lips are nearly alike. The new species produced a two-flowered raceme, with a rudiment of a third

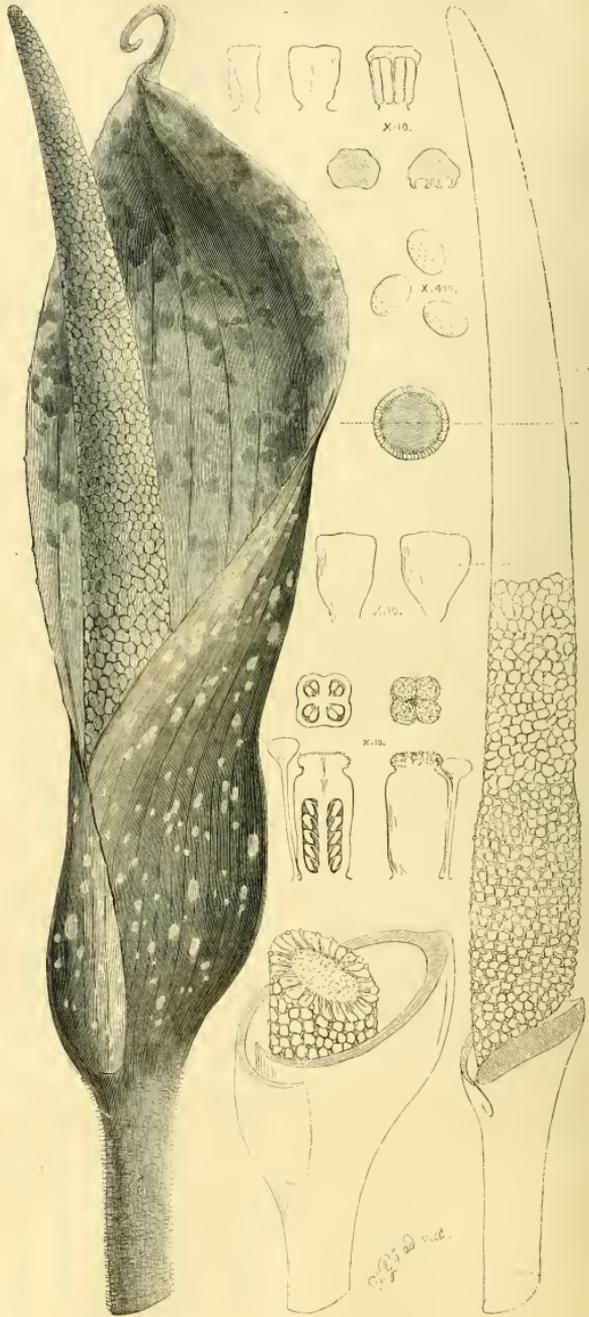


FIG. 45.—*HOMALOMENA FELTATA.* (SPATHE AND SPADIX NAT. SIZE; FLORAL DETAILS MAGN.)

* *Masdevallia Vespertilio*, Rehb. f. in *Gardener's Chronicle*, 1874, p. 817, June 24, nomen.—(Saccilabiata) uniflora (flure seu floribus succedentibus hysterocronis); sepalis oblongo-triangularibus ovatis hispidis, in caulis longioribus atramentis; tepalibus subunivalvibus, papillis adnatis in valva unica accedentibus, valva altera prope obliterata interna; labello pandurato; hypochilio angusto utrinque obtusangulo; carina anteriori angulata in disco; epichilio transverso latissimo oblongo utrinque involuto, laevi; columinae apice lacero rosata. Pedunculus purpurascens. Sepala cum caudis flavida, purpureo-maculata. Tepala eburnea coloris. Labello albidum. Columina alba. Nova Grenata.

† *Cyripedium Haynaldianum*, Rehb. f.—Aff. *C. Lowei*, Lindl. Pedunculo stricto deorsum ac patentem viloso; usque quadrifido (in pinnae apertione); bracteis oblongis acutis vilosis; ovaria pedicellata villosa non sequentibus; sepalis dorsali linearibus obtusangulo acuto; sepalis inferioribus oblongis acutis lacinato labello breviori; tepalibus linearitrigulatis anteriorum dilatatis oblongis acutis; labello saccato utrinque juxta succum in angulum angustum producto; lamellis in sinus inter angulum et unguem integra (eom planidentata); staminodeo spatuliformi apice obtuse bilobo; lobis contiguis, deorsum flexis, denticulatis, medium abscondentibus; processu cordato in basi. Rehb. fil. *Xenia Orchidacea*, II., p. 222.—Insul. Philipp., Wallis.

flower. It may even produce four flowers like the beautiful *C. Lowei*. It is one of the very best Philippine discoveries of Mr. Wallis. I had the great satisfaction of dedicating, a few years ago, this splendid plant to his Excellency Dr. Ludwig Haynald, Archbishop of Kalocsa, a zealous botanist, and a most liberal promoter of science and art in modern Hungary. His Excellency's name will for ever be connected with the development of that wonderful land. *H. G. Rehb. f.*

HOMALOMENA FELTATA, Mast.*

This is a new Aroid, alike of striking appearance and much interest. It was, we believe, introduced to Mr. Bull's establishment at Chelsea by Mr.

Be this as it may, the present plant is undoubtedly not a *Carmeria*, but a true *Homalomena*. It is of tufted habit, with numerous leaves springing from a contracted stem, and interspersed among them in due season are formed numerous flower-stalks. The leaf-stalks in Mr. Bull's plant are about 30 inches in length, sheathing at the base, nearly cylindrical above, where they are about the thickness of the finger, covered with soft rusty brown simple conical multicellular hairs, interspersed amid which, near the base, are numerous conical prickles. The blade of the leaf is convolute in vernation, about 2 feet in length by 16 or 17 inches in width, rather coriaceous in texture, dark green and glabrous above, covered with soft ferruginous pubescence

sistent, 6-7 inches long, tightly rolled round, except near the apex; constricted in the middle, acuminate at the apex, prominently but obtusely keeled at the back, glabrous externally, pinkish in colour, and white-spotted, internally greenish, shining; margins thin, pinkish, finely denticulate. It opens rather more than half-way down, and subsequently closes again. The spathe is nearly as long as the spathe, of the thickness of the forefinger, entirely covered with flowers, those of the upper two-thirds or rather less being cream-coloured male flowers, the lower third or rather less being occupied by female flowers of a greenish colour, mixed in with abortive female flowers, the intervening space being occupied by neutral flowers. The stamens



FIG. 46.—*HOMALOMENA FELTATA* (MUCH REDUCED).

Shuttleworth, from Colombia. Our illustrations (figs. 45, 46) will suffice to convey a general idea of its habit and botanical structure, and from the latter it may be seen that the plant is a true member of the genus *Homalomena*, the other species of which, with one exception (*H. Werderlandi*), are East Indian. In the *Gartenflora* for October, 1876, and again in the number for February, 1877, our learned friend Dr. Regel reduces the genus *Carmeria* of Linden and André to *Homalomena*, but if so then *Carmeria* must form a distinct section, for it possesses none of the neutral flowers of *Homalomena*, nor are the fertile ovaries mixed with abortive ones, as they are in the last-named genus.

* *Homalomena feltata*, Mast., n. sp.—Cespitosa: petiolo basi vaginato superne tereti cancellato pubescente, basin versus mucronato; foliis peltatis cordato ovatis acuminate superne glabris subtus ferrugineo-pubescentibus, spathe valde carinata.

beneath, especially along the nerves. It is attached in a peltate manner to the stalk about half-way between the base and the centre, and in form is cordate ovate acuminate. The base is deeply cordate, spreading, and separated by a triangular sinus. The nervation is prominent on the lower, depressed on the upper surface; from each side of the midrib proceed alternately, at intervals of about an inch, eight secondary nerves, which run obliquely to the margin, where they march with their fellows. Seven of these ribs are unbranched, but each of the basal nerves divides into two divisions, and of the latter one is again bifurcated. The tertiary nerves are very much smaller, parallel to the secondary ones, and enclose a fine reticulation. The peduncle is about a span long, sub-compressed, oval in outline, channelled on the anterior side, setose, and marked with linear pinkish blotches. The spathe is per-

are 4-5-cornered, oblong, with very thick white filaments, and two-keeled anthers bursting inwardly below the flat truncate apex of the filament. Pollen coherent, the individual grains oval. The neutral or abortive flowers are club-shaped, with a slender stalk and a thick whitish club-shaped head. The fertile ovaries are frequently intermixed with abortive club-shaped flowers, and are free, or more or less connected by mucous threads. Each ovary is obtusely four-cornered, with four cells, and a sessile 4-lobed viscid stigma. The placentation is axile, the ovules being very numerous, minute, horizontal, anatropal, and stalked. When open the flowers have a peculiar somewhat aromatic perfume, comparable to anised or turmeric.

The appearance of the plant is, as we have said, very striking, and the flowers are produced in great abundance. Our examination was made in February, *M. T. M.*

Florists' Flowers.

TULIPS.—It is fifteen years since I sowed my first Tulip seed, and it takes a seedling from five to seven or eight years to give its maiden bloom, the latest attaching to one's own seedlings, and especially the batch due to bloom in the current season, becomes intense—a very agony of pleasure.

Just now, when the plants are getting fairly above-ground, the chief excitement over the seedling-bed lies in watching the growth of the largest yet un-bloomed, to catch a glimpse of the significant second leaf. For this is the one sure sign that the bulb intends to flower this time; whereas the very boldest first or "guard" leaf, if it does not contain a second within its fold, will only result in that well-known blank, single leaf which florists—borrowing a term curiously remote from all horticultural pursuits—term a "wreath." Still, the idea of loneliness which the word conveys gives it an expressiveness for these solitary leaves.

I do not know any seedling raiser of Tulips who would cross out of the classes, *i.e.*, a yellow ground (bizarre) with a white ground (a byblomen or a rose). White blood would tend to pale the rich yellows of bizarre ground colours, and yellow blood would stain the lustrous purity of the white ground classes. It would also greatly increase a mongrel and now un- tolerated class called tricolors. One pod of seed is capable of giving flowers in all the three classes, just as a pod of Piceæ seed will give three seedlings in all the classes—light or heavy. This being so, in the Tulip, there are now and then some seedlings which, instead of being purely of this or that class, drop in between two, and in their rectified state exhibit a combination, more or less confused, of colours belonging to white and yellow ground classes.

In the seedling or "breeder" state, these "tricolors" are detected by their base or ground colour belonging to one class, and their body colour to another; thus, a yellow base belongs to the bizarre, and a lilac body colour to the byblomen breeders.

But sometimes a lilac seedling comes with a yellow base. Here we have elements of two classes; and this confused flower will break into a yellow base and a breeder form, or a yellow base and the byblomen marking, and also strike a byblomen white ground colour into the yellow, either in the form of streak or shading.

Though I have had tricolor seedlings with bizarre base and byblomen body, I have never seen the combination of byblomen base with bizarre body, or known of it occurring.

But the "rose" class body colours, which are red or pink, are combined with yellow bizarre bases, and produce tricolors of scarlet, white, and yellow. Sometimes, however, the yellow base and red body are the breeder form, or the "red bizarres," a grand sub-class. However, a practised eye can at once distinguish between the red ground colour of a "rose" seedling, and that slightly browner or yellowish red which denotes the undeveloped red bizarre.

A very interesting point in Tulip culture is the origination of "strains." Name is something in a florist Tulip, but strain is everything. For strains we are indebted to the "breaking" of the breeders into their permanent form.

Every breeder that breaks, originates a new strain of the flower that bears its name. If the breeder breaks badly, it and all its offsets after it are a "bad strain" of the name it bears. If it break in a fine feathered character, that is the foundation of a fine "feathered strain," which it and its offsets will (with a sport now and then to a flame and back again) maintain.

Many breeders break into no distinct character at all—a muddle between the flamed and feathered state,—the "feather" full of "skips" or misses, and the flame a smudge or dab. Bad breaks are thrown away, however high the name of the flower in its fine strains. The breeders help a flower into circulation very much, as in this state both bulbs and increase are larger than when "rectified" in good "breaks."

Tulips are a mystery in many ways. Why does a flat offset always bloom when a round one of equal, or even greater weight, will be a widow for the year? My only guess is that the flat offset has been fed at its mother's side, being connected with the old bulb, while a round offset is entirely on its own root. The flat offset may, perhaps, thereby draw

sustenance enough to allow of its forming a blooming herb, which these bulbs do at their leisure when at rest.

Seed should be sown when the old bulbs are planted in November, and it will appear with them in spring. Bulbs may but never should be planted as late as January, and seed may be sown as late, and still will appear the same season. But if not sown till, say, April, it will remain idle until the succeeding autumn, when it is natural for its parent to rot again.

I have twice had seed do this, and that is all the experience I can speak from. I thought twice was often enough, and have ever since taken the hint to be more punctual. It is no light matter to incur yet more outlay of time than the necessary five to eight years. *F. D. Horner, Kirkby Malwood, Ripon.*

Forestry.

PLANTING as a branch of rural industry may be divided into two classes, namely, the planting of large and small trees; but between the tree 30 feet high and the seedling a few inches in length there is a wide and important difference. The one is attended with much difficulty, labour, skill, and expense, while the other is exempt from almost any—the one is very difficult, the other is very simple.

The operation of planting is in general well known, but there are a few particulars of such vital importance as to require more than a cursory remark. The first thing to which I wish to direct attention is the thickness of the turf or herbage of the ground into which the trees are to be planted. Nothing is more injurious to plants than excluding the air and other elements from the lower part of the stem, or, more properly speaking, the neck of the plant. That part of the plant where the stem and root are connected is very sensitive, and requires the greatest possible care and attention; and it is more on account of the requisite treatment plants receive in the nursery, compared with what they receive in the forest, that their early growth is so much superior.

Thousands of plants at five years, planted in the forest, have scarcely begun to grow, and a large portion are quite dead. It is often asked, what becomes of all the plants grown in the public nurseries year after year, and what of the 3000 or 4000 trees that were planted per acre. The answer doubtless is, they all died in infancy, and for want of air rather than want of food. It is quite a common thing to find patches of the best soil, and favourable situations, either entirely destitute of trees or occupied with distorted ones, the result of too rank herbage amongst them in their early stage of growth.

In planting rich old pasture-ground, or hollow places in moorlands, it is well either to pare off the turf, and cart it away, for enriching bare hillsides in arable fields, or to turn it over by means of the spade or plough, and allow it to remain. By either means of preparation the plants are allowed to be planted without burying the stems too deep, and the herbage is thereby prevented from injuring them till they are sufficiently advanced to keep it down, for nothing more effectually keeps down weeds than a good close crop.

Next in importance to avoiding deep planting, and giving air, light, and sunshine, to every part of the plant—stem, branch, spray, and leaf—is that of adapting the roots to the soil in which they are destined to grow. With very small plants, and even medium-size ones, up to 30 inches, with ordinary precautions and situation, nothing serious need result from the operation of planting or transplanting, since up to that stage the roots have scarcely acquired a fixed state or condition. With older trees, however, the case is widely different, so much so, indeed, that when a tree is removed from one quality and condition of soil to another of an opposite and different one, the roots all decay and rot, frequently back to the very stem and base from whence they originally started. To remove a tree from a poor to a rich soil does not prevent the roots from decaying, neither is it prevented by removal from a clay to a loam. The most disastrous failure I have met with has been when the trees grew in strong clay wet or dry, and were transplanted into light loam or sandy moss; nor does it appear that different species are differently affected: I have seen Oak, Beech, Elm, and Ash, all influenced in a manner similar to Lime, Poplar, Willows, and Alder. Experience has taught me, however, that unless a large tree can be removed with

a good ball of earth it should not be attempted to transplant from clay soils, even although into loam of a superior quality. It is a common and in some respects desirable thing, to form hedgerows of large trees by transplanting these either close, or a few feet distant from the hedge. In doing this, sometimes the trees usually die the first season, and every successive year others gradually sicken, lose their tops and side branches, until nothing but bare poles remain as relics of what were once handsome and flourishing trees. The situation is blamed for it, the air is charged with the evil, the planter is censured, and the hedge itself into which the trees are planted is also accused. It is seldom or never suspected that the evil is all at the root, and it was only after taking up trees in the various conditions described that I found out where the evil lay.

Removal with a good-sized ball prevents decay of the roots, as, by it they are protected and nourished till they shake their fibres, and reach the new soil for nourishment, when they are safe. Next to these, another important consideration is abundance of branches upon the stem, and the lower down the better, as by the lower branches the roots are supplied with food, as much so as from the soil in which they grow. The soil in being returned upon the roots, in planting large trees, should be in a dry state, and never in the form of puddle or mortar; and when the soil is naturally destitute of sand, that should be added, as it greatly incites to growth. *C. J. Michie, Culliton House, Culliton, Feb. 24.*

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Continuity of supply is one of the first desiderata in a garden, equally as much in flowers as in eatable commodities. This can only be attained by timely forethought. There are many species of hard-wooded plants that can be retarded for several weeks, or even months, so as to give a succession without injuring them in the least, provided the retarding process is conducted by proper means and in a proper manner, by the use of such a lean-to with a northern aspect, and not by matting up or the use of material that darkens an ordinary plant-house. The latter course is always injurious in its effects, as, despite the shading occasioned by the structure of a house fully exposed to the sun is always so much raised during bright weather as to expose growth, which through the shading is unavoidably weaker than is consistent with the future well-being of the plants. If some of the late-flowering varieties of *Epacris*, such as *miniata*, *minuta*, *spicantans*, *Eclipte*, or *grandiflora* races, are now put in a retarding-house before the flowers have made much progress, they will move little further for the next six weeks, and then come on for greenhouse or conservatory decoration up to the end of the year. These plants, if they are now put, will be kept back until later on, when their flowers are further advanced, it will frequently cause them to fall off. *Polygals*, *Aphelexis*, *Boronia*, *Dillwynia*, *Chorizanthes*, *Eriostemon*, *Hoves*, and *Rhysochortos* *jasminoides*—these also will submit without injury to their time of blooming being retarded, as well with the *Epacris*; set them well up to the glass, and in giving air be guided by the state of the weather, for even if a minimum of growth is progressing, they should never be subjected to the lights being kept back. Use no shades of any kind, and if the presence of plants like the above is more acceptable in the conservatory than late in the spring, when they are useful for mixing with such things as *Pelargoniums* and *Fuchsias*, of which at this time there is usually a superabundance. Any of the latest-flowering varieties of *Camellias* that have not been put when their blooming will be retarded, may now be subjected to treatment similar to that of the above-named plants; they will open their flowers here equally as well, and furnish a supply most acceptable during a later favourable disposition in these late kinds by delaying the time of their making growth. The worst feature in *Camellia* culture is often a glut of flowers at one time, with few early in the winter or late in spring, whereas by careful management, with a moderate number of healthy plants, there is no difficulty in keeping up a supply from November till the end of April. A portion of the latest blooming *Cinerarias*, herbaceous *Calcitricas*, as also some of the shrubby kinds, should be kept back in like manner. Hence, no more caution is necessary in the admission of air during the next six weeks than at any other time in the year. An

impression often prevails that these air-polluting plants, when well established in the soil and in rude health, will at all times bear the heat of a blazing fire through the house. Yet this is by no means the case, especially with the hardest-wooded kinds. I have seen large and valuable plants at this season, in a few days so injured in their foliage by the incautious admission of too much fire, as to have a considerable portion of them necessarily destroyed; the leaves are affected first turn of a reddish brown colour, which, if the inexperienced might be taken as an evidence of health; but when they have so suffered they soon lose their vitality, become brown, &c. no further assistance to the plant, and very unprofitably, will remove. *T. Baines.*

ORCHIDS.—Continue with the potting and top-dressing of the plants as previously advised, so that as soon as possible the whole of the collection will have been gone over, and by this means the state of the roots and breaks will be more clearly perceived and better understood than they would otherwise be. As soon also as signs of returning activity and growth are observed, the fresh soil will be at hand for the young roots to push into; and this in the case of the majority of these plants is the best and most judicious remedy to have recourse to for the exciting of new soil about them. No doubt many things are potted late on in the season, sometimes probably through purchase, or some cause may have prevented their being seen in the early months of the year. These may, and do, succeed as successfully as the extra care must be given, both in regard to shading and water, otherwise the bulbs and leaves shrivel and turn yellow before the roots can again start away, and keep up the regular and requisite amount of life-giving and sustaining sap. The best mode of setting racks for the plants, is in the middle of the day, and though it may seem early to speak about shading, it will be advisable to look to the blinds and see that they are sound and fit to be put up with a likelihood of lasting the season through, and then on a dry day to draw them down to top-dress the houses, or by the admission of a greater quantity of external air. The evergreen section of the Dendrobiums, such as densiflorum, Schroederi, Farmeri, thysiflorum, chrysocamum, &c., will now be commencing to show their new growth in points, chiefly in the case of the bulbs. Such of these which were stood out in a cooler division should now be brought back into the Dendrobium-house, where, under the influence of a little more heat, the spikes will push out and develop. In the case of flowers at first only a small quantity of water will be required, the amount being increased when the growths appear. If this is not kept in mind the buds are apt to push out, and to damp off at the tip of the spikes, and thus a great quantity of the blooms are lost. *D. Farnesii aureo-flavum* is a variety that is still very scarce, but its rich and showy racemes of deep yellow flowers, and the number that are produced on a spike, though the spike may have started away from a comparatively small bulb, are sufficient reasons why this should be highly appreciated. This should be grown in a basket, as in all probability the plants will be small, and thus being near the light, it will come on better than if it were in a pot and stood under some of the larger plants. *D. Falconeri*, too, that has been in the soil long, and is now in the same stage, and provided the growths are strong and well-ripened, will quickly push out a number of its charming flowers—generally singly, but sometimes in pairs—at the joints of last year's or the previous year's growth. The light spikes of the preceding year will be light spotted, and it must not be done away with at present, or the young points will start growing very vigorously before the buds appear. The plants of *Chysis* must be looked to, for it will be found that *C. limninghi*, which is by far the most desirable and attractive when their richly coloured flowers expand. Small plants of any of the genus will succeed well in baskets in moss and peat, and liberally supplied with water when growing. These all during the growing season have the temperature of the Cattleyas, and if the plants are in the height of the growing season they were to be placed in the Dendrobium-house, the little extra heat would be of great assistance in swelling up the bulbs. The little yellow thrips is apt to get into the young growth, it must, therefore, be watched, and if any are observed, they must immediately be got rid of by

smoking the house with tobacco-paper or cloth. *W. Swan, Fallowfield.*

FRUIT HOUSES.

PINES.—In the preceding Calendar for this department an intimation as to the careful preparations necessary for potting and other requirements was given. At any time now, when the heat at about a foot beneath the surface of the bed is steady at from 85° to 90°, proceed in potting those plants which demand very attention; for this operation select only those specimens of root which when they are done plant them into the bed forthwith. If on the other hand the temperature as indicated be not attained, defer these operations; and in the event of an insufficient amount of heat being apparent, at once add some fresh materials and turn the bed over again. Plants which are shifted without having the roots much disturbed, should be watered with tepid water after they are potted, and be placed where the ventilation of the house is carried on in the usual way, but in the case of disrooted plants or rootless suckers water should be entirely withheld for about a fortnight, by which time new roots will begin to appear at the side of the pot; water may then be freely given whenever it is required. During the period named the object will be to induce the formation of new roots to re-establish the plants; for this end the atmospheric conditions about the plants should be such as will sustain Nature in the absence of these essentials, and should therefore be temperate and invigorating without aridity; artificial heat, if used, should be such as to keep the house close, whilst its temperature remains below 80°, with an abundance of moisture about it; exclude powerful sunshine altogether, and lightly dew the plants overhead with a fine syringe twice or thrice every week. The size of the pot to be used in regard should be given to the variety and the time the plants are required to produce ripe fruit. If plants of the Queen and kindred kinds which are now in from 5 to 7 inch pots, are, when full of roots, transferred to 10-inch ones, the plants under proper care will surely give a crop of fruit the subsequent February, and be ripe early in the succeeding June; if those of larger size be employed it generally makes them later. The rapid way of cultivating these now-a-days dispenses with the annual overhauling of stock, which formerly was necessary at the end of each year, and confines it to a more limited number of plants—which is assuredly an advantage, inasmuch as the maintenance of an over-abundant supply of stock often tends to impair the quality of the fruit, and thereby upset calculations which are deduced from practical observation. See that no lack of heat exists at the roots of plants which are started into fruit. Avoid wetting the fruits whilst in flower, and maintain an equal temperature in the house as where this is tried. To prolong the supply of the Pine-apples, if necessary, remove to cooler quarters those which are just ripe. *G. T. Miles, Wycombe Abbey.*

CUCUMBERS.—A period extending over many weeks of mild sunless weather is now likely to be succeeded by cold cutting storms from the North, which will necessitate extra firing, and as the days are now increasing in length, and the plants may be more frequently syringed to keep down red-spider, which generally accompanies increased fire-heat, and spreads, if left unchecked, with alarming rapidity, particularly if the plants have been weakened by heat in the previous season, the best does not recur to the liberal use of clean water, a weak solution of Gishurst or soft soap may be applied towards night, when the foliage is likely to hold the moisture, or the foliage may be dusted with flowers of sulphur, the probability of the success of this measure is remedily is not objectionable. To keep up a good supply of Cucumbers through February and March, every means must be employed for keeping the plants in free growth, for if once allowed to stand unhealthily the season over, Cucumbers are most in demand will have passed away before they can be restored to a bearing state. Of equal importance with the management of the foliage is the bottom-heat, which should never fall below 80°, or 85°, which secures the plants to the better. Attend to top-dressing with this layers of turfy loam and old mortar; as the roots appear water with tepid liquid manure at a temperature of 85°, and syringe the surfaces of the beds and floors with the same at nightfall. Sow seeds and start cuttings for succession in pots and frames; be ready in readiness a supply of warm turfy compost for earthing up plants which were turned out last month on small hills as soon as the roots begin to work on the surface. Attend to linings before the heat is too far kept up, and keep the plants in a permanent fermenting state for this purpose, and turn the back and front linings alternately.

THE ORCHARD-HOUSE.—If not already done, fruit trees growing in pots should now be placed in

their summer station, and if the pots can be sunk one-third of their depth in the border, where they can root through into good turfy loam, the fruit will be finer, of better quality, and less liable to injury from an irregular supply of water through the hot months of July and August. The pots should be plunged regularly in water, and be protected by covering to pass freely away after it leaves the drainage, otherwise the soil will soon become sour and unhealthy. In lofty houses, where it is desirable to keep the trees near the glass as possible, the evil effects of drought may be counteracted by planting out in each pot a nearly dry sod of new turf, to slide downwards. See that all the trees are perfectly free from aphid at the time the first blossoms begin to unfold by syringing occasionally with quassia or weak tobacco-water. Always make plants of the first quality of tobacco-paper, and before the earliest tree unfolds its bloom, and I find the trees are then safe until after the fruit is set.

Owing to the mildness of the season many kinds will now be in flower and fit for fertilisation, which is best performed with a camel-hair pencil stuck on fine days, when the atmosphere is warm and dry. Ventilate freely on all favourable occasions, close the house sufficiently early to insure a few degrees warmer than the house, and apply it early on fine mornings, in order that the atmospheric temperature of the unheated orchard-house when the trees are in bloom. Watering will now require careful attention. Let the water used be a few degrees warmer than the house, and apply it early on fine mornings, in order that the atmospheric temperature of the unheated orchard-house when the trees are in bloom. Watering will now require careful attention. Let the water used be a few degrees warmer than the house, and apply it early on fine mornings, in order that the atmospheric temperature of the unheated orchard-house when the trees are in bloom. Watering will now require careful attention. Let the water used be a few degrees warmer than the house, and apply it early on fine mornings, in order that the atmospheric temperature of the unheated orchard-house when the trees are in bloom. Watering will now require careful attention. Let the water used be a few degrees warmer than the house, and apply it early on fine mornings, in order that the atmospheric temperature of the unheated orchard-house when the trees are in bloom.

KITCHEN GARDEN.

With the advance of the season there will be less risk in committing seeds to the earth, and taking stock of what has already been sown and the appearance of such as are through the surface. The sowings of Peas may be at once supplemented by a larger sowing of various sorts of very good selections for this sowing would be Champion of England, extra Perfection, and Ne Plus Ultra. Also Longpod and Windsor Beans for succession; the improved varieties are best for the purpose. Sow on the open border—a sheltered south one is much to be preferred. Let *Ranunculus acris*, *R. ficaria*, *R. flammula*, *R. abortivus*, Sprouts, salading, and a moderate bed of Prickly Spinach, also Celery in heat at once, if not already sown, and prick out that which was sown for early purposes in frames on a gentle heat, where also must be pricked out the sowing of *Wolfeana* and other Cauliflowers, as well as the different sorts of autumn Broccoli as before-mentioned. Another sowing of all the sorts for succession should be made at once on the open border, and the choice sorts will be better, or the protection of handlights. Cauliflowers under handlights will now require attention; the ground should be picked up all round them. During the operation the earth should be laid round each group of plants in a basin-like form, so that if the necessity for watering should arise, the water may be retained in contact with the roots; for the same reason it will prevent the waste of the liquid manure, good doses of which should be given at intervals as soon as the plants are growing freely. The Cauliflower plants which have been kept in frames on the open border, and in the open garden, if the temporary shelter is obtained by planting them in deep drills, which may be filled up with advantage as they advance in growth. The alleys between Asparagus beds are excellent sites for these early Cauliflower plants, and as the crowing of the Asparagus plants is on the move, the sooner they are dressed over and pricked up the better; when the alleys are well thrown out over the surface, they should be heavily manured with rich dung, and the Cauliflowers planted at once. Where the beds of Asparagus, Sea-kale, and Globe Artichokes are required, and the beds have been entrenched up as recommended last month, let no opportunity be lost of bringing the ground into good condition for planting, by tormenting and knocking about the dry weeds and roots of last year which are left up the beds intended for the main crop of Onions; this should be well manured, and frequently tramped over and knocked about on dry days to get it into a fine seasonable condition for sowing sown. Also the beds for the main crop of Carrots will require a considerable amount of cultivation and tormenting to get the soil well pulverised to a good depth. The ground for this crop should always be heavily manured the previous year, so that it may be thoroughly decayed and intimately incorporated with the soil, and the frequent trappings should in the cultivation necessary to bring it into condition for sowing; the reason for this is that if there are lumps of dung in the bed, and it incorporated with the soil, as soon as the Carrots start into growth they will be in search of it, instead of the straight tapering roots so desirable in this crop. *John Cox, Rolford.*

THE

Gardeners' Chronicle.

SATURDAY, MARCH 3, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Mar. 5	Salisbury Hort. Socy. Meeting of the Fruit and Floral Committees at 11 P.M. and Scientific Committee at 12 P.M.
WEDNESDAY, Mar. 7	Salisbury Hort. Socy. Meeting of the Fruit and Floral Committees at 11 P.M. and Scientific Committee at 12 P.M.

FOR our horticultural readers the great value of Mr. DARWIN'S last work on CROSS AND SELF FERTILISATION OF PLANTS, of which Mr. HENSLOW is providing us with an abstract suitable for our purposes, consists in the practical applications which follow from the author's very numerous, protracted, and laborious experiments. Seed growers and hybridisers will find, as we have already pointed out, and as we shall have occasion to repeat again and again, that much that was mere haphazard and of a tentative nature in their practice has been by Mr. DARWIN reduced to rule and method. Uncertainty and loss of time are thus to a considerable extent replaced by certainty and confidence as to result, with a corresponding gain as to time. But although this is apparent to those who read the book carefully, nay, in many cases, is proved to demonstration to those who can read figures and form anything like a clear estimate of the value of evidence, yet it is certain, judging from all past experience, that these practical results will be a long time filtering into the minds of those who will eventually most profit by them. The theories and speculations, on the other hand, that may be and are based on these facts, will be keenly discussed from the first. Good cannot fail to result from what may seem at first sight profitless discussion. New facts will be brought to light and old facts will be viewed in a new light, and so the results cannot fail to be of advantage. One of the first points which has elicited discussion is as to the ORIGIN OF THE SEXES IN PLANTS, and the question whether the ancestors of existing plants were "dicocious," that is, whether they had their male flowers on one plant and their female flowers on another, or whether the primordial flowers were hermaphrodite. Mr. Darwin (p. 410) adopts the former view, and in so doing is considered to be in so far opposed to those great doctrines of evolution and progressive development of which he is the high priest. We should as soon think of controverting as of defending so mighty a master, but if there is one quality for which he is more remarkable than another it is his perfect candour and freedom from dogmatism. We cannot doubt, therefore, that, however averse to barren controversy, free discussion on a proper scientific basis will be welcomed by him. It is under such an impression that we venture to make some remarks on this question of the origin of the sexes in plants. Without going into minute botanical details, though at the risk of sacrifice of precision, we may premise that there are some plants in which no difference of sex has been yet observed, others in which two sexes have been discovered in the same flower, as in the so-called hermaphrodite flowers, such as Lilies; others again, in which the two sexes are borne, not in the same flower, but on the same plant, as in the Hazel (mœnœuous); while still another class of plants, like the Acubia, for instance, bear the sexes on different plants (dicocious). All this, of course, well known to most of our readers, but it is necessary to start with clear notions in discussing so intricate a problem. So far, then, we have (1) plants which bear sexless flowers (we use the latter word here in its widest sense, including the reproductive organs

of the so-called flowerless plants), (2) others which are as to structure and conformation two-sexed in the same flower, or (3) two-sexed on the same plant but not in the same flower, and (4) others again two-sexed on different plants. But now arises a complication: a flower may be two-sexed as to structure and as to function also. These are the so-called "self-fertilised" plants, of which a prominent instance is the common Bee Orchis. But in the majority of cases, albeit both sexes exist in the same flower, yet the pollen from one flower must be carried by insects, or by the wind, or by some other agency, to another flower; and thus cross-fertilisation is effected. The necessity for this arises from the circumstance that structural peculiarities of various kinds, or the fact that one sex is mature while the other is immature, prevent self-fertilisation and necessitate cross-fertilisation. So then a flower may be structurally two-sexed, but physiologically one-sexed, or "dichogamous."

The assumption on the principles of evolution, adaptation, and survival of the fittest, would therefore be that hermaphrodite or two-sexed flowers were the progenitors of one-sexed flowers. In course of time the advantages accruing from the union of two parents of the same stock, but of remote degree, as contrasted with the results of the union of two very nearly related parents, would become greater and greater. The tendency of growth would therefore show itself in the production of one-sexed flowers, and ultimately of one-sexed plants, rather than of two-sexed flowers. In other words, the hermaphrodite condition would precede the dichogamous, that the mœnœuous, and that again the dicocious, the latter being considered the latest stage of evolution. We may put this in the form of a table, thus:—

Sexless plants?	
Flowers two-sexed—	
Structurally and functionally	1. Hermaphrodite.
Structurally only	2. Dichogamous.
Flowers one-sexed—	
On the same plant	3. Mœnœuous.
On different plants	4. Dicocious.

The order of progression would be from 1 to 4, according to the general principles of subdivision of labour and least expenditure of power to attain a given result.

Mr. DARWIN, on the other hand, to the surprise of some of his followers, supposes plants to have been originally dicocious, and that the hermaphrodite condition was subsequent.

If we look at the matter physiologically, it is difficult to resist the hypothesis of a primitive oneness of sex. No difference of sex exists in the first instance in the structure of any plant or animal; it is only after development has proceeded some way that any difference is observable. There is, then, in the life of every individual a primordial oneness of sex. What happens in the individual may be true, as PLATO surmised, of the race. It may even be the foundation of the myth of the development of EVE from ADAM'S rib. Reverting to plants, among the lowest forms we have an apparent oneness, or inseparable condition of sexes. The first stage of duality is merely a subdivision of one into two; and, indeed, looked at in its simplest form, the process of reproduction is nothing more than the repeated subdivision of an original unit. It is the cause of this subdivision which remains at present a mystery. From the very simple stage of plant life just referred to we advance gradually to those in which the sexes become well marked, and placed in proximity, or apart, or even on different plants. Now, if we could trace a gradual unbroken line upwards from the lowest mass of mucus or protoplasm to the most highly specialised flowering plant, the pedigree would, of

course, be as complete as it would be interesting. It happens, however, unfortunately for the pedigree-makers, that the self-same conditions of one or two-sexed flowers (if we may so call them), and one or two-sexed plants, exist, broadly speaking, among fungi, among Algae, among Charas, among Ferns, &c., so that we cannot look upon these conditions as marks of progressive development from one group to another, though they may be so within the limits of each individual group.

If we regard the matter from a structural point of view only, then it appears as if we must begin by the simplest forms, and ascend gradually to the more highly-developed ones. We find good evidence of the very simple-flowered, wind-fertilised Cycads and Conifers long before there is any evidence of ordinary flowering-plants, much less of such highly specialised forms as Compositae, Umbellifers, or Orchids. These latter, so far as we know, were late developments on the earth's surface. Again, in point of individual development, we have, first, the simplest sexless structure, then a development of stamens, then a development of pistils, so that each individual flower begins as sexless, but it becomes in time male, and afterwards hermaphrodite (structurally); or if growth and development of either stamen or pistil be arrested it may remain one-sexed. How, then, can the hermaphrodite precede the dicocious condition? From this point of view, then, Mr. DARWIN seems to us to be unquestionably right. But it stands to reason, in a case of this kind, we must look at the matter on all sides, and so, in direct proportion to the diversity we see, is, of course, our ignorance of the matter. If a particular opinion is borne out by the facts of morphology or structure, and is not consonant with what we know of physiology, or vice versa, it is quite certain some part of our theories is untenable.

We cannot doubt that the existing structure of plants and animals is the direct consequence of a long inheritance by descent, modified more or less by necessary adaptation to surrounding circumstances. It is our business to study these relations and to profit by them. To know the exact line and course of descent of existing plants and animals may partake of that knowledge which is too wonderful for us. In any case it is quite certain that the depth of our ignorance is such that all speculations as to the pedigree, or, as it is the fashion now to call it, the "phylogeny" of existing organisms, are little more than guesses, more or less wild.

— The accompanying figure of *EURYCLIS AUSTRALISICA* (fig. 47), an almost forgotten amygdaloidaceous plant, was made from one of a number of well-flowered specimens exhibited at South Kensington on the 14th ult. by Messrs. VITCH & SONS, of Chelsea. It is one of those paniciform plants in which the flower-structure is developed in the advance of the leaves, the latter being very broad, with a strongly marked cordate base, and petiolate. The flowers are white, produced in a many-flowered umbel, and have a cylindrical tube and regular limb of equal segments, with an inner cup or crown. The genus comes very near to *Calostemma*, and has the curious property of the seeds germinating in the capsule. HERBERT makes two species—*E. amboniensis*, a stove bulb, requiring winter rest, and subject to great variation in the development of the crown; and *E. australisica*, our present subject, which, he says, has much narrower leaves, and is sufficiently hardy to bear greenhouse treatment. ALLAN CUNNINGHAM, writing in the *Botanical Magazine* (t. 3399), where E. Cunninghami is figured, makes three species—*E. sylvestris* or *amboniensis*, *E. australis* or *australisica*, and *E. Cunninghamii*, distinguishing the last from *E. australis*, which has a simple stigma, by its smaller and fewer-flowered umbel, and its three-lobed stigma. KUNTH adopts the same three species. Finally, BENTHAM, in the *Flora Australiensis*, adopts two species—*E. amboniensis*, in which he includes *australisica*, distinguishing it by its very broad cordate leaves, and its

* We add the signs commonly used to express these conditions—thus, ♂ for hermaphrodite, ♀ for mœnœuous, and ♂-♀ for dicocious; to these we venture to add ♂ for dichogamous flowers.



FIG. 47.—EURYCLIS AUSTRALASICA. (LEAF $\frac{2}{3}$ NAT. SIZE; POLLEN $\times 160$.)

corona not being one-fourth as long as the perianth-lobes; and E. Cunninghami, distinguished by its ovate not cordate leaves, and its corona not being two-thirds as long as the lobes. Of the published figures our plant certainly most nearly resembles the former, but it has the spiky corona attributed to the form named E. australis.

— The Thirty-fourth Anniversary Dinner of the GARDENERS' ROYAL BENEVOLENT INSTITUTION will take place on Wednesday, July 4, when Sir TREVOR LAWRENCE, Bart., will preside.

— We have received the schedule of prizes arranged by the committee of the NATIONAL ROSE SOCIETY for their first exhibition at St. James' Hall on July 4, and it fully justifies the term that has been applied to it of "liberal," the prizes amounting to upwards of £250, including three silver cups; of these, Messrs. CRANSTON & Co., of Hereford, offer one for amateurs—a challenge cup of fifty guineas, with the liberal condition that it must be won in three years, unlike some challenge cups which go on for an indefinite time; thus it is won by A. in 1877, and by B. in 1878, only A. and B. can compete for it in 1879. There have been already promised in donations towards the prize-list upwards of £120, and since then 100 members have joined, and the committee have great hopes that before long they will be able to announce that the prize-list has been equalled by donations, and the number of members trebled, for the terms are very generous. The subscription is fixed at ten shillings, and for that each member is to receive two five-shilling tickets of admission, entitling the holders to see the Roses for an hour before the show is open to the general public. As the only Rose show in or about the metropolis this year is likely to be that at the Crystal Palace (although that is not yet announced), there can be little doubt that the new venture will be successful in point of flowers, and we hope may be equally so in the attendance of visitors. The Horticultural Club has permitted the Society to use its rooms, and all intending members can address the Secretary of the National Rose Show, 3, Adelphi Terrace, W.C. Seeing that Wednesday, July 4, is the day fixed for the evening *fête* at the Botanic Garden, Regent's Park, for the holding of the committee meetings at South Kensington, and for the anniversary dinner of the Gardeners' Royal Benevolent Institution, we would ask why this date has been selected for the holding of the Rose show, while the previous and subsequent Wednesdays are disregarded. Rose growers cannot tell to such a nicety when their flowers will be at their best as to make this clashing at all necessary, and it certainly will produce much embarrassment.

— THE CLIMBING PLANTS in the Conservatory No. 4 at KEW are just now very interesting. Most beautiful of all is perhaps Clematis indivisa, whose white star-like blossoms must be seen to be appreciated. In addition there are *Lonicera sempervirens*, *Hardenbergia Compertiana*, *Kenedia rubicunda*, *Akbia quinata*, *Hibiscus dentata*, a species whose rich bronzy leaves contrast well with the large yellow flowers. In the Succulent-house the very magnificent *Agave Eileneana*, though past its best, is still worth a journey to Kew to see.

— Following the example of the Belgians, the Italians propose combining the chief horticultural societies of the kingdom into a HORTICULTURAL FEDERATION, and to hold periodic exhibitions at Milan, Venice, Florence, Turin, Naples, Rome and Genoa—the first to take place at Milan in 1878, the second in Florence in 1880.

— THE WATER PLAGUE at KEW has not much abated yet. Only a few days since there were, we were told, two feet of water in the stockholes of the Temperate-house. In the case of the Palm stove an attempt is being made by means of steam fire-engines to empty the lake in front, in hopes that in this way the water may be reduced in the stockholes.

— We desire to call attention to the interesting lecture of Sir JOHN LUBBOCK, on the RELATIONS BETWEEN PLANTS AND INSECTS, before the Society of Arts, and a portion of which we reprint from the

Journal of the Society. Apart from its special interest, it has a value as affording one more and most striking evidence of the value of the Darwinian hypothesis in supporting what theologians call the argument of design, and which was made use of so effectively in the case of PALEY and the watch. The evidence, says Sir JOHN LUBBOCK in closing his lecture, "is sufficient to justify the conclusion that there is not a hair nor a line, not a spot nor a colour, for which there is not a reason, or which has not a purpose and a function in the economy of Nature."

A recent number of the *Moniteur* gives full particulars as to the measures proposed to mitigate the disasters caused by the PHYLLOXERA in France, such as remission of taxation, &c. The vineyards devastated are estimated at 200,000 hectares (a hectare = 2.4 acres), 50,000 hectares being now completely devoted to some other crop. The Government are desirous of aiding all those who are exerting themselves against this pest, and without definitely pronouncing in favour of any particular course—the facts not being, in their opinion, sufficient to justify such a proceeding on their part—they yet call special attention to the replanting of the French vineyards with American Vines. M. FABRE writes that the resistance of the American Vine has now been conclusively proved. Four years ago he grafted on some "Aramons" some American scions, and these he double-grafted with Bordeaux varieties. The roots of the Bordeaux varieties, and of the "Aramons," have been completely destroyed by the Phylloxera, while the American roots are quite healthy. No alteration in the quality of the wine was noticed. It is not clear, however, from M. FABRE'S letter what the effect of the double-grafting was. We imagine, however, from the context, that it is essential that the roots should be of American origin. As the insect is of American origin, it is recommended that these American Vines be introduced solely into those regions already affected by the Phylloxera, and not planted in districts up to this time free from the pest. The stamping-out process is also strongly insisted on.

— We are requested to state that, in addition to Messrs. VETICH, WILLS, and WILLIAMS, Mr. WILLIAM BULL is also an agent in this country for the International Horticultural Exhibition to be held at Oporto on June 29 and 30 and July 1 and 2 next.

— It is stated that, on account of the unfavourable weather, the clay soils on the coast-lands of Scotland will probably this year be cut off from cultivation, and this, added to the scarcity of the crop, owing to the dry summer of last year, may account for the high prices now being obtained for what is known as CARSE TARES, a variety the seed of which is almost as large again as our ordinary English Tares. The price per quarter is now some 20 or 25 per cent. higher than it was at this time last year.

— We are again reminded of the recent MILDNESS OF THE SEASON by the receipt from Mr. BESTER of a spike of flowers of a single blue Hyacinth, cut from a plant growing in the open air at Tottenham. We are also informed that at the residence of the Dowager Lady WILLIAMS, at Tregallow, near Truro, a fine dish of Asparagus was cut on the 15th ult. from an old bed in the open air, without any forcing. The garden lies on very high ground, and exposed to north and east winds.

— The experimental grounds of Messrs. BARR & SUDDEN, at Tooting, just now afford an admirable illustration of the wealth of SPRING FLOWERING PLANTS available for decorative purposes this season of the year. We were too late to see *Galambus Elwesii*, the blooms being just over, but *G. Imperati* and *G. pictus* were both in flower. *Scilla bifida* and its white variety are very beautiful, and *S. sibirica* is rapidly throwing up its charming blue blossoms. Iris reticulata shines out in the gleaming sunlight with a richness of purple beauty peculiarly its own. A few days' bright sunshine would bring into flower a new Dog's-tooth Violet, which may probably prove to be *E. grandiflorum*; and *E. giganteum* is showing for bloom. Hepaticas in variety are getting into full flower. These soft and delicate plants are known to who appreciate these fine old plants. *Anemone blanda* and the gorgeous *A. fulgens* are out, and *A. appennina*

is following close on their wake. All the spring-flowering Cyclamens are also in bloom; any one seeking for information in respect to these plants has a good opportunity for obtaining it at Tooting. The foregoing are but a selection representative of many subjects of something more than common interest, and from Christmas onwards there are always subjects to charm and instruct. The Daffodils are coming on apace, and by the middle of this month they will be well worth an inspection. In many gardens the common double Daffodil is already in full bloom, and clumps that have remained undisturbed for years are again with an auriferous sheen that seems to set at defiance the wintry influences that have played about them during the past week.

— Mr. T. W. BOND, late gardener to GILEAD A. SMITH, Esq., The Beeches, Weybridge, has been appointed to the management of the gardens, Oak Lodge, Addison Road, Kensington, W., the residence of James MCHENRY, Esq., in the room of Mr. A. WILKIE, who is leaving.

— The next meeting of the Fruit and Floral Committees of the ROYAL HORTICULTURAL SOCIETY will be held on the 7th inst., in the conservatory, on which occasion a flower show will take place. A meeting will also be held in the afternoon for the election of Fellows, &c. It is expected that the show will be of superior character.

— Those who propagate DAHLIAS largely are already at work increasing their stock. In nurseries, where large numbers of plants are required, a low lean-to border is used, with the hot-water pipes running underneath the bed on which the plants are placed. The "ground roots," as they are termed, which have been carefully preserved all the winter, are well examined, in case any decay has set in. They are then half buried in a bed of appropriate soil, but all the dormant buds which surround the base of the main stem cut away in the autumn are left exposed. As soon as planted the bed is watered and a brisk heat maintained. Small fibrous roots are thrown out from the thick fleshy roots, and from the eyes spring forth growths, which are carefully cut through just beneath an eye when 4 inches or so in length, put into store-pots, and placed in the hot-water heat, generally in a frame heated with a good dressing of manure. Here they root, and the cuttings are best potted singly into large thumb-pots, and hardened off for sale. Some roots throw out a much larger number of cuttings than others, and it will occasionally happen that a root will remain altogether blind. This is sometimes a very serious matter when the variety is a valuable or scarce one. The Dahlia propagation season is one of extreme activity in the instances of such nursery establishments as Mr. TURNER'S at Slough, or Mr. KAYNES' at Salisbury. The closest attention is required, and in this important business the propagator must be instant in season and out of season. When the young stock has to be counted by tens of thousands, a careless activity is absolutely necessary.

— Mr. W. J. CROSS, gardener to Lady ASHBURTON, Melchet Court Gardens, Kilmory, has sent us a photograph of a specimen of *CELECYNE CRISTATA* which is bearing seventy-five spikes, or about 350 flowers, and which measures over five feet in side 5 feet 2 inches. Some ten or twelve years ago the plant was growing in a 6-inch pot, and it looks well in the flat rusticated pot made by Mr. MATTHEWS, of Weston-super-Mare. The pot measures 30 inches in diameter, and its outside is a good imitation of Elm bark.

— THE BRITISH AND SUESS FLORICULTURAL AND HORTICULTURAL SOCIETY'S ANNUAL EXHIBITIONS are announced to be held on June 27 and 28, and September 12 and 13.

— In reference to the ENCLOSURE OF COMMON LANDS, the *Globe* has the following remarks on the recent decision in the Chobham Common case:—

"Another of the long series of actions which are now pending with respect to the rights of commoners and of the public against lords of manors was decided a few days since, and the decision was in favour of the lord. Its effect may be very briefly stated, and is one at which those now enjoying such rights have good reason to be alarmed. It assures practically to the lords of a very

great many manors—perhaps most manors—in England the right to turn the wastes of the manor, that is to say, the village common, into a brickfield. Chubbam Common is an open space of five square miles in extent. The commoners have all their rights of pasture, turbary, and estovers, which usually belong to the tenants of such a manor, and it was admitted that they had not given any assent to the action of the lord in granting out parts of the common to be destroyed for brick-making purposes. Upon these facts the judges of the Queen's Bench Division have held that the action brought by the lord was perfectly legitimate, and that there is no remedy at all, either for the commoners or for the inhabitants of the parish, to interfere with the proceeding. The practice is now just as usual, the existence of which the judges inferred from the fact that in ancient times the commoners had not protested against its exercise. It is unnecessary to say that on similar negative grounds a like custom might be supported in a vast number of commons throughout the country. But the most alarming feature in this as in the other cases is that the interests of the public and the neighbouring estates are quietly and slyly ignored. This is the consideration which makes it so abundantly clear that the Legislature must step in and practically recognise rights which the common law is unable to discern.

RELATIONS BETWEEN PLANTS AND INSECTS.

[The following extracts are taken from a recent lecture of Sir John Lubbock before the Society of Arts.]

Neither plants nor insects, indeed, would be what they are, but for the influence which each has exercised on the other. We know now, for instance, that certain plants produce no seeds at all unless visited by insects. Thus, in some of our colonies, the flowers of the red clover do not set on account of the absence of humble-bees; for the proboscis of the hive bee is not long enough to effect the object. According to Mr. Belt, the same is the case for the same reason in Nicaragua with the Scarlet Runner.

But even in those cases in which it is not absolutely necessary, it is a great advantage that the flowers should be fertilised by pollen brought from a different plant, and, with this object in view, insects are tempted to visit flowers for the sake of the honey and pollen; while the colours and scents are useful in making the flowers more easy to find.

USE OF HONEY.

The real use of honey, indeed, now seems so obvious that it is remarkable to see the various theories which were entertained on the subject. Patrick Blair thought it absorbed the pollen, and then fertilised the ovary. Fontana thought it kept the ovary in a moist condition. Linnæus confessed his inability to solve the question. Other botanists considered that it was useless material, thrown off in the process of growth. Kützner even observed that in meadows much visited by bees the plants were more healthy, but the inference he drew was that the honey, unless removed, was very injurious, that the bees were of use in carrying it off. Sprengel was the first to show that the real office of the honey is to attract insects, but his view was far from meeting with general consent, and even so lately as 1833 was altogether rejected by Karst, who came to the conclusion that the secretion of honey is the result of developmental energy, which afterwards concentrates itself on the ovary.

One reason why the earlier botanists missed the true explanation was, perhaps, that some plants secrete honey on other parts besides the flowers. Belt and Delpino have, I think, suggested the true function of these extra floral nectaries.

ANTS.

The former of these excellent observers describes a South American species of *Acacia*, which, unprotected, is apt to be stripped of the leaves by a leaf-cutting ant, which uses the leaves, not directly for food, but, according to Mr. Belt, to grow Mushrooms on. The *Acacia*, however, bears hollow thorns, and each leaflet produces honey in a crate-formed gland at the base, and a small, sweet, pear-shaped body at the tip. In consequence, it is inhabited by myriads of a small ant, *Pseudomyrmex bicolor*, which nests in the hollow thorns, and thus finds meat, drink, and lodging all provided for it. These ants are constantly roaming over the plants, and constitute a most efficient body-guard, not only driving off the leaf-cutting ants, but, in Mr. Belt's opinion, rendering the leaves less liable to be eaten by herbivorous manna.

Delpino mentions that on one occasion he saw

gathering a flower of *Clerodendron fragrans*, when he was suddenly attacked by a whole army of small ants.

I am not aware that any of our English plants are protected in this manner from the browsing quadrupeds, but not the less do our ants perform for them a very similar function, by keeping down the number of small insects, which would otherwise rob them of their sap and strip them of their leaves.

Mr. Forel watched, from this point of view, a nest of *Formica pratensis*. It found that the ants brought in dead insects, small caterpillars, grasshoppers, centipedes, &c., at the rate of about twenty-eight a minute, or more than 1600 in an hour. When it is considered that the ants work not only all day, but in warm weather often all night too, it is easy to see how important a function they fulfil in keeping down the numbers of small insects.

Some of the most mischievous, indeed—certain species, for instance, of aphids and coccidæ—have turned the tables on the plants, and converted the ants from enemies into friends, by themselves developing nectaries, and secreting honey, which the ants love. We have all seen the little brown garden ant, for instance, assiduously running up the stems of plants, to milk their curious little aphid. By this ingenious idea not only do the aphides and coccidæ secure immunity from the attacks of the ants, but even turn them from foes into friends. They are subject to the attacks of a species of ichneumon, which lays its eggs in them; and Delpino has seen the ants watching over them with truly maternal vigilance, and driving off the ichneumons whenever they attempted to approach.

Though ants are in some respects very useful to plants, they are not wanted in the flowers. The great object is to secure cross-fertilisation; but for this purpose winged insects are almost necessary, because they fly readily from one plant to another, and generally confine themselves for a certain time to the same species. Creeping insects, on the other hand, naturally would pass from each flower to the next; and, as Mr. Darwin has shown in his last work, it is of little use to bring pollen from a different flower of the same plant—it must be from a different plant altogether. Moreover, when they quit a plant they would naturally creep to another close by without any regard to species. Hence, even to small flowers (such as many Cruciferæ, Compositæ, Saxifragæ, &c.), which, as far as size is concerned, might well be fertilised by ants, the visits of flying insects are much more advantageous. Moreover, if larger flowers were visited by ants, not only would they deprive the flowers of their honey without fulfilling any useful function in return, but they would probably prevent the really useful visits of bees. If you touch an ant with a needle or a bristle she is almost sure to seize it in her jaws, and if bees when visiting any particular plant were liable to have the delicate tip of their proboscis seized on by the horny jaws of an ant, we may be sure that such a species would soon cease to be visited.

On the other hand, we know how fond ants are of honey, and how zealously and unremotely they search for food. How is it, then, that they do not anticipate the bees, and secure the honey for themselves? Kerner has recently published a most interesting memoir on this subject, and pointed out a number of ingenious contrivances by which flowers protect themselves from the unwelcome visits of such intruders.

The most frequent are by the interposition of *chevrons de Fritz*, which ants cannot penetrate, glutinous parts, which they cannot traverse, slippery slopes which they cannot climb, or barriers which close the way.

Firstly, then, as regard *chevrons de Fritz*.

In some respects they are the most effectual protection, since they exclude not only creeping insects, but also other creatures, such as slugs.

With this object it will be observed that the hairs which cover the stalks of so many herbs usually point downwards. A good example of this is afforded, for instance, by a plant allied to our common Blue Scabious, *Kassatia dipsacifolia*. The heads of the common *Carolina allertia*, again, present a like effect, which must offer an impenetrable barrier to ants. Some species of plants are quite smooth, excepting just below the flowers. The common but beautiful Cornflower (*Centaurea Cyanus*) is quite smooth, but the involucres forming the flower-head are bordered with recurved teeth.

In this case neither the stem nor the leaves show a trace of such prickles. In this species the stigma projects about one-fifth of an inch above the flower, so that if ants could obtain access they would steal the honey without fertilising the flower; a flying insect, on the contrary, alighting on the flower could scarcely fail to touch the stigma.

Kerner has called attention to very interesting illustration addressed by the Polygonum amphibium. The beautiful rosy flowers of this species are rich in nectar, the stamens are short, the pistil, on the contrary, projects considerably above the corolla. The nectar is not protected by any special arrangement of the flower itself, and is accessible even to very small insects. The stamens ripen before the pistil, and any flying insect, however small, coming from above, would assist in cross-fertilisation. Creeping insects, on the contrary, which in most cases would enter from below, would rob the honey without benefiting the plant. Polygonum, as its name denotes, grows sometimes in water, sometimes on land. So long, of course, however, as it grows in water it is thoroughly protected, and the stem is smooth, while, on the other hand, those specimens which live on land throw out certain hairs which terminate in sticky glands, and thus prevent small insects from creeping up to the flowers. In this case, therefore, the plant is not sticky, except just when this condition is useful.

All these viscous plants, as far as I know, have upright or horizontal flowers. On the other hand, where the same object is effected by slippery surfaces, the flowers are often pendulous, creeping creepers being thus kept off from them, just as the pendulous nests of the water-bird are a protection from snakes and other enemies. As instances of this kind, I may mention the common Snowdrop and the Cyclamen.

(To be continued.)

Home Correspondence.

Double-Bearing Raspberry. — All Raspberries delight in a deep rich sandy loam, resting on a moderately dry bottom, and unless these conditions can be secured either naturally or artificially it is almost useless attempting to grow the autumn-fruiting kinds, for should the weather by chance be favourable to ripen them, their flavour will be so inferior as to be of little value. A well-sheltered site having a southern aspect, but sufficiently far away from trees not to have their roots encroaching on those of the Raspberry, is the best place to make the plantation, which may be done at once by proceeding in the following manner. Trench the ground from 15 inches to 2 feet deep, and thoroughly break up the soil by using the water-bark or other suitable tool, but do not bring any of the subsoil to the surface—a mistake many make, by which trenching has been brought into bad repute. As the work proceeds, shake and work in plenty of thoroughly decomposed manure, keeping the same well down, and if the land is at all stiff and adhesive add a good proportion of road scrapings or sharp sand, to keep it open and porous. In planting choose young healthy single canes, and place them triangularly at about 6 inches apart, and each clump a yard distant from each other, allowing the same space between the rows, which will afford ample room for growth and admit plenty of light and air. When the planting is complete cut away the tops, so as to induce them to push strongly from below, and to encourage a good growth of young canes which will be drawn off during the summer keep the surface well mulched with half-rotten dung, which will shade the ground and keep their roots cool. With autumn-fruiting Raspberries there should be no attempt to get a summer crop, as the whole strength of the plant ought to be concentrated in the young canes, which should be all cut clean away during the winter, and the ground top-dressed, but never dug or disturbed beyond what is necessary to remove weeds or to thin out the suckers, an operation these become necessary to prevent any overcropping that would otherwise take place. *J. Sheppard.*

The R.H.S. Provincial Show Fund.—I do not think Dr. Denny (p. 245) quite fully states the way in which the first country show was started; but, as I believe he was not at the time a Fellow of the Society, he cannot be expected to be conversant with the circumstances. When a country show was suggested in the Council, one of the "expenses committee," though approving of the idea, pointed out that as the expenditure would not be connected with the Commissioners' estate it could not be sanctioned. The Council, notwithstanding this, decided on the show being held, but said that, as they took the risk of loss, any profit must be applied to purely horticultural purposes. I believe, had there been a failure instead of a success,

the members of Council would have been personally responsible. I know I considered so at the time, and accept my share of the blame. In some of the proposals, to a considerable extent, due to local efforts, in which Mr. Fish took the lead. I do not agree with all that gentleman writes, but I have always thought that the Society owes him a great debt for his unwearied energy to ensure success in the attempt which he made the first, was a most important one. *George F. Wilson.* [We owe it to Dr. Denny to correct an unfortunate error into which we fell in the publication of his last letter on this subject. Dr. Denny's contention is, that the Society owes a great debt of gratitude to Mr. Dobree, borrowed from the Provincial Show account, that sum should be considered as a debt due from the Society to the Provincial Fund. Eds.]

Orchids in February.—Promise is still far in excess of performance in the Orchid-house. Nevertheless, the month has been graced by the presence of the following:—

Dendrobium Wardianum	Ada arantacea
„ crassinode	Leptotes serrulata
„ cecilioides	Cyrtopogon villosus
„ ardens	„ venustum
„ capillipes	„ niveum
„ andamanicum	„ aurantiacum
„ nobile pendulum	Calanthe Turneri
Brassavola grandis	Odontoglossum Rozellii
Cyclopis chinensis	Alexandra
„ media	„ Cervantesii
„ flavo-rosea	„ Koenigii
„ Veitchii	„ pallidulum majus
„ savana	„ Reticionense
„ aurantiaca	Phalaenopsis Schilleriana
Cattleya Trianae (supposed one of the lot sold a year ago to Sir Newton, numbered 2 to R. This is a new variety with a superb flower. Petals pure white, labellum rich purple, large, and of fine form)	„ grandiflora
„ Trianae	„ amabilis
„ chromolaia	„ Onidii-cantabrigiense
Zygopetalum crinitum cornutum	„ Cavendishii
„ Mackayi	„ sphaerulatum
„ maculiferum	„ Barkeri
„ Gouletii	„ polyanthum
Leelia crispilabia	„ orthobotrychum
„ anepi	„ Isidleyi leopoldinum
„ Dayana	„ chrysanthum
Madevillia polysacta	„ Angraecum sesquipedale
„ bicincta	„ eburneum viridum
„ Nyerberia	Epistadium dichroanthum
„ meliopolita (not worth growing)	„ fragrans
	„ saxatilis
	„ cochlearium
	„ recurvatum
	„ subulatum
	„ Heliconia sanguinolenta
	„ Macleania luteo-alba

Edward W. Cox, Mount Mount, Hendon, Feb. 24.

Coronilla glauca.—In the village of Havering at Bower there are two plants of *Coronilla glauca* which have been standing out in a cottage garden all the winter, and which are to-day (February 26) in full bloom, and looking quite healthy. The foliage is much better than on many plants grown inside, but the flowers look rather pale as compared with those on plants grown in a greenhouse. *J. Lant, Brygo Park.*

An Ancient Pear Tree.—During the late storm a large Pear tree in the orchard of Mr. Robert Hay, Chase Farm, Ambergate, was blown down. Mr. Hay says that when his great-grandfather took possession of the place in 1750, or 1727 years ago, it was a much larger tree than when (Mr. Hay) was born, and it has since then had a long and large life in exceptionally high winds. Mr. Hay believes it to be considerably over 300 years old, and the dimensions taken to-day, as below, will, I think, to some extent bear out his assertions. The tree has been a great favourite with the old man, and last year it bore a large crop of very good fruit. It had two trunks, dividing about 3 feet from the ground line. The measurements are—Circumference at ground 9 feet 6 inches; at 3 feet above ground, 11 feet; at largest trunk, 14 feet above ground, 6 feet 6 inches; at smaller trunk, 6 feet above ground, 5 feet 6 inches; at largest bough, 4 feet 6 inches; next largest bough, 4 feet; height from ground to top, 45 feet. *T. C., Crick Chase, Ambergate (on the "Derby Mercury").*

Spiral Growth of Plants.—This was induced by the action in the Gardeners' Chronicle of January 13 (p. 48) on twining plants to look round—though at an unfavourable time to find the generality of twiners—to see what I could find that coiled in different directions. To make plainer my meaning as to the direction the plant takes in twining, suppose you have a statue with the face to the south. Fix a string to the left foot, twine it over the right leg round the body as many times as you may, and the direction of the coil I consider as being, from left to right, like the apparent course of the sun in twining, upon the dial, and the hands of the clock; but if you face the plant, and follow its growth round, you will perceive it progresses from your right shoulder to your left—no matter from what point of the compass you view it, the coil follows its course round the statue, column, or

stake just the same. On the same principle, if you fix the string on the right foot of the statue or to a stake, twining it over the left leg and round the body, you have the coiling from right to left, contrary to or "against the sun" (as we hear sometimes remarked), and contrary to the shade on the dial, and clock hands, or in this case going from west to east, but in the first from east to west. I have only found one genus that coils from east to west, or from left to right—viz., *Lonicera Caprifoliata*. I enclose two specimens—*Lonicera brachyoda* and *L. flexuosa*. I apprehend those twining from west to east, or right to left, are more numerous. I send specimens of them—viz., *Alekkia quinata*, *Convolvulus sepium*, *Gratiola Bindevede*, *Perilopa græca*, *Stigmaphyllon ciliatum*, *Mandevilla*, *Wistaria Consequiana* or *sinensis*, *Physianthus albens*, and *Stauntonia latifolia* (this fine hardy evergreen climber twines firmly round a stake or other support, and also throws out a curious corkswear-like tendril as an additional holdfast). *Alstromeria acutiloba* I find no stems of, but in the summer I perfectly recollect it coiled round the stakes from west to east. *W.*

One of the Gardeners' Friends.—By all means kill the slugs—hand-pick them, salt them, and burn them up with unshaken lime, use all and every means to keep them under—but don't destroy the ear-shaped Testacella. This most useful garden scavenger is a slug of a pale-yellow colour, when crawling about 2½ inches long (fig. 48), and carries an external ear-shaped shell a quarter of an inch in length on its tail. It is difficult to persuade gardeners that they are harmless, but they would starve on a seed-bed of the tenderest young Cabbage plants, while the food in which they revel



FIG. 48.—THE EAR-SHAPED SLOG.

consists chiefly of worms and other animal matter, in fact they are exclusively carnivorous. Where these slugs exist they may be met with on garden paths early in the day on any mild morning after rain, especially during the months of April, May, and June. I have seen as many as two dozen at one time on one path in my garden during these months, and the fall-grown ones will sack down a worm twice their own length. I would, therefore, urge all who have the opportunity to notice whether their gardens are favoured by the presence of such a useful coadjutor, and if so, to issue an order to have them strictly preserved. *John Miller, Southgate, N.*

Euryale ferox.—This plant is self-fertilised, for some seasons, although the flowers have remained entirely submerged, perfect seeds have been produced—indeed, for the flowers to expand above the water has been the exception rather than the general habit of the plants we have grown here. Last year, however, perhaps owing to the unusually hot, bright weather which prevailed during the time our plant was flowering, a considerable number of the flowers expanded above the water level, and although comparatively small were very beautiful. We had many self-sown young plants of *Euryale* in our tank up to the end of December last, when, unfortunately, the hot-water boiler failed, and while replacing it with a new one the water became too cold for them, and they perished. *W. H. Baxter, Botanic Garden, Oxford.*

Root Lifting.—This is an operation which has hitherto received much less attention amongst fruit cultivators than it deserves. Success in open air fruit culture hinges upon well ripened wood. The uncertainty of obtaining this end is very great in a climate so fickle and uncertain as ours, especially when the roots are allowed to ramble and get where they

please. In dry summers such as the past roots penetrate to a depth too far below the surface to be properly aërated, and finally acted upon by solar heat; they are therefore feeding upon air forcing up a crude sap, to encourage rampant growth and large foliage, which continues to grow too late in the autumn months to become thoroughly matured and ripened. This remedy consequently is to be found in the management of the roots to obviate the existing evil. Root-pruning has been strenuously advocated by some fruit growers to check luxuriant growth, and no doubt some good results have been obtained from it. It has however, the disadvantage of requiring repeated operations, which becomes troublesome, and expending, and does not altogether serve the desired end, as the central root of the tree, which commonly penetrates deepest into the soil, is frequently not reached, and therefore the supply of nutritious fluids is not entirely cut off, whereas if root-lifting trees of good size and well established, the large and long roots are brought up near to the surface and are annually acted upon by solar heat, even although a portion of the smaller branching rootlets will penetrate deeper. From long experience of root-lifting at all seasons, even in midsummer when convenient, I am convinced that all fruit trees growing against walls or in the open ground are improved by root-lifting and relying as near the surface as possible to admit of being either dug or forked over for light cropping—a practice in most gardens indispensable, but one which should be avoided if at all practicable, as the roots of vegetables and fruit trees are in constant antagonism. A good method of getting the roots of trees well exposed to be much more in accordance with good fruit cultivation, so as to coax and keep up the roots near the surface, thus enabling the wood and buds to ripen with greater ease and certainty, and attaining the not less important end of getting the fruit better ripened and higher flavoured. My practice is, when I have the roots up, to take out a portion of the exhausted soil, put to a good layer of fresh loam, and mix it well in the bottom before laying the roots out. Fresh soil is laid over the roots, and about 2 inches of well-rotted manure, which serves to draw the roots up. The remainder of the soil is then covered all over the opened trench. One or two copious waterings will be necessary the first year after lifting, if the summer is a dry one. *J. Webster.*

The Fruit Prospects.—The weather has been extremely mild here all through the winter, and we have had rain almost daily. Vegetation is very forward around us, and we have here, on a west wall, a fine lot of Peas and Beans, and over the wall. It has been in bloom for some time, and in the Peach-house there is a splendid picture of bloom, without the least aid from fire-heat. Peas are bursting their flower-buds, and promise well, and Apples, especially the earlier varieties, are in a very forward state, and likewise promise an abundant crop. The fruit crop this season promises to be excellent, if the spring frosts do not kill the blossoms. *Henry C. Ogil, Efford Park, Lynton, Hants.*

The Vagaries of Ferns.—The reversion of *Athyrium Filix-æmas* Frisellii to the normal type in consequence of transplanting, as mentioned by Dr. Reichenbach at Ilmsburg, is somewhat out of common experience [Normal ferns have been always occasionally produced, but in very small quantity, Eds.], but the production of fructe fronds by the ordinary *Scolopendrium vulgare* is a circumstance quite common both in the wild and cultivated condition. But the most extraordinary of the similar varieties, are in a very forward state, and likewise promise an abundant crop. The fruit crop this season promises to be excellent, if the spring frosts do not kill the blossoms. *Henry C. Ogil, Efford Park, Lynton, Hants.*

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Asperula this, in 1874, we raised a batch of plants from spores from a frond of *Polystichum mucronatum* (or *triangulum*). Among these were some plants of *P. filicinum*. The plate given by Hooker of that species is so good that we could not be mistaken, but, to be doubly sure, we forwarded a frond to Mr. Baker, of Kew, who said it was undoubtedly *P. filicinum* of Hooker. I am aware it will be said, "Oh, but you had *P. filicinum* growing near, and the spores given to me by the P. filicinum." I can assure you that *P. filicinum* had never been in our possession, and I do not even know there was such a thing till we saw Hooker's plate. Among the batch was another form, very different from either *P. mucronatum* or *P. filicinum*, and most beautiful either of them. The fronds are from 12 to 18 inches long, not more than 1 inch broad, bipinnate, the pinnules linear-lanceolate and acute, the lobes terminated by a long mucro. We had several plants of both these forms; the rest of the seedlings were of *P. mucronatum*. Who will tell us of these three is the species, and which the variety? *A. Stansfield, Vale Nurseries, Totterdean.*

Ants.—I have been very much pestered with an ant's nest in one of our Peach houses, and found very troublesome when the trees were in flower; but on visiting Mr. Muir, of Oulton Park, Cheshire, he showed me a most successful plan of keeping them at bay, at which was done by tying a mixture of brown oil or carvas around the stems of the trees, and painting it over occasionally with gas tar. Having none of the mixture at hand, I used a mixture of lamp-black and oil, which has answered the same purpose. I must remark, however, that the trees are grown in pots, and do remarkably well. *Wm. Driver, G. to Thos. Wrigley, Esq., Timberhurst, Bury, Lancashire.*

The Organ Plant.—Mr. T. Goulli's question respecting the "Organ Beet," reminds me of the days of childhood in South Wales, where the cottagers make what they call tea (pronounced "tay") "organs" out of the leaves of the *Organum vulgare*, or common Marjoram, and the garden cultivated kind, *Organum Marjorana*, Sweet Marjoram, which is distinguished from the former by its more compact spikes and more elliptical leaves. It really is a valuable herb-medicine in nervous complaints, relieves headaches of this class, and acts as a tonic. Some people throw a small bunch of the dried plant into their beer, and say that it makes the beer the ale turning acid. The name of Marjoram comes from the Arabic for this herb, "Maryamch," and *Organ* is a corruption of *Organum* I believe, but I never heard it except in South Wales. *Helen E. Watne, Erry Garden.*

The Organ herb is what is commonly known in the west of England as Pennyroyal. It was formerly used as a beverage by the poorer classes. *Edwin Sanford, The Gardens, Dale Park, Arundel.*

The Influence of the Moon on the Flow of the Sap.—Your correspondent "C. W. D.," asks if there be "any additional confirmation of the theory that the flow of sap is greatest at the full, and least at the new moon?" This is a subject to which I have paid some attention, and I think I have satisfied myself that there is not a title of evidence to support the opinion. Many years ago I spent nearly a year in Cuba, and there I found the opinion was held—I may say universally—that wood or any vegetable matter perished speedily if cut during the waxing moon; and a friend at whose house in the country I was staying informed me that "it was well known in fact that the Palm leaves used for thatching would not last more than a few months if cut at the one period, though they would last for as many years if cut at the other; but notwithstanding my friend's positive assurance that he had not had any of his wood which was heaped up by me (and his friends around him), I still remained a sceptic, and with some difficulty I induced him to make an actual experiment by re-thatching a shed that needed it with Palm leaves, saying half that should be cut at one, and half at the other period of the moon's age; and in a letter that I received from him about four years afterwards he frankly confessed that he could discover no difference in the rate of decay, and therefore he had come over to my opinion. "It may be," he said, "but was concerned"—viz., that this faith in the moon's influence was the relic of an older religion, that was not yet effaced by more modern intelligence. *J. P. G. Smith, Sweeney Cliff.*

Orchids.—Herewith I send you flowers of *Phalaenopsis amabilis* and *Dendrobium crassinode*. The variety of *P. amabilis* is the best that has ever come under my notice [Very fine. Eds.], and considering that the plant has been in flower since December 20, it shows how valuable *Phalaenopsis* are for the decoration of the Orchid-houses during winter. The variety

of *Dendrobium crassinode*, I think, also merits praise, as it is the best coloured flower of the *Barbaterium* section that I have seen. [A very bright flower. Eds.] *J. P. G. Smith, The Gardens, Routhall Hall, Woodbridge.*

Diospyros Kaki.—I will remember a Tomatolooking fruit in the Canton River, which must have been the *Diospyros Kaki* mentioned at p. 269. It was sweet and luscious, but had always a slightly stringy part, which I think was near the seed. *H. K.*

Action of Pollen on the Seed of Peas.—Upon reading the letter of your correspondent, "W. E.," I have sometimes, but not always, changed by the cross, and others, that the colours of the envelopes of the seeds of Peas immediately resulting from a cross are never changed; and "I find, however, that the colour, and probably the substance, of the cotyledons is sometimes, but not always, changed by the cross." The other matter seems to affect rather the phenomena subsequent, and appearing in after generations. In the letter to Mr. Darwin, however, which, strange to say, I had never read, other and very interesting observations are made, and which seem to indicate a change of seed, but of the pod also. I was very ill at the time this appeared, and conclude I missed it. There is "a certain degree of uncertainty" in the wording, and I should feel greatly obliged if "W. E.," or any correspondent, who has written me, would send me more accurately worded, upon this subject, which has long occupied my attention. *T. C. K., Welton Place, February 28.*

Referring to the report of the meeting of the Scientific Committee of the Royal Horticultural Society on February 14, 1877 (*Gardener's Chronicle*, p. 219), when Col. Clarke exhibited a pod of Woodford Marrow Pea from a flower fertilised by pollen from the white-seeded *Avergue*, the pod containing a single seed, and which it is stated he slightly observed the change; this is a misapprehension, for which I am sure Col. Clarke will forgive me calling attention. At the Botanical Congress in 1866, I exhibited a case containing diagrams illustrating the various changes, with the actual or parallel representative seeds, one of which diagrams showed the results of fertilising "Evergreen," a round green-seeded Pea, with a round white-seeded variety, the produce being green and bright yellow seeds in the same pod. I also communicated to Mr. Darwin about the same time the particulars of crosses between blue and white Peas, showing the changes of colours in the seeds, but these changes were all in the envelopes of the cotyledons of the seeds, and not in the envelope. I, however, found that by fertilising purple-flowered Peas with the pollen of white varieties some changes took place in the colours of the envelopes. Purple-flowered Peas seem to be permeated with the purple colour all through the plants, as this colour shows itself not only in the flower, but in the seeds, the pods, and at the axils of the leaf-stalks, the grey and brown maple or partridge colours of the seeds being derived from fine particles of the purple colour on the surface. It is the yellow tone being due to the transmission of the colour of the cotyledons through the semi-opaque envelope. In one case I found that by crossing the purple-flowered "Sugar" or "Mangout" Peas, with a white-seeded variety, with a white-flowered and white-seeded variety, some of the Peas in the pod were positively in-coloured, or nearly black, others broadly streaked with the same colour, and others grey only; and although the produce in the following generations showed clearly the results of the cross, some of the seeds being grey and others white, the purple and striated forms only appeared rarely and at intervals, and were never fixed or permanent, and I have never seen any running or permanent colour, which cross-fertilisation seems to induce. The same "running" character of the purple colour was also evident in crosses with the purple-podded Pea, the grey colour appearing both on the envelopes and the seeds. I have also seen the latter change of colour. Mr. Darwin, to whom I sent some of the specimens. By crossing, also, the brown maple or partridge Pea with a white-flowered kind, I obtained fixed varieties with grey and purplish striated seeds, but in these there was no change of colour in the envelopes of the seeds from the fertilised flowers. In my paper on the cross-fertilisation of Peas read before the Scientific Committee of the Royal Horticultural Society I showed the results which followed from crosses between a white round and white partridge, and that the blue and white wrinkled and blue round

varieties threw off, during more than one generation, pods containing seeds in all the four forms, viz., blue wrinkled and round; and white wrinkled and round seeds in the same pod; and I have since frequently confirmed this, although a change has not always been apparent in the seeds of the crossed flowers. I have never, however, observed a case where the round white seed after the second generation produced the other forms, but I have seen many cases where there is more fixity and permanence in the round white-seeded Pea with white flowers than in the blue and wrinkled forms. Perhaps the former may be the original stock of the garden Pea, and the others merely subsequent varieties of it. The colour of the envelopes, the colour of the embryo, the envelope, and the pericarp by the action of pollen is of such interest that I trust Colonel Clarke will continue to follow out what has so well begun in Matthioli's *Leguminosae*, and especially the part as being practically of interest, and affording an excellent field for logic and continued investigation. *Thomas Laxton.*

The "Annuaire Belge."—In reply to your correspondent of p. 178, permit me to say that it is a frequent custom on the Continent to send books by post, "on approval" to persons likely to be interested in them. These persons retain the books if they please, or they return them. The option of so doing is expressly stated in print on the cover. Many persons are glad to be made acquainted in this way with the contents of such books. The book, moreover, was not accompanied by a post-card, but one was sent twenty days subsequently. *E. Rodigas.* [No one who knows the Editors of the publication in question would for a moment be personally interested in them, and they were doubtless not aware that it is not the custom to send books in this country in the way above indicated, unless intended as presentation copies. The conditions should be printed in English. Moreover, we inular Britons are apt to consider such unauthorised communications in the light of intrusions. Eds.]

Natural History.

WITCH KNOTS.—The observations of your correspondent "O.," on the cause of the Witch Knots of the Birch deserve more credit as a discovery than is claimed for them by the modern element that their origin is "not so well known." Unless I am mistaken, it was not known at all. It is not very long since the Rev. Mr. Berkeley brought specimens of these Witch Knots to one of the meetings of the Scientific Committee of the Royal Horticultural Society, and on that occasion I believe no satisfactory explanation of their cause was offered. Neither can I find any *Phytophthora* described as infesting the Birch except one that produces an Eriumph on the back of the leaves, described by Schumacher under the name of *Eriumph betulinum*, on which is something quite distinct from the one residing in the buds. It may, no doubt, have occurred to many that these Witch Knots were probably due to insect agency; that, however, is something very different from having detected the *Phytophthora* in the deformed buds and traced their growth. Guided by "O.'s" researches, I have examined some of these buds, but had no difficulty in finding the *Phytophthora* in numbers. It seems to me little different from other species that I have seen elsewhere. It is more abundant at the head, and its legs look more clumsy; no doubt it is a distinct species, although it is scarcely possible to formulate a distinctive definition.

The very curious question remains that is suggested by "O.'s" inquiry at the end of the notice, whether the Carrant species causes Witch Knots or no. We know that it does not. We know that the *Yew Phytophthora* does not, that the *Sloe Phytophthora* does not, in fact that Witch Knots are found on comparatively few species of trees. Why is this, and how comes the *Phytophthora* in most cases merely to cause enlargement of the buds, whereas in this instance it causes the production of woody fibre?

But we must not confound them. It is only indirectly that it causes the growth of woody fibre, the actual and direct action is the same in all cases. By the irritation its presence and feeding creates, it causes the buds first to swell and afterwards destroys them. In the plants where the *Witch knots* appear, after it has destroyed the buds, it would appear that the plant accepts the condition and makes no more effort to send out a bud at the same spot. In the Birch it would appear that a new bud in the place of, or new buds close to, the old one, come out to be

again destroyed by the Phytoptus; and after a series of repetitions of this in successive years that it ends in producing the accumulation of arrested buds that finally become a Witch Knot. *Andrew Murray.*

— May I ask to be allowed to correct an error which by some misadventure has occurred in the measure of the Phytoptus, p. 249. It is given as the two-thousandth, it should have been the two-hundredth of an inch in length. *O.*

The Villa Garden.

SEED RAISING.—He who loves his garden will be led to essay experiments with a view to extending his knowledge and adding to his resources; and his success will in a great measure depend on the forethought he exercises, and the intelligence he applies to the overcoming of difficulties. There are thousands of gardeners who purchase seeds to raise them for the sake of having plants they themselves produce; and a varying success crown their efforts. Some succeed wonderfully well, others find themselves as far off from anything like success as they can well be. Happy is the gardener who, though in the very alphabet of his procedure, is not deterred by failures, but accepts them and perseveres till they become changed into successes. A few years ago a soldier exhibited, at one of the meetings of the Royal Horticultural Society, some seedling Pelargoniums he had raised on the mantelshelf of the living-room he occupied. The productions justly received a good deal of praise, and they served as a valuable illustration of what can be done, under apparently unpromising circumstances, when the true gardening spirit rises superior to conditions that scarcely promise desirable results may be forthcoming.

There are those who raise Stocks, Asters, Verbenas, Pelargoniums, Marigolds, Petunias, and suchlike in sitting-room windows, and secure plants by his means with which to make their gardens look gay in summer. Such attempts are not at all uncommon, they are being achieved day after day during the spring season; but we are not generally familiar with them, because so seldom recorded, that they are possibilities transmuted into actual results.

Those who find their greenhouse and conservatory only in their sitting-room window use flower-pots in preference to pans for raising seeds. The pots are first of all thoroughly cleansed inside and out. The next proceeding is to fill them nearly or quite one-third full of crocks, made up of broken pots or small pieces of bricks, placing over this draining material a thin layer of moss to prevent the soil being washed down among the *drivis* at the bottom. Then the pots are filled with a fine sandy soil to within an inch or so of the rims. This is gently pressed down till the surface is smooth and level, and then the soil is ready for the reception of the seed.

The next proceeding is to place a very thin layer of silver-sand over the top—only enough to give a slightly sanded surface, and then the seed is sown. This is done thin—much more than is generally done, and that for two reasons worthy of being well borne in mind; 1st, that the plants be not too thick to cause damp to destroy some of them, as will happen in the case of Stocks and other subjects where too much crowded; and, 2dly, as the space for growing the plants is necessarily limited, it is sometimes requisite that they remain in the seed-pots almost till planted out. Room is thus of some importance, for a few strong plants are better than a crowd of weak ones, and therefore this sowing is an imperative necessity. The seed being sown, and gently pressed into the soil, a very slight covering of sand may be spread over it, and then a gentle sprinkling be given. In the absence of a fine-rose watering-pot the surface of the soil can be moistened by placing the fingers in water and gently sprinkling what adheres to them over the newly-sown seed. Later on, when the soil gets well settled down, the pots can be immersed in a pail or tub of water up to the level of the surface of the soil, and then the water well drained off before they are restored to the place they occupy in the window.

If the pots are in a window having a south or west aspect it is obvious that the effects of the sun will be felt, and the soil will dry quickly; therefore it is a good plan to place a piece of glass over each pot, and over this again a piece of newspaper, to screen the glass from the sun. The glass may be kept down

close to the rims of the pots till the seeds begin to germinate, then it should be slightly raised on one side. This will admit a little air and prevent the plants from damping off, which they will sometimes do when too closely confined. Nothing should be allowed to lie on the surface of the soil, such as a piece of leaf, or any similar substance that would hold the damp and spread mildew. It is a somewhat critical time when the seeds are through the soil, and the pots should be inspected daily, to see that no harm is spreading among them. In dull weather the paper covering may be wholly removed, and when the plants grow into size it need only be placed over the pots when the sun shines forth at its greatest heat. In this manner may have raised seeds of choice things, and then during the summer, when they are making their gardens look gay, they are able to point with justifiable pride to what they have so well done.

As the weather grows milder the pots of seedlings can be stood out in the sun for a time, and sprinkled overhead to keep the young leaves clean and free from dust, and a fine-rose watering-pot is of great value for this purpose. A pot holding half a gallon or so of water will be quite large enough, and it should have a long narrow spout a feet in length, at the end of which a fine rose can be fitted on. Watering-pots of this kind are sometimes constructed with a rose which is a fixture, and cannot be removed, as the pot is then very useful for watering other plants when it may not be expedient to wet the leaves. The exposure of the plants to the sun will prevent them from becoming drawn, and cause the growth to be sturdy, and infuse a certain degree of hardiness into the constitution.

It may be said that all this labour can be avoided by purchasing plants from a nurseryman at the proper time for planting in the open ground. This is quite true, but then it considerably narrows the extent of pleasure to be derived from gardening operations. Some persons are apt to think that all the pleasure of gardening pursuits is confined to the witnessing of plants breaking into flower; but that is a mistake. Our aim always has been to create and foster a love for raising and growing, as well as a simply blooming them; and in all our gardening experiences we have ever found that they who raise a few flowers from seed, and assist in maturing their growth till they can be planted out in their gardens, experience a higher sense of enjoyment than those who merely purchase a few plants at the blooming time. Every experiment made in the way of raising seeds, however simple it may be, becomes a pleasant occupation, and a daily source of engaging interest and hopeful speculation; and, let it be recorded to the credit of human nature, failure has proved with many only a powerful incentive to attaining ultimate success; and he who finally conquers in small matters is thereby encouraged to essay larger attempts. The teachings of experience surmount obstacles; the harvest of enjoyment corresponds to the labour spent, and the patience and hopefulness exhibited. As the Eastern poet puts it—

"Be of good cheer; the sunless month will die,
And a young moon requite us by-and-by."

SOWING SEEDS OF BEDDING PLANTS.—Now should be sown *Lobelia speciosa*, *Pyrethrum Golden Feather*, *Salvia patens*, *Petunias*, *Perilla nankiensis*, and any other things of this character that may be wanted for bedding purposes by-and-by. There is nothing like the old seed-pan, with holes at the bottom to secure drainage. Place some pieces of broken crocks at the bottom, and over these a little leaf-mould, and then fill up to within three-quarters of an inch with a light sandy soil; press the soil down till it is smooth and level, and then sow the seed very thin, and sprinkle the most careful covering of sand over it. Then place the pans away on a shelf or any convenient place, cover each with a piece of glass, and cover the whole with newspapers for a few days, when the seeds will soon begin to germinate.

Obituary.

WE deeply regret to announce the death, on the 20th ult., at Fern Bank, Ventnor, of Mr. HENRY ORMOND, the well-known horticultural builder, of Stanley Bridge, Chelsea.

Mr. Ormond was born at Reed House, Antrobus, Cheshire, on April 13, 1816, and in early life was

employed in the Manchester Botanic Garden under the late Mr. Campbell, whom he survived but a few weeks. From Manchester Mr. Ormond went to Alton Towers, Staffordshire, when that garden and princely seat was at its best. Here he distinguished himself by his great aptitude for learning, and the Earl of Shrewsbury's chaplain taught the young man among other things perspective drawing, and this one thing was the turning point of Mr. Ormond's success in business, for when he left Staffordshire and got to London his ready sketching always got him favour and a preference to other competitors. Along with two other young men, Mr. Gray and Mr. Brown, he started his business career about the year 1847, the title of the firm being Gray, Ormond & Brown. At the end of 1850 the business came into the hands of Messrs. Gray and Ormond only, but when in the autumn of 1857 he began to see his way clearly to the touch the business of horticultural builder entirely into his own hands, and he has stated that however late he might be at night with either business or pleasure he always lighted the gas and opened the works himself to see that he got value for his money in the way of labour. By bold strokes and often repeated, he worked up an extensive connection, and as may be seen by his advertisements he did business with names of note, from royalty downward.

The late Joseph Knight and the late James Veitch, both of Chelsea, were both of them tried friends of Mr. Ormond, and though greatly assisted in getting him into the high position he attained, but much depended upon his own practical acquaintance with all the details, for he had been well grounded in horticulture under Mr. Campbell and Mr. Forsyth, and could advise as well as execute, which no mere builder could aspire to. His death will leave a blank that will not easily be made good, for he was not only trustworthy with what he took in hand, but spared no pains or cost to give his patrons satisfaction; and it is to be regretted that, having worked up such a business to that pitch of perfection, he has left neither son nor daughter to enjoy it. Those whom he has benefited by beneficial employment as well as by acts of charity will suffer an irreparable loss. He was interred at St. Thomas' Church, Fulham, on Tuesday last.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON.
FOR THE WEEK ENDING WEDNESDAY, FEB. 28, 1877.

MONTHS AND DAYS.	BAROMETER. Mean Baro- meter of day, at 3 p.m. Average of four years.	TEMPERATURE OF THE AIR.		Hygrometric directions from Glazier's Bar- ometer, with its Edition.	WIND. Average Direction, Force, and Velocity.	RAINFALL.			
		Highest.	Lowest.						
Feb. 22	30.68	14.4	4.4	12.0	3.7	2.43	80	W. N.W.	0.0
23	30.74	-0.07	6.01	11.4	37.6	1.63	84	N.W.	0.15
24	30.4	-0.37	35.45	3.5	37.0	0.7	80	W.S.W.	0.07
25	30.71	-0.68	35.41	5.10	4.9	0.4	79	W.S.W.	0.09
26	30.71	-0.94	35.13	4.0	0.0	0.1	77	N.W.	0.13
27	30.71	-0.49	2.08	12.7	3.4	3.6	77	N.W.	0.20
28	30.07	0.20	39.24	15.4	11.5	0.2	74	N.W.	0.00
Mean	30.60	-0.31	6.0	12.8	38.0	-0.37	79	W.	0.33

- Feb. 22.—Fine, but dull and very cloudy. Cold.
— 23.—A fine day, cloudy at times. Cold. Rain in early morning.
— 24.—A dull, cloudy day. Rain fell at 11 A.M. Mild.
— 25.—Lunar halo at night.
— 26.—Cloudy and showery, frequently fine and bright. Strong winds.
— 27.—Fine, but frequently dull, with hail and snow showers. Cold day. Temperature at 0 A.M. = 44.7; decreased to 36° at 0.30; and to 33° at 0.45. Then increased to 38.5° at noon. The maximum, 46.1°, occurred very early in the morning.
— 28.—A very fine day, cloudless at times. Cold. Hoar-frost in morning. The lowest temperature in the month occurred on this day.

LONDON: *Barometer.*—During the week ending Saturday, February 24, in the suburbs of London the reading of the barometer at the level of the sea in-

creased from 30.10 inches at the beginning of the week to 30.11 inches by noon on the 18th, decreased to 29.56 inches by the early morning of the 20th, increased to 30.07 inches by the morning of the 21st, decreased to 29.71 inches by the evening of the same day, increased to 29.96 inches by the afternoon of the 23rd, and decreased to 29.56 inches by the end of the week. The mean reading for the week at 9 a.m. level was 29.79 inches, being 0.7 inch below that of the preceding week, and 0.23 inch below the average.

Temperature.—The highest temperatures of the air varied from 51° on the 24th to 42½° on the 21st. The mean for the week was 47½°. The lowest temperatures of the air ranged from 41° on the 23rd to 40° on the 18th. The mean value for the week was 35½°. The mean daily range of temperature in the air was 11½°, the greatest range in the day was 16½° on the 24th, and the least 8½° on the 18th. The mean daily temperatures of the air and the departures from their respective averages were:—18th, 44.4°, + 5.6; 19th, 43°, + 4.2; 20th, 39.4°, - 6.5; 21st, 38½°, - 0.9; 22d, 36.7°, - 2.4; 23d, 39.7°, + 1.9; 24th, 42°, + 3.7°. The mean temperature of the air for the week was 40.3°, being 1.3 above the average of sixty years' observations.

The highest readings of a thermometer, with blackened bulb in vacuo placed in sun's rays, were 98° on the 23rd, and 94° on the 19th; on the 18th the highest reading was 57°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 20½° on the 21st, 22d, and 23d, and 30½° on the 24th; and the mean of the seven low readings was 30°.

Wind.—The direction of the wind was W.S.W. and N.W., and its strength brisk. The weather during the week was more reasonable, but generally dull and cloudy. A lunar halo was seen on Saturday night, February 24.

Rain fell on five days in the week; the amount collected was 0.66 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 56° at Sunderland and 55° at Portsmouth and Cambridge; at Liverpool and Bradford 49° was the highest temperature; the mean at all stations was 48°. The lowest temperatures of the air observed by night were 26° at Wolverhampton and 27½° at Eccles; at Portsmouth 35½° was the lowest temperature; the general mean from all stations was 31½°. The range of temperature at all stations was from 11° at Liverpool, 15°, and the greatest at Sunderland and Wolverhampton, both 25°; the mean range of temperature from all stations was 20°.

The mean of the seven high day temperatures was 44° at Newcastle and Sunderland, both 49½°, and the lowest at Wolverhampton and Hull, both 44½°; the mean from all stations was 46½°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 35½°, and the highest at Truro, 41½°; the mean from all stations was 36½°. The mean daily range of temperature in the week was the greatest at Sunderland 13½°, and the least at Liverpool, 6½°; the mean daily range of temperature from all stations was 10½°. The mean temperature of the air for the week for all stations was 41°, being 2½° below the value for the corresponding week in 1876. The highest occurred at Truro, 44½°, and the lowest at Wolverhampton, 38½°.

Rain fell on every day in the week at Truro, Cambridge, Sheffield, and Hull, and on five or six days at the other stations. The amounts measured varied from 1 inch at Norwich, Manchester, Eccles, and Hull, to four-tenths of an inch at Truro, Portsmouth, Plymouth, and Leeds. The average fall over the country was scarcely more than an inch. The weather during the week was fine and reasonable, but showery, and the sky generally cloudy. A lunar halo was seen on the 24th inst.

SCOTLAND: Temperature.—The highest temperatures of the air varied from 54° at Dundee to 47° at Greenock; the mean value from all stations was 50°. The lowest temperatures of the air ranged from 26° at Paisley to 30½° at Aberdeen; the mean from all stations was 28½°. The mean range of temperature in the week from all stations was 22½°.

The mean temperature of the air for the week for all stations was 39½°, being 2½° above the value for the corresponding week in 1876. The highest was 46½° at Leith, and the lowest 39° at Greenock.

Rain fell at Greenock to the amount of seven-tenths of an inch, at Perth two-tenths only fell, and at Dundee no rain fell; the average fall over the country was four-tenths of an inch.

DUBLIN.—The highest temperature of the air was 54½°, the lowest 32½°, the range 22½°, the mean 42½°, and the fall of rain 0.35 inch.

JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—BACON.
173. GREAT TREE OF PULO PENANG.—Can any of your readers inform me of what species is the great tree of Pulo Penang? H. K.

Answers to Correspondents.

ARALIA SIBIROLA VARIEGATA.—This plant to flower and ripen its seeds in the country.

ARCHIMEDEAN LAWN MOWER.—A *Constant Reader*. The London agents are Messrs. J. G. Rollins & Co.

AZALEAS: W. M. R.—Probably the plants have been kept in too warm and close an atmosphere. See instructions given from time to time in our "Garden Operations."

BEANS: A. D. The Saville Longpod Bean has been forwarded by Messrs. W. E. Lubin & Co. Your correspondent's statement, "unknown to English-grown Beans," correct?

BOOBY: D. R. Paxton's *Botanical Dictionary*, published by Bradbury, Agnew & Co., Bowdler Street, Fleet Street, E. C.

CAMELLIAS: H. C. We cannot, and do not, understand the use of Camellias which are florists' flowers. Send them to some nurseryman who grows a large collection.

CATERILLAR POISONING: H. W. G. We have no direct knowledge of any case of poisoning by *Rhododendron ponticum* or *Andromeda floribunda*, but from what we have read, we should be inclined to think that the cause is the same as in the right.

CREEPERS FOR A VINERY: A. I. We are afraid that any plants used to screen hot-water pipes in a vinery will give you a great deal of trouble.

FLYING: A. I. Camellias which are florists' flowers. Send them to some nurseryman who grows a large collection.

WATER: A. I. We are afraid that any plants used to screen hot-water pipes in a vinery will give you a great deal of trouble.

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NAMES OF PLANTS: J. C. r. *Cupressus Japonica*; 4, *Thuja Cunninghamii*; 3, *Cupressus Japonica*; 4, *Thuja dolabrata*; 5, *Thuja gigantea* (Lobbi); 6, *Pinus insignis*—*Hayes*. *Pinus serrulata*.—*J. H.* *Masdevallia polystachya*. The *Lobelia* is noticed by Professor Reichenbach in another column.—*D. Saunders*. *Cissua aurantiaca*, probably, but there is very little to judge by.—*J. W.* *Wormaster*. Possibly a *Dianella*, so far as we can tell from a single leaf.

RHUBARB: D. R. A Vegetable.

SHADING: E. H. A mixture of whitening, new milk, and thin paste or starch, will answer your purpose; but you must be careful to wash the plants, as not to touch the point or patty, which the paste causes to curl off.

SLUGS: Only a Notice. Dred the plants with soot or fresh horse manure. Salt would not do the slugs and the plants too, and is a dangerous thing in the garden in the heads of a novice.

VANDALEN IN PICCADILLY: H. K. The cutting down of the Elm trees in Piccadilly by Vandaleen, at all, but a measure of necessity. The Elm trees were planted alternately with Planes to shelter the latter, and to afford some little shade until the Planes got up, when it was always intended that they should be cut out. The time has now come when to leave the Elms would be to do injury to the Planes, and they have been rightly retained. The Editor who considers "the cutting down of these trees the most extraordinary piece of Vandalism of modern times," so doubt that he would have been more prudent in not the strippling, but in planting any knowledge of trees, and of Elms in particular, would dream now-days of planting them permanently near to any thoroughfare.

VINE ROOTS: Anxious Enquirer. Your Vine roots are infested with abundant mycelium of some fungus threads and fruits of a Saprolegnia, and a number of living infusorial animals. The latter point unmistakably to superabundant moisture.

VIOLETS: G. Lee. Your seedling, which might well be called *Odoratissima*, is the finest we have seen.

The flowers are large, and of a rich purple, with broad rounded well-set petals, of a bluish purple, and deliciously fragrant. Judging from the leaves sent, the foliage does not appear to be so coarse as in some of the other large-flowered sorts.

WOODICE: E. H. Turn a few Toads into the house; or, failing to get them, pour scalding water into the runs of the woodlice, and repeat the application until you have exterminated them.

CATALOGUES RECEIVED.—Messrs. Webb & Sons (Woolley, Southampton), Annual Catalogue of Flower Seeds.—H. Bennett & Co. (Lancaster Flower Nursery, Stapleford, Wilt), Trade List of New Roses.—R. Buist (Roseale Nurseries, Darley Avenue, Philadelphia, Pa., U.S.A.), Catalogue of New Roses.—W. Paul & Sons (Backhouse & Son (York), Catalogue of Hardy Perennials and Alpine Plants.—Messrs. Ewing & Co. (Royal Norfolk Nurseries, Eaton, Norfolk), List of New Varieties of Fruit Trees.—W. B. Waite, Bushell, Huggins & Co. (79, Southwark Street, London, S.E.), and 10, Rue Albert, Paris), Catalogue of Agricultural Seeds.—H. B. Wood, (10, St. James's Street, London, W.), Trade List of Young Plants and various other Plants.

COMMUNICATIONS RECEIVED.—D. M. Clauserin.—J. W. Gordon Castle (best than E. R.—E. O. M.—S. G.—W.—W. T. D.—J. M. (many thanks)—H. A. B.—Senex.—S. H.—D. J.—W. F. W. F.

DIED, at Pinefield Cottage, on Thursday afternoon, the 28th inst., Mr. GEORGE MORRISON, seedman, Elgin, aged sixty-six years. Friends will please accept this intimation.

Markets.

COVENT GARDEN, March 1.

Trade remains quiet in this market, and will be so until we get through Lent and Easter. The supply of Apples is getting very short, and prices are well maintained. Apples are in demand, and making high prices. Stocks of Kent Cobs appear to be nearly exhausted, and scarcely any inquiries are made for them. *James Webb, Wholesale Apple Market.*

VEGETABLES.

Artichokes, per bush, 2 s. 6 d.	Leeks, per bunch, 2 s. 6 d.
— Eng. Globe, doz. 4 s. 0 d.	Lettuces, Fr. per doz. 1 s. 0 d.
Asparagus, Fr. per bun. 5 s. 0 d.	— Cos, per doz. 6 s. 0 d.
— English, per bun. 6 s. 0 d.	— Mint, per bunch, 2 s. 0 d.
— Sprue, per bun. 1 s. 0 d.	Mushrooms, per pott. 0 s. 6 d.
Beans, French (new), 1 s. 0 d.	— <i>Canthale</i> , do. 1 s. 0 d.
— <i>Canthale</i> , do. 1 s. 0 d.	— young, per bun. 0 s. 10 d.
Beet, per doz. 1 s. 0 d.	Parley, per bunch, 0 s. 4 d.
Brussels Sprits, bunch, 6 s. 0 d.	Peas, green, per bun. 1 s. 0 d.
Cabbages, per doz. 4 s. 0 d.	Peas, new, per lb. 1 s. 0 d.
Carrots, per bunch, 1 s. 0 d.	Radishes, per bunch, 1 s. 0 d.
Cauliflowers, per doz. 1 s. 0 d.	— <i>Canthale</i> , do. 1 s. 0 d.
Celery, per bundle, 1 s. 2 d.	New Jersey, doz. 2 s. 0 d.
Chicory, per doz. 1 s. 0 d.	Rhubarb, per bundle, 1 s. 0 d.
Cucumbers, each 1 s. 0 d.	Salsify, per bundle 1 s. 0 d.
Endive, per doz. 1 s. 0 d.	Seakale, per bunch 1 s. 0 d.
— <i>Canthale</i> , do. 1 s. 0 d.	Shallots, per bunch, 1 s. 0 d.
Garlic, per lb. 0 s. 6 d.	Spinach, per bushel 4 s. 0 d.
Herb, per bunch 0 s. 4 d.	— <i>Canthale</i> , do. 1 s. 0 d.
Horse Radish, per bun. 1 s. 0 d.	Turnips, per bundle 0 s. 4 d.
— <i>Canthale</i> , do. 1 s. 0 d.	

Peasants.—Kent Eggs, 4s. to 6s.; Essex Eggs, 4s. to 5s. to 6s.; Kidneys, 4s. per ton.

FRUIT.

Apples, per $\frac{1}{2}$ -sieve	3 0-8 0	Oranges, per 100	4 0-10 0
do., per lb.	6 0-12 0	Peaches, per doz.	0 0-2 0
Grapes, per lb.	6 0-12 0	Pears, per doz.	0 0-2 0
Lemons, per 100	4 0-10 0	Pine-apples, per lb.	1 6-4 0

PLANTS IN POTS.

Azaleas, per dozen	24 0-6 0	Heliotrope, per doz.	6 0-12 0
Begonias, per doz.	12 0-6 0	Hyacinths, per doz.	6 0-12 0
Bouvardias, do.	12 0-6 0	Lily of Valley, each	0 0-2 0
Cineraria, per doz.	3 0-9 0	Magnoliae, per doz.	6 0-12 0
Colombus, per dozen	3 0-9 0	Myrtles, do.	6 0-12 0
Crocus, per dozen	3 0-9 0	Palms in variety, each	3 0-21 0
Cyclamen, per doz.	12 0-6 0	Pelargoniums, scarlet,	6 0-12 0
Cypripis, do.	6 0-12 0	per doz.	6 0-12 0
Dracena terminalis	30 0-6 0	Prunella sinensis, doz.	4 0-9 0
Eranthis, per doz.	18 0-6 0	Rachicela rhombica,	6 0-12 0
Fernis, in var., p. doz.	6 0-30 0	per doz.	0 0-2 0
Ficus elastica	2 0-6 0	Salunans, per doz.	6 0-12 0
Fuchsia, per dozen	6 0-12 0	Tulips, per doz.	6 0-12 0
Heaths, variety, doz.	0 0-2 0	Valotta purpur., doz	0 0-2 0

CUT FLOWERS.

Azaleas, 12 sprays	0 6-2 0	Lily of the Valley, 12	0 6-2 0
Bouvardias, per bun.	1 0-4 0	do. sprays	0 0-2 0
Camellias, 12 blooms	1 0-9 0	Mignonette, 12 bun.	0 0-2 0
Carantions, per dozen	1 6-4 0	Narcissus, 12 sprays	0 0-2 0
Crocus, 12 bunches	2 0-6 0	Pelargoniums, 12 spr.	1 6-3 0
Cyclamen, per doz.	3 0-9 0	do. small, 12 sprays	0 0-2 0
Daffodil, dbl., 12 bun.	4 0-9 0	Primroses, per dozen	1 0-3 0
do., 12 bun.	3 0-9 0	do. small, 12 sprays	0 0-2 0
Epiphyllum, 12 blooms	1 0-3 0	Roses, indur., p. doz.	3 0-10 0
Eucharis, per doz.	6 0-12 0	Stephanotis, 12 spr.	0 0-2 0
Euclathus, 12 sprays	2 0-9 0	Topazium, 12 bun.	0 0-2 0
Gardenia, per doz.	9 0-18 0	Tulips, per dozen	1 0-2 6
Gladiolus, 12 spr. 0 6-2 0		do. 12 bun.	0 0-2 0
Hyacinths, p. dozen	6 0-12 0	Wallflowers, p. doz.	6 0-12 0
—Roman, 12 spr.	1 0-4 0		

CORN.

Trade at Mark Lane on Monday was quiet. Fine dry Wheat, either English or foreign, was well held; but the bulk being more or less affected by the weather, the rates of Monday se enight were not as a rule exceeded. For Barley prices were barely so firm. Malt was steady without much demand. In Oats and Maize the better qualities had an upward tendency. Beans and Pens were in very limited request. There was a quiet sale for all descriptions of flour, at the rates of last week.—Trade on Wednesday was very quiet, and quotations showed no material change. The continuance of cold, frosty weather would improve the condition of the produce, and increase the marketable supply; hence holders were not so firm as might be anticipated from the change in temperature, and with very little doing there was even some difficulty in supporting previous quotations in some instances.—Average prices of corn for the week ending February 21—Wheat, 45s. 3d.; Barley, 45s. 4d.; oats, 25s. 7d. For the corresponding week of the year—1876—Wheat, 43s. 3d.; Barley, 43s. 4d.; oats, 24s. 7d.

CATTLE.

At Copenhagen Fields on Monday there was a slow sale of beasts, and in some instances rather less money was taken, but there was scarcely a quotable reduction. There was a good demand for sheep, and late rates were well maintained. Choice calves were in request at high rates. Quotations—Beasts, 47. 6d. to 57., and 65. to 67.; calves, 6s. to 7s.; sheep, 5s. 10d. to 6s., and 6s. 10d. to 7s. 6d.; pigs, 4s. 4d. to 5s. 4d. On Thursday the supply of beasts equalled the demand, and both were limited; prices were lower than on Wednesday, and sheep were readily bought at the figures quoted above, but otherwise trade was not brisk.

HAY.

At Whitechapel on Tuesday there was only a moderate supply, and trade improved. Clover was decidedly firm, the better sorts making from 100s. to 128s., while inferior produce was quoted from 85s. to 95s.; prime meadow hay was held at 105s. to 124s.; inferior, 70s. to 85s.; and straw, 40s. to 54s. per load.—Trade was not brisk on Thursday, at the following quotations—Clover, best, 98s. to 125s.; inferior, 85s. to 90s.; hay, best, 95s. to 122s.; inferior, 65s. to 72s.; straw, 40s. to 52s. per load.—Cumberland Market quotations—Superior meadow hay, 126s. to 135s.; inferior, 110s. to 114s.; superior Clover, 138s. to 147s.; inferior, 115s. to 130s.; and straw, 52s. 57s. per load.

POTATOS.

The Borough and Spitalfields reports state that the Potato markets remain steady. There are moderate supplies, and no material change is apparent in quotations. Kent Regents, 100s. to 125s.; Essex do., 90s. to 120s.; Scotch, 100s. to 130s.; Flukes, 125s. to 130s.; Victorias, 140s. to 170s.; Kidneys, 100s. to 120s.; Hooks, 75s. to 90s.—The market in London on last week consisted of 29,514 bags from Hamburg, 16,465 from Antwerp, 5428 from Ghent, 3029 from Bremen, 710 sacks from Boulogne, 745 bags from Harlingen, 643 from Brussels, 677 from Rotterdam, 200 from Malta, 175 tons Dunkirk, and 52 Dahouet.

COALS.

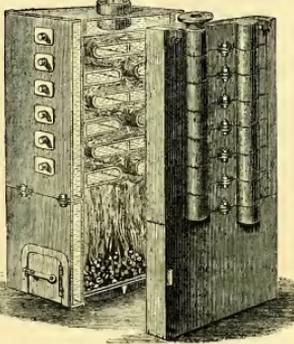
The market on Monday was firm, and house coals made an advance. There was a small supply on Wednesday, owing to the vessel which was detained by the stormy weather, and house coals were sold at an advance of about 2s. per ton. Quotations—Belside West Hartley, 16s. 6d.; East Nylam, 16s. 6d.; Hartley, 16s. 3d.; Walls End—Hawthorns, 17s. 6d.; Hartlepool, 18s. 6d.; Kellou, 18s.; East Hartlepool, 19s. 3d.; South Hartlepool, 18s.; Tees, 19s.

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By Her Majesty's Royal Letters Patent

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It is the only Hot-water Boiler in which

The whole interior is specially arranged to secure the largest amount of the direct and most powerful "flame impact," delivered on the most effective surfaces. Outside deposit reduced to a minimum by the endless strokes. The interior currents are specially arranged for the most powerful circulation, whereby nearly treble the amount of water is rushed through the furnace and nearly treble the amount of heat absorbed from the ascending products. Inside deposit reduced to a minimum by the extraordinary circulation. Every volume of heat, large or small, is forced in its travel (until it will fill) over the entire surfaces, from bottom to top, delivering scorching blows on surfaces at right angles to its ascent.

Entirely water-jacketed: loss of costly heat, therefore, absolutely impossible; and danger from fire reduced to a minimum. The flame-stream is entirely broken up and disintegrated. Air and gases thoroughly mixed and burnt, and the formation of smoke largely prevented. The whole interior one large combustion chamber. The flame kept in most intimate contact with the entire surfaces. From its extraordinary rapidity it will be found of the extreme value in case of accident or mistake. By means of the "central rib" every inch of the interior is visited by the water in rapid circulation. Cold water fed in on one side, and taken away hot on the other. Water, once heated, never submitted to flame-action again. The whole ten sections deliver into the "hot column," one above the other. Extraordinary power for actuating the circulation when so situated. May be erected, repaired, and taken down by any ordinary workman. India-rubber between all the joints, allowing every facility for expansion or contraction. Not a "fitter's" work. Will be altered in any power or level. In handy sections. Breakages easily repaired at trifling cost, &c. No horizontal heating. No brickwork. Outside fitted entirely with sheet-iron, &c.

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PLATANUS OCCIDENTALIS (true), to 120 feet high, and girthing 4 to 8 inches at 4 feet from the ground.

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POPULUS CANADENSIS NOVA, 15 to 16 feet high, and girthing 6 inches at 4 feet from the ground.

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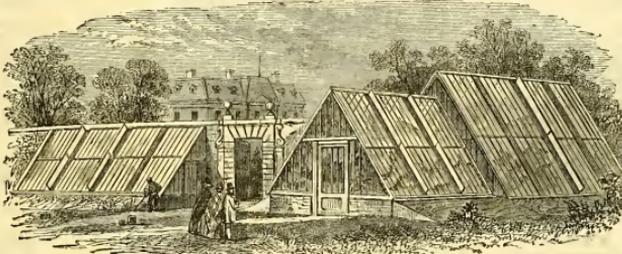
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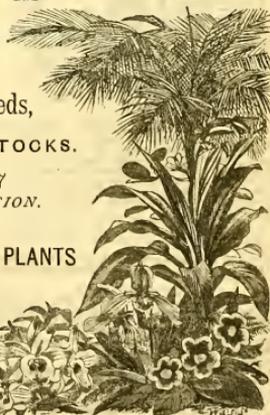
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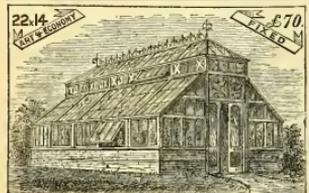
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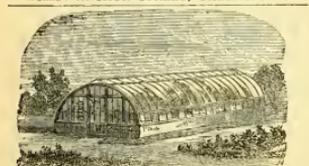
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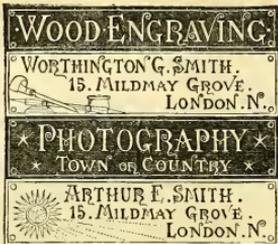
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Sold in casks of about 30 gallons each, at 2s. 6d. per gallon,
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CAUTION.—It having lately come to the knowledge of
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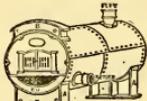
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FOR THE
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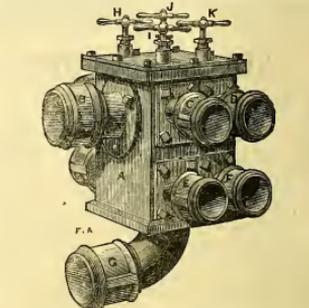


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A. The Rubber Ring as rolled into the Socket.
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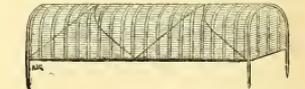
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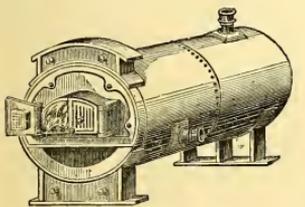


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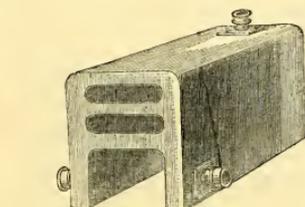
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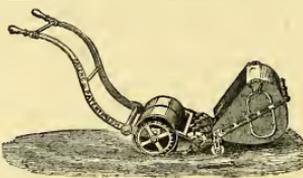
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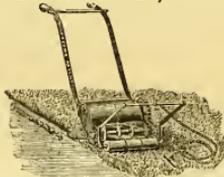
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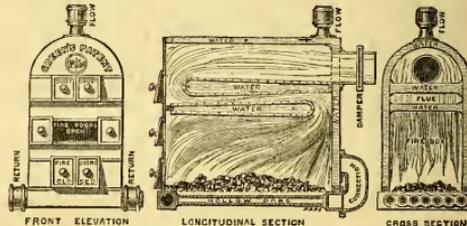
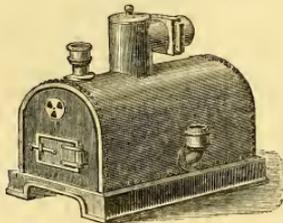
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E	2 0	3 6	1100 "	29
F	2 0	4 0	1400 "	36
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J	3 0	6 0	3500 "	70

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GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 167.—VOL. VII. {NEW SERIES.}

SATURDAY, MARCH 10, 1877.

{Registered at the General Post Office as a Newspaper.} Price 5d. POST FREE, 5 1/2d.

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(Two of the Gems of the Season)
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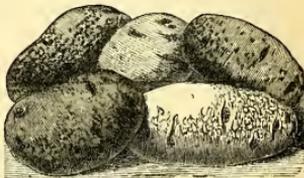
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"Such is the capability of this sort that a set weighing six ounces, in a good soil, with the aid of a good season, will up a heap of handsome tubers weighing as much as 22 lb. We speak from knowledge, and will add that with good cultivation this sort may be expected to produce stools averaging 5 lb. to 7 lb. at the very least, and therefore it must be a profitable Potato." - S. H., in the 'Pictorial World,' Feb. 24, 1877.

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"It is a good looking market root, and cooks well, the flesh being white, mealy, and of excellent flavour. None would wish for a better Potato." - S. H., in the 'Pictorial World,' Feb. 24, 1877.

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Complete Liberal Collections of CHOICE VEGETABLE SEEDS, 15s., 21s., 42s., 63s., and 105s. each, carriage paid. As my new and choice seeds are now in large demand, please order early. SPECIALITIES - CALIFLOR, Veitch's Autumn Giant, 1s. 6d. per packet. LETTUCE, Alexandria Co. true, 5s. per packet. ONION, Gantrell's extra, true, 1s. per packet. BROCCOLI, Lemonington, finest late, 1s. 6d. per packet. CABBAGE, Alpha, fine, large, and early, 1s. per packet. CATALOGUE of New and Choice Seeds on application. R. B. M'COMBIE, Grower of Choice Seeds, &c., Christchurch, Hants.

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- PLANKS, 12 to 14 feet. CHESTNUTS, Horse, 11 to 12 feet. CHESTNUTS, Scarlet, 9 to 10 feet. LIMES, 12 to 14 feet. POPLARS, Canadian, 12 to 14 feet. CHESTNUTS, Spanish, 9 to 10 feet. POPLARS, Lombardy, 15 to 20 feet.

All with clean cut stems.

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WILLS' NEW HYBRID DRACÆNAS.

RAISED BY F. BAUSÉ.

The following Six splendid Novelties will be ready for sending out on and after April 1, 1877.

For descriptions see various articles in the *Gardeners' Chronicle*, *Journal of Horticulture*, *The Gardeners' Magazine*, &c.

D. ELIZABETHÆ (Cooperii, × regina).

A very handsome variety, and remarkably distinct, not only on account of its variegation, but also of the tendency of its leaves to curve under volutely. It is of dense habit, with broad, strongly recurved leaves, measuring 5 inches across, of a dark green colour, with a dark midrib, and a narrow edge of bright rosy crimson on the older leaves, and with a broad-margined variegation of deep pink and creamy white on the younger leaves, the leaf-stalks being conspicuously coloured of a fine rosy tint. It is a wonderful free-growing and very early-colouring variety of great merit. *Fine established plants, price 31s. 6d. each.*

Large specimen plants in full character. Prices on application.

D. GLADSTONEI (excelsa, × ferrea).

A variety of bold habit, with densely set drooping or recurved oblong leaves 4 inches broad, of a very dark bronze colour, the younger leaves breaking into a deep crimson suffused with salmony rose, the margins of the petioles being also coloured. It will form an invaluable plant for decorative purposes, being of a very hardy constitution, of very free and erect growth, and calculated to form a tall specimen.

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Large specimen plants in full character. Prices on application.

D. REBECCÆ (Cooperii, × regina).

A variety of dense stocky habit, having the leaves drooping, oblong, $3\frac{1}{2}$ inches broad, the lower ones variously spotted with purple-rose, the upper ones freely marbled with magenta-pink and creamy white, changing to yellowish green, and broadly edged with dark rosy purple, in some leaves almost wholly coloured, the centre of the variegation showing a broadish varied band of green. The rosy coloration of the leaf-stalk adds much to the effect of this plant, being an exceedingly pretty and early-colouring variety.

Fine established plants, price, 31s. 6d. each.

Large specimen plants in full character. Prices on application.

Three Medals were awarded to the above Novelties, including the Grand State Medal, at the Brussels International Exhibition, on April 30, 1876.

The First Prize for the three best Dracænas in cultivation was also awarded to Mr. Wills at the same Exhibition.

THE USUAL DISCOUNT TO THE TRADE.

THE ANERLEY DRACÆNAS.

Extract from the "Gardeners' Chronicle," May 27, 1876.

"Some time since (*Gardeners' Chronicle*, 1875, iv., 615) we gave an account of a marvellously fine collection of seedling Dracænas, which had been raised by Mr. Bausé, at Mr. Wills' Nursery, at Anerley. That account referred to a selection of a considerable number of the finest of the varieties which had at that time broken into colour. As was to be expected, however, amongst the thousands of judiciously crossed seedlings Mr. Bausé had obtained, the first selection by no means exhausted all the gems that were worth preserving, and a subsequent visit has enabled us to confirm Mr. Wills' opinion that a further selection from amongst Mr. Bausé's fondlings should be made."

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In adopting this System, all the overbalancing expenses of re-jointing, re-painting or re-glazing are completely done away with, and it is now in use throughout several of the Great Railway Companies, such an enormous saving would be effected that it would have a considerable influence in supplying an addition to the yearly dividends.

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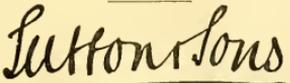
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SATURDAY, MARCH 10, 1877.

LLEWELYN'S DINGLE.

IT is the fate of forests that they must diminish or disappear before the advance of progressive communities. France, which has always led the van of civilisation, was one of the first countries to invent contrivances for economising the consumption of fuel. Germany, a land once covered by dense and trackless forests, was constrained years since to adopt the uncomfortable expedient of the close stove. New England has recognised her comparatively scanty sticks in the same manner for many years, and the classic shout of menaced patriots—*pro aris et focis* ("for hearths and altars")—must now be rendered in all those countries "Fight for your stoves!" Our own case would be similar even in England but for coal.

Many of the attacks upon the forests of these islands took place under Acts of Parliament, for the purpose of dislodging outlaws and wolves from their favourite haunts. In Ireland, Henry II. swept down the forests in pursuit of his scheme of conquest. Edward I. thinned those of Wales with the same object, at the period of his wars with Llewelyn. Yet it happens that the very grove called locally "a dingle," in which the last native Prince of Wales lost his life, still remains. The scene of this tragic event is on the banks of the Wye, near the ancient town of Builth, and not far from the edge of Radnor Forest. Builth was a favourite residence of Llewelyn's, and the old town stood immediately beneath the walls of his castle, as the present town does beneath the mound on which its relics may still be distinguished, though hardly a stone remains of the once formidable stronghold. The position was important, being immediately upon the line of communication between North and South Wales. Builth Bridge spanned the Wye opposite the castle gates, as a more recent bridge does the same part of the river at the present time. A broken ridge of hills, following the long valley, approaches the winding stream on either side, and Oaks and Oak scrub cover the highest level that vegetation of that kind can obtain. The scenery of the locality is smoother than that of North Wales, and wilder and more picturesque than the pastoral yet hilly districts of South Wales, where the land is more valuable and trees are therefore less abundant.

The original stamp of Nature upon the country around Builth was too bold to be easily obliterated, and it probably presents much the same aspect as in the days of Llewelyn. The river makes the same music as of old, and no polluting manufacture at present destroys the salmon. The people have perhaps changed more than their surroundings, which cannot have altered very much in their leading features since the thirteenth century. At the time of our visit to Builth the Brecon volunteers, marching through the street, and their band playing Rule Britannia, seemed a decided incongruity, and was certainly a decided change since the thirteenth century. As to other alterations there is now a pump room—modern Builth being a watering place—and in the hotel was an old gentleman connected with minerals—coal or copper—in Glamorganshire. He had come out for a holiday, and was napping in an

to see how freely everything that is planted grows in the sheltered bed. A Wellingtonia that was less than 6 feet in 1871 is now 23 feet, and Decodars that were then 24 feet are now 38 feet, expanding laterally in like proportion.

In the stove where some charming Ferns; the lovely Adiantum Farleyense expands its ample fronds in great perfection, and, favoured by the warmth and moisture, other kinds multiply in all directions. A pretty variety has established itself among the miniature rocks at the back of the tank, in which a jet often throws up a fine spray supplied from a spring that rises half-way up the cliff behind us. This Fern partakes of the character of *A. concinnum*, *A. concinnum latum*, and *A. Farleyense*, but is identical with neither; and I am inclined to think will prove an interesting subject of study, and may throw some light upon the variations in Ferns. The *Echaris amethystina* has been lovely, so has a plant of the elegant *Thyracanthus*, and now we have all the *Cadatum* tribe rushing out with beauty from their short but necessary rest.

The *Tecoma* variety, which gave great promise of flowering in the autumn, has disappointed us, probably from the want of sun, but it is so healthy and vigorous that it may make another effort.

In the greenhouse the *Brugmansia*, the scarlet *Salvia*, the *Callas* and *Habrothamnus*, with an abundance of *Primulas*, *Hyacinths*, and other bulbs, kept us gay in the mid-winter; and now we have the *Cinerarias*, *Deutzias*, *Spiræas*, *Libonias floribunda*, *Azaleas* and *Camellias*, to cheer and carry us on till April brings the *Pelargoniums* and all the other favourites of the year.

In the vinery we began to fire up on February 26, and planted the early Potatoes in the frame on the same day.

We have not yet seen any salmon passing over the river, but it has been so full of water that they might easily escape notice. We did not suffer any inconvenience from the floods which were so disastrous above and below us, but the sight of the rapid torrent at these times is very fine—

Viduus flavus Tiberin, retorts
Litore Etrusca violenter undis
lit.

From observations made from time to time, I have been led to estimate that upwards of 1,250,000 cubic feet of water per minute flowed past this garden—a stupendous volume, which one can easily understand would flood all the low-lying ground before it reached the sea.

The pretty-water hens now visit us daily; they come from the pool in the river upon our lawn, in search of food, strolling about close to the windows, with their coquetish rick of tail. I see them sometimes perched in a Laurel, but they hardly seem at home in a tree. The great green woodpecker are now beginning to startle us with their loud wild laughing cry as they fly across the garden, and the thrushes make the trees echo with their songs; but, all these signs notwithstanding, we must remember the words of the poet—

"Mindful of disaster past,
And shivering at the northern blast,
The sleety storm returning still,
The morning hour and evening chill,
Reluctant comes the timid spring."

THE GENUS AGAVE.

(Continued from p. 171.)

SERIES I.—CORIACEO-CARNOSE.—Texture of the leaf rigid, not at all fleshy or yielding to the touch when mature. End spine large, hard, and pungent.

Group I. Filifera.—Edge of the leaf splitting out into distinct threads.

1. *A. (Littoa) filifera*, Salmдық; Jacobi, Mon., pp. 35 and 193; Lemaire, Ill. Hort. vii., t. 243; fig. 49.—Aculescent; leaves 60—90 in a dense rosette, stiff, striate, ensiform, 6—9 inches long, 1 inch broad at the middle, narrowed gradually to a grey pungent tip, flat on the face, pale green, not at all glaucous, the continuous grey edge splitting off centro to irregular spreading grey wiry threads, the outer ½ inch, the base ½ inch thick, the back rounded, marked with conspicuous grey vertical lines where the edge of the other leaves have pressed against it; outer leaves of the rosette not at all recurved, but spreading stiffer. Scape 3—4 feet long, its bract-leaves subulate, the lower ones ascending, the upper squarrose. Flowers in a dense spike 2—3 feet long; bracts purplish-brown, linear, about as long

as the unexpanded flowers; pedicels very short and stout. Perianth greenish, about 2 inches long; ovary oblong, ½—¾ inch long; tube funnel-shaped, about as long as the ovary, suddenly dilated in the upper half; segments brownish, spreading, obtuse, half as long as the tube. Filaments 1½ inch long, inserted at the base of the segments; anthers yellowish-red, ligulate, ¾ inch long. Style reaching to the top of the anthers.

Var. *filamentosa*—*A. filamentosa*, Salmдық; Jacobi, Mon., pp. 36 and 199; Baker, in Saund. Res. Bot., t. 164; Gard. Chron. 1870, p. 8.—Leaves larger, attaining a length of 18—24 inches, and a breadth of 1½—1½ inch. Scape, including the spike, attaining a length of 10—12 feet.

A native of Mexico; a plant which has been long well known to all collectors. The two varieties named by Salmдық, and kept up by Jacobi as species, differ from one another in size only, and run into one another most gradually. An excellent coloured figure of the large one, from a specimen that flourished with Mr. Saunders, will be found in the *Refigium*, as just quoted. The plant flowered at Kew in the summer of 1875. There are three forms represented in Mr. Saunders' set of photographs, one very dwarf and stiff, with leaves under half a foot long.

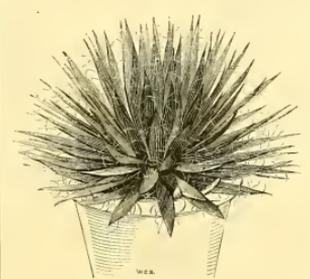


FIG. 40.—A. FILIFERA.

2. *A. (Littoa) schidigera*, Lemaire, Ill. Hort. vol. ix., t. 330; Jacobi, Mon., pp. 36 and 200; Bot. Mag., t. 594.—Aculescent; leaves 50—80, in a dense rosette, stiff, ensiform, 12—15 inches long, ¾—1 inch broad at the middle, similar in colour and texture to those of *filifera*, but the grey margin broader, and splitting off into flat shavings half a line broad, not mere threads. Scape about 3 feet long. Spine dense, as long as the scape. Perianth and stamens just like those of *filifera*.

A native of Mexico, introduced by Verschaffelt in 1801. It cannot be considered as more than a variety of *filifera* in a broad sense, the flowers being just the same, and the only appreciable difference between the two being in the character of the threads that split off from the edge of the leaf. There is a good coloured figure in the *Botanical Magazine*, as just cited. It is to be seen in all the best English collections. The variety *Ortiziana*, which I have seen in Mr. Peacock's and at Kew, is a dwarf form of *schidigera*, with a pale central band to the leaf. The type is well represented in Mr. Saunders' set of photographs.

3. *A. (Littoa) Schottii*, Engelm., Notes, p. 17; *A. geminiflora* (L.) var. *Sorensii*, Torrey, in Bot. Mex. Bound., p. 211.—Aculescent; leaves linear, 6—12 inches long, 3—4 lines broad, rigid, flat or concave on the face, convex on the back, ending in a terete pungent brown tip ½ inch long, the margin splitting off into copious fine whitish fibrous threads. Scape 5—6 feet long. Flowers spicate; primary and secondary pedicels each about a line long. Perianth ½ inch long; ovary under ½ inch long; tube funnel-shaped, gradually widening from the bottom to the top, ½ inch long; segments linear-oblong, cretato-petiole, ½ inch long. Filaments scarcely protruding beyond the segments, inserted a little below the throat of the tube, 8 lines long; anthers ½ inch long. Style reaching to the top of the stamens.

A native of Southern Arizona, where it was discovered by the late Dr. Arthur Schott in 1855. It is known only from his dried specimens, described by Dr. Engelm., from whose notes mine are entirely taken.

4. *A. (Littoa) pariflora*, Torrey, in Bot. Mex. Bound., p. 211; Engelm., Notes, p. 16.—Aculescent; leaves linear-lanceolate, from a broad deltoid base, 2½—3 inches long, 4 lines broad above the base, ending in a pungent finally grey spine ¼ inch long, the edge below the middle furnished with minute brown cartilaginous teeth, above the middle splitting off into a few short stout white threads. Scape 4—5 feet long. Flowers spicate, not more than ½ inch long; ovary oblong, over ½ inch long; tube campanulate, a little longer than the ovary; segments oblong, suberect, half as long as the tube. Filaments 4 lines long, inserted low down in the tube, like the style, scarcely protruding beyond the tip of the segments. Capsule amblobose, shortly cuspidate, 4—5 lines long.

Like the last, a native of the Sierras of Southern Arizona, and discovered in the exploration of the Mexican boundary by the late Dr. Schott. It has not been yet brought into cultivation, and is a most curious and distinct little plant, forming a connecting link between the *Filifera* and *Striata*.

A fifth species of this section, as yet known very imperfectly, is *A. angustissima*, Engelm., Notes, p. 18, gathered by the late Dr. Schott and Geotille in Western Mexico, which is said to have narrow linear leaves 2—3 feet long, 2½—3 lines broad, convex on the back, filamentose on the edges, ending in a brown spine under ½ inch long, and a scape 5—6 feet long. *J. G. Baker.*

MELONS FROM CENTRAL ASIA.

Since commencing the *Gardener's Chronicle* the result of M. Naudin's trial of the Melon seeds from Turkistan, p. 303, I have received through the kindness of Dr. Hogg the accompanying report on the results obtained from those grown at Chiswick. *W. T. Thistleton Dyer.*

Report on Varieties of Sweet Melons from Yarkand, received from Dr. Hooker, May 16, 1876.—

The seeds were sown in the end of May, which proved somewhat late. The plants grew well, but only five of the varieties fruited satisfactorily. Several varieties never produced any female flowers. Of the five which fruited, the following notes were taken:—
1. *Yarkand*; 4. *Labidi*; and 3. *Nashakar*, were identical. Fruits of fair average size, roundish ovate, even surface; skin pale green, changing to pale greenish yellow, covered with a fine down; flesh pale orange, very tender, juicy and sweetly flavoured; with a very thin rind. Distinct from any known variety; very promising.
5. *Chikla*.—Fruit ovate in form, but otherwise very similar to No. 1.
6. *Chiguldah*.—Fruits of medium size, roundish ovate, deeply ribbed; skin pale green, changing as the fruit ripens to a splashed greenish yellow, and covered with a fine down; flesh pale scarlet; tender, juicy, and sweetly flavoured. A sweet melon.

It may be noted that, for reddish-fleshed Melons, the flesh was far more tender than is usually found in those of that class.

ASPECTS FOR PLANT HOUSES.

If "Aqua Calida" had taken a little more notice of the altitude of the sun at mid-day during the months of December and January, he would not have spoken of his (the sun's) rays striking perpendicularly or even comparatively perpendicularly—whatever that may mean—on any side of a house, at that period of the year, but he would have seen rays of light thrown from a low elevation casting long shadows where obstructed and reaching far into an interior where no obstruction exists; and even now (March 5th) shall be thrown by the ridge of a house standing ends north and south is rather longer than the height of the ridge, and every bar and rafter throws a corresponding shadow, so that the light is rather diffused than direct till afternoon, when the sun works round to the west.

It follows, then, that the sun shining full on the south side of a house sends his rays as far through the house as a shadow would fall in case an object intervened; hence it arises that the north side of a span-roofed house, with a face to the south, receives the full force of what little sunshine there is during the dead of winter, and is brighter even than the south side, which receives the shadow of the framework or front wall, as the case may be, and the elevation of temperature consequent on the sunshine melts the ice on the north side before even the west side of a house standing the other way feels any benefit, and the east face is rarely touched by the sun in the depth of winter.

It might perhaps have struck "Aqua Calida," if he

had given it a thought, that to modify the heat from the sun on a summer's morning so early as 5 o'clock air must be "left on" over night, which is not always desirable, for instance, when the wind is either rough or cold, or some one must be up to pay attention to the matter before the early hour named—not always an agreeable alternative.

Then, again, with respect to closing the houses on a summer's evening: without either directly or by implication finding fault with the course of the sun, I most undoubtedly prefer the soft diffused light of a house shaded by its own framework to the gloom of a house shaded by a drawn blind.

"Aqua Calida's" remark about a tall bank of plants in the centre of a house obstructing light applies to both aspects, but much more forcibly to the one where the blinds are much used, in that case the plants on both sides lose the reflected light they receive when not artificially shaded.

I wrote the original paper with a view to encourage amateurs who had not a site in the fashionable position. The one I recommend is quite as good, at any rate, as that generally adopted; as I said before, it says a great deal better. Its advantages are a greater amount of sunlight in the winter, when it is most needed, and a less amount in summer, when we take pains to keep it out.

I might perhaps tell "Aqua Calida" I should greatly prefer a lean-to facing the south for mere winter work to a span in his fancy position, but it was more for houses of general utility I was writing.

I am no mouthpiece for hot-house builders, few of whom know anything of practical gardening, and build the structures ordered upon any site selected by the proprietor. I do not think any one of them (the builders) would refuse an order on account of the unsuitability of a position assigned to them.

The rest of "Aqua Calida's" remarks call for no answer from me; the mere business details may be safely left to the persons most concerned; still I do not see if the man who has to pay for the work desires the woodwork unpainted any reason why he should not have it. I fancy the conclusion was an effort of wit, which some people may understand, but I candidly confess I do not. *J. Bester.*

LANTANAS FOR BEDDING.

As a most useful and durable bedding plant the Lantana deserves more attention than it actually receives at the hands of gardeners. It is a more desirable plant than the Verbena in this respect, the varieties have been multiplied so much of late that they are now very varied in point of colour; they flower for a long time—it is computed by some for eight months in the year—and they are much less liable to those attacks of insects, &c., that will frequently convert a bed of Verbenas into a most unamiable floral expression.

Some of the most charming beds seen in the pretty circular flower garden at Lockinge Park, Wantage, during the past summer were those formed of Lantanas, and it did appear to be a happy accident which had resulted in these beds being planted with varieties of different colours instead of one variety only, as was originally intended. Mr. B. S. Williams has expressed the opinion that the Lantana has been much neglected, owing to its having strongly scented foliage, "the peculiar tone of which is not grateful to most people," but this peculiar scent is not very apparent unless the plants are handled.

There are two uses to which the Lantana can be put. To one, viz., for bedding, reference has already been made; the other is that of being grown in pots for conservatory decoration and exhibition purposes; and especially by those who have but scant accommodation for growing choice plants. Sometimes at country shows admirably grown specimens of Lantanas can be met with, and the plants always appear to be well-bred and flowered and singularly clean. "Lantanas," says Mr. B. S. Williams, "are rapid growers, and will soon form large specimens; and, wherever space can be given, a few should be grown for the sake of the bright coloured and abundant summer autumn flowers."

From the time of species have been introduced from day to day from South America and the West Indies; but the main of these now cultivated are improved garden hybrids, and in point of variation in colour they range from pure white to rich orange crimson and purple. Plants are easily raised from cuttings struck in a brisk moist bed in spring; and those so obtained, after being sufficiently hardened off, make most useful subjects for bedding.

The most effective beds are formed by pegging down the young shoots till the surface of the bed is covered and then permitting them to flower, which they do almost if not quite as freely as the Verbena; and as a bed of mixed Verbenas is generally much more attractive than one wholly composed of one variety, so a bed of mixed Lantanas is to be preferred to beds wholly of one colour or variety.

A warm well-drained spot appears to suit the Lantana best when bedded out, and it is perhaps owing to this that beds of this plant on raised terraces are generally so effective. A good light loam, some peat and leaf-mould make an excellent compost for the Lantana.

The plants grown in pots for house decoration require to be kept partially dry during the winter, and be cut-in in the spring time and repotted. The soil recommended by Mr. B. S. Williams is loam, peat, and sand in equal parts. Plenty of pot-room is requisite, as the Lantana puts forth a great number of roots.

There are now a large number of varieties: some of the best are *Angusta* Wilhelm, white and orange; *Distinction*, rich orange-yellow, changing to rose; *Mine d'Or*, orange and red; *Madame Thibaut*, orange-scarlet; *Nec Plus Ultra*, purple and yellow; *Mons. Kougier*, yellow bordered with scarlet, a fine bedding variety; *Magenta King*, bright purplish scarlet; *Doum Calmet*, pink, with peach and yellow centre; and *Princess Louise*, dark maroon-red with white centre. *R. D.*

CATASETUM SCURRA.

THIS curious plant, which was described by Professor Reichenbach in our volume for 1872 (p. 1003),



FIG. 50.—CATASETUM SCURRA.

was exhibited by Sir Trevor Lawrence, Bart., M.P., at the meeting of the Royal Horticultural Society on the 14th ult., and attracted a good deal of interest on account of its curious aspect. It is comparatively a small plant. The pseudobulbs are ovate, acute, from an inch to an inch and a half long. The leaves are stalked, oblong-lanceolate, and the flowers are in drooping racemes, each bearing five or more blossoms, of a pale straw-colour or waxy white, the chief peculiarity of which resides in the lip. The sepals are obovate blunt; the petals broader, shorter, and rounder, and the lip trifid, its "side lacinia erect, with bent borders, rhomboid, denticulate, the middle lacinia with a very short, broad, linear stalk, expanded into a subreniform blade, with crisp and toothletted margins." The species comes from Demerara, and was first flowered in the collection of W. Wilson Saunders, Esq., whose plants furnished Professor Reichenbach with the materials for his description.

The flowers have a peculiar scent, Reichenbach even calls it a most beautiful perfume. Mr. Saunders, it appears, compared the odour to that of Lemons, while Reichenbach could not detect the Lemon-scent, but found that of essence of Roses. The subject did not escape notice at the meeting of the Floral Committee on the occasion of its being recently exhibited, and both ourselves and many members of the

committee, as well as our artist, compared the scent to that of stale or somewhat mouldy Lemons, not disagreeable, but certainly not particularly fascinating. The plant was awarded a Botanical Certificate, and furnished our artist with materials for the accompanying woodcuts (figs. 50, 51). It is said to be very nearly related to *C. Warszewiczii* and *C. roseum*, both of which have a fringed labellum.

RELATIONS BETWEEN PLANTS AND INSECTS.

(Continued from page 279.)

SLEEP OF PLANTS.

I HAVE elsewhere ventured to suggest that the so-called "sleep" of flowers had reference to the habits of insects, on the ground that flowers which are fertilised by night-flying insects would derive no advantage by being open in the day; while, on the other hand, those which are fertilised by bees would gain nothing by being open at night. I confess that I suggested this with much diffidence, but it may now, I think, be regarded as well-established.

Silene nutans, the Nottingham catchfly, is a very interesting species from this point of view, and indeed illustrates a number of interesting points in the relations between plants and insects. Its life history has recently been well described by Kerner. The upper part of the flowering-stem is visible, from which it has derived its local name, the Nottingham catchfly. This prevents the access of ants and other small creeping insects. Each flower lasts three days, or rather three nights. The stamens are ten in number, arranged in two sets, the one set standing in front of the sepals, the other in front of the petals. Like other night flowers, it is white, and opens towards evening, when it also becomes extremely fragrant. The first evening, towards dusk, the stamens in front of the sepals grow very rapidly for about two hours, so that they emerge from the flower; the pollen-tubes, and is exposed by the bursting of the anther. So the flower remains through the night, very attractive to, and much visited by, moths. Towards three in the morning the scent ceases, the anthers begin to shrivel up or drop off, the filaments turn themselves outwards, so as to be out of the way, while the petals, on the contrary, begin to roll themselves up, so that by daylight they close the aperture of the flower, and present only their brownish-green undersides to view, which, moreover, are thrown into numerous wrinkles. Thus, by the morning's light, the flower has all the appearance of being faded. It has no smell, and the honey is covered over by the petals. So it remains all day. Towards evening, however, everything is changed. The petals unfold themselves, by 8 o'clock the flower is as fragrant as before, the second set of stamens have rapidly grown, their anthers are open, and the pollen again exposed. By morning the plant is again asleep, the anthers are shrivelled, the scent has ceased, and the petals rolled up as before. The third evening again the same process, but this time it is the pistil which grows, and the long spiral stigmas on the third evening take the position which on the previous two had been occupied by the anthers, and can hardly fail to be dusted by the moths with pollen brought from another flower.

An objection to the view that the sleep of flowers is regulated by the visits of insects, might be derived from the cases of those flowers which close early in the day, the well-known *Tragopogon pratense*, or "John Go-to-bed at Noon," for instance; still more, such species as *Lapsana communis*, or *Crepis pilulera*, which open before 6 a.m. and close again before 10 in the morning. Bees, however, are very early risers, while ants come out much later, when the dew is off the grass; so that it might well be an advantage to a flower which was quite unprotected to open early for the bees, and close again before the ants were out, thus preserving its honey for another day.

ACTION OF PLANTS ON INSECTS.

So much for the first part of my subject. I must now pass to the second—the action of plants on insects. It would here, perhaps, be most natural to discuss the modifications which have been produced in insects by the search after honey and pollen, especially the gradual lengthening of the proboscis in butterflies, moths, and bees, to enable them to suck the honey, and the adaptation of the legs of bees to enable them to carry off the more or less dry and dusty

pollen. Having, however, already treated of them elsewhere, it will be better for me to take other illustrations, and fortunately there is no lack or difficulty.

Many of the cases in which certain insects escape danger by their similarity to plants are well known; the leaf insect and the walking-stick insect are familiar and most remarkable cases.

The larvae of insects afford also many interesting examples.

I will not, however, refer to isolated cases—however interesting in themselves—on the present occasion, but will take a group and see how far we can explain its various colours and markings, and what are the lessons which they teach us. For this purpose I think I cannot do better than select the larvae of the *Sphinxidae*, which has just been the subject of a masterly monograph by Dr. Weismann, the learned Professor of Freiburg.

COLOURS OF CATERPILLARS.

Let us begin with the *Charocampa elenor*, the elephant hawk-moth. The caterpillars, as represented in most entomological works, are of two varieties, most of them brown, but some green. Both have a white line on the three first segments; two remarkable eye-like spots* on the fourth and fifth, a very faint median line, and another more than 4 inches long. I will direct your attention specially, for the moment, to three points:—What mean the eye-spots and the faint lateral line? and why are some green and some brown, offering thus such a marked contrast to the leaves of the *Epilobium parvum*, on which they feed? Other questions will suggest themselves later, for I must now call your attention to the fact that, when they first quit the egg, and come into the world, they are quite different in appearance, being, like so many other small caterpillars, bright green,

appear on the fourth and fifth segments. There is also a second pale line running along the side. Please remark these two lines. After another five or six days, and when about half-inch in length our caterpillars moult again. In their third stage the commencement of the eye-spots is more marked, while, on the contrary, the lower longitudinal line has disappeared. After another moult, the eye-spots are still more distinct, the white gradually becomes surrounded by a black line, while the centre becomes somewhat violet. The subdorsal line has almost, or entirely, disappeared, and in some specimens faint diagonal lines make their appearance. Some few assume a brownish tint, but not many. A fourth moult takes place in seven or eight days, and when the caterpillars are about 1½ inch in length. Now, the difference shows itself still more between the two varieties—some remaining green, while the majority become brown.



FIG. 51.—CATASETUM SCURRA. NAT. SIZE. FLOWERS WHITE.

The caterpillars are very different in colour—green, white, yellow, brown, sometimes even gaudy, varied with spots, patches, streaks, and lines. Now are these merely casual and accidental, or have they a meaning and a purpose?

In many, perhaps in most cases, the markings serve for the purpose of concealment. When, indeed, we see caterpillars represented on a white sheet of paper, or if we put them on a plain table, and focus the eye on them, the colours and markings would seem, if possible, to render them even more conspicuous, as, for instance, in this diagram of *Dellephila galli*; but amongst the intricate lines and varied colours of foliage and flowers, and if the insect is a little out of focus, the effect is very different.

and almost exactly the colour of the leaves on which they feed. That this colour is not a necessary or direct consequence of the food, we see from the case of quadrupeds, which, as I need not say, are never green. It is, however, so obviously a protection to them, that the explanation of the green colour of small caterpillars suggests itself to every one. After five or six days, and when they are about a quarter of an inch in length, they go through their first moult. In their second stage they have a white subdorsal line stretching along the body, from the horn to the head; and after a few days, but not at first, traces of the eye-spots

* The shaded portions, which replace the eye-spots on the other segments, are an instance of the general rule that a character which appears on every two segments has a tendency to develop itself on every other segment.

The eye-spots are more marked and the pupil more distinct, the diagonal lines plainer, while the subdorsal line is only indicated on the first three and the eleventh segments. The last stage has been already described.

Now, the principal points to which I desire to draw your attention are (1) the green colour, (2) the longitudinal lines, (3) the diagonal lines, (4) the brown colour, and (5) the eye-spots.

USES OF THE COLOUR AND MARKINGS.

As regards the first—the green colour—I think I need say no more. The value to the young insect, the protection it affords, is obvious. We must all have observed how difficult it is to distinguish small green caterpillars from the leaves on which they feed.

When, however, they become somewhat larger their form betrays them, and it is important that there should be certain marks to direct the eye from the outermost of the body. This is effected, and much protection given, by longitudinal lines, such as those occurring in the second stage of our larvae. These lines, both in colour and thickness, much resemble some of the lines on leaves (especially those, for instance, of grasses), and also the streaks of shadow which occur among foliage. If, however, this is the explanation of them, then they ought to be wanting, as a general rule, in very small caterpillars, and to prevail most among those which feed on or among green leaves. Now, similar lines occur in a great number of caterpillars belonging to that distinct group of butterflies and moths, as you may see by turning over the illustrations of any monograph of the Lepidoptera. We have seen that they exist among the hawk-moths, as, for instance, in *Ch. elenor*; they occur in many butterflies, as, for instance, in *ARGE galathea*, which feeds on the Cat's-tail grass; and among moths, as, for instance, in *Pyrophila traspogonius*, which feeds on the leaves of the "John Go-to-bed at Noon" (*Traspogon*). Now you will find that the smallest caterpillar rarely possesses these streaks. As regards the second point also, the streaks are generally wanting in caterpillars which feed on large-leaved plants. The *Staytride*, on the contrary, all possess them, and all live on grass. In fact we may say, as a general rule, that these longitudinal streaks only occur on caterpillars which live on or among narrow-leaved plants. We have seen that in a later stage these lines disappear on certain segments, and are replaced by diagonal lines.

THE DIAGONAL MARKINGS.

In this particular species these diagonal lines are faint, but in a great many other caterpillars belonging to the most distinct families of butterflies and moths, they are conspicuous and no doubt important. Now these diagonal lines come off just at the angle of the ribs of leaves, and resemble them very much in general effect. They occur also especially in species which feed on large-leaved plants, and I believe that it is because of this that a great many species of caterpillars present these lines, they are rarely if ever present in species which live on grass. In the diagram are represented three of such caterpillars, one belonging to each of the three great divisions of lepidoptera, namely, that of the purple Emperor (*Apatura iris*), which feeds on the Oak, as representing the butterflies; that of the Privet hawk-moth; and lastly, that of a moth, the Kentish Glory (*Endromis versicolor*), which feed on large-leaved plants, and I believe I may say that, though very frequent, they rarely occur in species which live on grass. It might at first be objected to the view that there are many cases, as indeed in our elephant hawk-moth, in which caterpillars have both. A little consideration, however, will explain this. In small caterpillars these oblique lines would be useless, because they must have some relation, not only in colour, but in their distances apart, to the ribs of the leaves. Hence, while there are a great many species which have longitudinal lines when young, and diagonal ones when they are older and larger, they are not, I believe, a single one of which begins with diagonal lines and then replaces them with longitudinal ones. You will also observe that the longitudinal lines still remain in our caterpillar on those segments which have no diagonal ones. This also often occurs, and it is striking where the lines are marked. This is also an advantage, because white lines crossing one another at such an angle have no relation to anything which occurs in plants, and would make the creature more conspicuous. It is an advantage, therefore, that when the diagonal lines are developed, the longitudinal ones should disappear. There is one other point in connection with these diagonal lines to which I must call your attention. In our species they are white, but in some cases, as for instance in the beautiful green caterpillar of the Privet hawk-moth, the white streak is accompanied by a coloured one—in that case blue. At first we might think that this would be a disadvantage, as tending to make the caterpillar more conspicuous; and in fact if we put one in full view over, for instance, on a table, the coloured lines are very striking. But we must remember that the habit of the insect is to sit on the inside of the leaf, generally in the middle, and in such a position as to form a situation the coloured lines beautifully simulate a line of soft shadow, such as must always accompany a strong rib, and I need not tell any artist that the shadows of yellowish green would be purplish. Larger over any one who has ever found one of these large

caterpillars will, I am sure, agree with me that it is surprising, when we consider their size and conspicuous colouring, how difficult they are to see.

The next point is the colour of the mature caterpillars. We have seen that some are green and others brown; and the green ones are obviously merely those which have retained their original colour. *Sir J. Lubbock*, in the *Journal of Arts & Crafts*.

(To be continued.)

CLIMATE AND PRODUCTIONS OF TURKISTAN.

M. A. REGEL, son of Dr. Regel, Director of the St. Petersburg Botanic Garden, is travelling in Turkistan, where he will make a stay of some years to investigate the flora. Already Dr. Regel has published many of the novelties sent home by his son, and he expects a rich harvest in the future. The following notes we have extracted from a narrative of considerable length in the *Gartenflora* for January—
Taschkend is a town of the extent of St. Petersburg, consisting entirely of one-storied houses surrounded by gardens. Nearly all the streets in the Russian part are planted with Poplars and Willows, and parallel to the pavements are ditches of running water, by means of which the gardens are irrigated, without which no crops can be raised. The heat in the summer months rarely descends below 85° Fahr., even during the night, and for six months very little rain falls. In winter the temperature is sometimes as low as 10° Fahr., but the spring is so warm that the first Grapes are ripe in June, and the first Apples by the end of May. Beyond the town, where artificial irrigation cannot be effected, the country has a burnt and desolate aspect.

From Taschkend to Verneje the traveller traversed nearly a thousand miles, and he has some 250 miles further to go to reach Kalcha, his destination, where he will stay some years. The results of his journey so far include many very interesting new plants, and he has sent seeds of upwards of 400 species to St. Petersburg, and the collection of dried plants is much richer. The number of bulbous plants secured is also large: the pretty *Lycoris Sewerzowii* is one of them. A peculiarity of the flora of the highlands of Turkistan is the total absence of Ericaceæ. On the other hand, it appears to be the native country of many of our old garden plants. Thus *Rosa gallica*, the precursor of *R. centifolia* and of *R. alba*, from which the hardy double white *Roses* of our gardens have descended; *Eremurus robustus*, Kaufmanni, Olge, Korolkow, &c.; *Tulipa Greigi*, *Fritillaria pallidiflora*, *Solida sogdiana*, are other gains of this expedition. The flora is particularly rich in bulbous plants and the salt-loving plants of the Chenopodiaceæ. Of *Allium* seventy species are known to occur in Turkistan, of *Gagea* fourteen, *Eremurus* ten, *Tulip* eleven, including five mostly very showy new species; *Fritillaria* four, &c. Only one species of *Lilium*, *L. Martagon*, is found, and that on north-eastern confines. *Rhinopetalum Karlinii* and *R. stenopetalum* are two interesting bulbous plants not yet introduced. A charmingly pretty new genus of Campanulaceæ, *Cylindrocarya Sewerzowii*, was collected at Karatan. Ten species of *Primula* are endemical, among them the lovely and variable *P. nivialis*. *P. Fedtschenkoi* rivals the finest species of the European Alps, and *P. Kaufmanniana* is likely to become one of the most favoured garden plants. *Kauffmanniana* is now an interesting new genus of *Primulaceæ*, with the habit of *Crocus Martialis*, and has yellow flowers. Finally, the beautiful and often magnificent species of *Astragalus* and *Oxytropis* may be counted by hundreds; and the *Salsola* tribe are represented by an incredible number of different forms, many of them exceedingly ornamental.

Florists' Flowers.

THE FANCY POLYANTHUS.—The determined set that so well-know a cultivator of the Auricula as the Rev. Mr. Horner has made against the introduction of self-alpines into competitions, shows how technically conservative it is possible for persons to become even in relation to so apparently progressive a vocation as that of gardening. It seems impossible to believe that the introduction of another section of a beautiful flower can in any way affect the status of recognised varieties, and one is at loss to perceive why self sowing Auriculas should not receive the same attention that has been bestowed upon their shaded brethren.

In this strict horticultural conservatism lies the danger for the fancy Polyanthus, for florists have hitherto only recognised the gold-laced section as exhibition flowers, and by the majority of at least the Northern school a "fancy" flower would be looked upon as decidedly heterodox. If the hard-and-fast lines of this school have not exterminated the gold-laced kinds, it is certain that really good forms are rarities, and that, further, these perfect flowers seem chiefly to be allied to growths of the most delicate kind, for propagation seems to kill rather than to increase. Well enough in their way, the gold-laced Polyanthus lacked size of pip, variety of colour and marking, and robustness of habit; but all these merits and more are found in the fancy variety, whilst in form and substance they are also, as compared with the gold-laced kinds, more than hold their own. Here, then, are offered at once the elements of a class of exhibition plants that are far more worthy the attention of florists than is the old show Polyanthus, whilst adding so greatly the charm of variety—for that appears to be endless. The committee of the new Auricula Society have admitted the Polyanthus to a place in their schedule for their show next April, but with two of the judges out of one three named men of the old school, and possibly full of prejudices for the old gold-laced forms, what sort of a chance will the fancy kinds possess at their hands? This is not a question as affecting that particular show, but is one that has a wide bearing, as these fancy kinds have been dispersed far and wide for show purposes, and, of course, the growers expect to find them duly recognised as show plants by judges. The fancy Polyanthus is so easily cultivated that it may well become a favoured flower for those myriads of amateur growers whose means are confined to a few rods of ground, and a few rods of ground. It does not require one tenth the attention and labour required by the Auricula, yet is so productive of beautiful kinds that even the Auricula may soon have to "pale its ineffectual fires" before its less pretentious compeer. For exhibition purposes the Polyanthus should be classed in gold-laced, self, and fancy sections, and then all kinds of good flowers would receive due encouragement. *Thurin Eye*.

Foreign Correspondence.

ATHENS: Feb. 14.—It is very pleasant to find the hills already covered with flowers, Anemones, Calendula, Arab. Arisarum, Crucis, &c., and as one looks at the white buildings, and the blue sea and sky, to find these little gems around one's feet. My object in coming here is to visit Mycenæ, and some of the large Asiatic tombs; it may not accord with the subjects in your paper to mention it, but I search for special Apples and Asphodel as I go along. It is curious that the Apple—rare in the Ionian Islands—is found about the mountain of Cressida in Coreyra, Corin—the place where Ulysses was received by Nausicaæ and her maidens, and where to this day an annual festival is held at midsummer, or, as a native described it, "When the Melons are ripe," apparently in honour of Pomona or Flora, and where the Pyrrhic dance is still kept up. The festival is now, however, much Christianised. The Greek priests of the little chapel are habited in robes covered with flowers; the chapel is situated at the foot of the little hill, which has been artificially levelled, and now forms a truncated cone, the summit of which is inhabited by a Sibyl-like old crone. Inside the chapel, and above the paintings of the flower-robed priests, who are represented life-size, and occupy what would in our old churches be called the roof screen, are two carved semi fish, semi-dragon like figures, each of which's base rests on a pedestal. The statues of the two are very similar in device to some of the dragons in Brittany, who are thought to swallow saints. The dragon is here evidently identified, as is so often the case, with the limpid fountain, which issues from the rock, and whose secluded waters are approached through a grove of unusually large and lofty Olive trees, whose matted and perforated trunks look like lacework against the sky. This feature in the trunk of the Olive is not seen at Athens, nor have I elsewhere seen it so marked as in Corin.

I have collected this letter till Feb. 18, the last day of the Carnival, outside of the Cathedral are being sold bundles of Narcissus. There are no other flowers for sale but this. *P.*

with four, five, and six large blossoms on a spike, and certainly not less than 900 blossoms altogether.

— We learn from the report of the ROYAL BOTANIC GARDEN, EDINBURGH, that the funds granted for the ordinary expenditure of the garden are only £1400, a sum very inadequate, and that for the bare support of the garden £200 more of annual income is required. Additions to the plants in the garden are only effected by voluntary contributions, and there is no Government allowance made for the payment of a Curator for the herbarium, library, and museum.

— A description of a portion of the rich collection of the late Dr. WELWITSCH'S Angolan herbarium was given by Mr. J. G. BAKER, of Kew, at the Linnean Society on March 1. The groups which this indefatigable worker has brought his knowledge to

— In some notes on the EFFECTS OF THE MILD WEATHER ON VEGETATION (*ante*, p. 177-8) we mentioned the ornamental foliage of some species of the genus *Ferula* so early in the year as the beginning of February. We very much feared that the sharp frosts of last week would have injured them and more or less destroyed their beauty, but it is worthy of note that they do not appear to have suffered in the least. It has long been known to those who admire beauty and elegance in leaves as well as brilliantly coloured flowers that the leaves of most species of *Ferula* appear in the middle of winter, or at the latest in early spring, in the climate of London; but it may not be so well known that they will bear a sudden change from very mild weather to 10° to 15° of frost with impunity. Certainly there is no class of herbaceous plants deserving of cultivation more for the imposing habit of

vegetables, flowers, and fruit, and that is an intense degree of cold during a usually long winter. If we get a continuous frost of from 15° to 20°, especially if accompanied by a sharp wind, it is as much as the boilers can do to perform the task allotted to them of keeping up the temperature of one or more houses, according to their area. But what must it be when the thermometer stands 50° below zero, and wood the only kind of fuel to be had? Such, according to a writer in the *Revue Horticole*, are the conditions under which the gardeners of Moscow manage to grow excellent Cucumbers, for instance, during the months of November, December, January, and February. Mild as we have had the weather, REAUMUR'S thermometer stood at 37° below zero at MOSCOW on Dec. 10 last, which is more than 50° below FAHRENHEIT'S zero, or 83° 5 of frost!—not far short

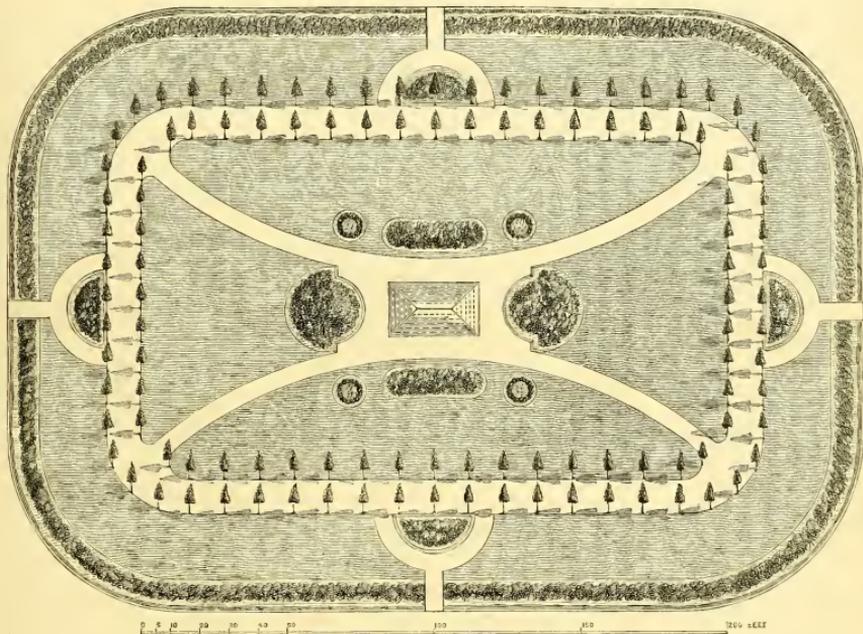


FIG. 52.—PLAN FOR TOWN SQUARE.

bear upon, are the Liliaceæ, Iridaceæ, Hypoxidaceæ, and Hamodraceæ. A very large number of entirely new species and two new genera of Liliaceæ are described. Notwithstanding this large accession of specific forms, Mr. BAKER believes they will not alter materially what is already known of the character of the Central African facies of vegetation.

— The Council of the ROYAL HORTICULTURAL SOCIETY having decided to receive provincial horticultural and floral societies into association with it upon an annual subscription of five guineas, they offer them the following privileges:—One silver Knightian Medal, one silver Banksian Medal, one bronze Knightian Medal, one bronze Banksian Medal, to be given as prizes at the shows of the provincial society; one members' ticket for the secretary, and twelve single tickets admitting the bearer to any meeting or show of the Royal Horticultural Society. Horticultural societies already in union will retain their present privileges.

growth and elegance of foliage than for the brilliancy or fragrance of their flowers that should be more strongly recommended than the *Ferulas*. As single specimens, when once properly established, they are exceedingly effective from early spring to midsummer, when their striking inflorescence is the signal for the beginning of the decay of the foliage. *F. communis* is one of the best; it makes fine clumps of foliage as finely cut as that of Fennel, and the candle-brush-like inflorescence reaches a height of 10 feet or more, according to the conditions under which it may be growing. *F. glauca*, *F. tingitana*, and *F. ferulago* are also handsome plants, quite distinct from each other in their general aspect.

— The Fourteenth Annual Exhibition of the LEEDS HORTICULTURAL SOCIETY will be held in the Horticultural Gardens, Hyde Park Road, Leeds, on June 27, 28, and 29.

— THE GARDENER AT MOSCOW has one great difficulty to contend against in supplying the table with

of the intense cold experienced by our latest Arctic explorers. Of course, in so rigorous a climate, few of the fruit trees that flourish with us can exist; but on the other hand the summers are more favourable than ours to the rapid growth and maturation of many plants. The writer alluded to treats more particularly of Cucumber forcing. The kind of house used for this purpose is a very low lean-to, with a slope of 20° to 25°, and from 12 to 15 feet wide, consisting almost entirely of wood and glass. The heating apparatus is a massive brick flue some 2 feet or 2 feet 3 inches in thickness on all sides, and wood is the only available fuel. In a house of this kind, 65 feet long, a skilful cultivator will raise from 4000 to 5000 Cucumbers per annum. But even then it is not a very remunerative industry, because wood becomes scarcer and dearer every year. These Cucumbers, the writer adds, must be at least 10 centimetres (about 4 inches) in length. Is this a misprint, or do they cultivate varieties of what we term the ridge type?

— We understand that the Hurlingham Club has made arrangements with the Messrs. JOHN WATERER & SONS, of Bagshot, Surrey, for an exhibition of Rhododendrons in the gardens at Hurlingham during the month of June next.

— The last part of COHN'S *Beitrag zur Biologie der Pflanzen* contains two additional articles on BACTERIA, one by COHN himself—relating more particularly to the development of the germs in various infusions, and the question of spontaneous generation, and the other by Dr. KOCH, on the etiology of the cattle distemper (*Adi-brand-krankheit*), founded upon the development of *Bacillus Anthracis*. With regard to spontaneous generation, COHN says that his investigations have removed the last support which the phenomena in connection with boiled infusions of hay gave to the hypothesis of spontaneous generation. In reference to the connection between these organisms and contagious diseases, KOCH'S researches, as far as they go, seem to prove that they are actually the medium in which the contagion is conveyed.

— It is well known that WALNUT TREES sometimes attain prodigious size and great age. An Italian architect mentions having seen at St. Nicholas, in Lorraine, a single plank of the wood of the Walnut, 25 feet wide, upon which the Emperor FREDERICK III. had given a sumptuous banquet. In the Baidar Valley, near Balacava, in the Crimea, stands a Walnut tree at least 1000 years old. It yields annually from 80,000 to 100,000 nuts, and belongs to five Tartar families, who share its produce equally.

— Mr. ISAAC DAVIES, Brook Lane Nursery, Omkirk, Litchfield, has arranged to exhibit his sweet-scented Rhododendrons, Azalea mollis, and other novelties, at the Winter Gardens, Southport, at about the end of the present month. We hear that the plants are now a mass of flower-buds, and will certainly be very interesting when in bloom.

— Dr. A. FAMINTZIN has published in detail in the *Bulletin de l'Académie des Sciences de St. Petersburg* his researches on the DEVELOPMENT of what he formerly termed the EMBRYONIC MEMBRANES OF PLANTS, but which he now proposes, in order to avoid ambiguity, calling the initial layers. He proposes to have treated the initial layers through every stage of development in several organs of a number of Leguminosae, and he finds that each of the initial layers into which the cellular substance of the embryo is differentiated in a very early stage of its existence is the foundation of, and develops only, its characteristic tissue. This being so, Dr. FAMINTZIN maintains that animal and vegetable embryos are perfectly identical in their mode of development. The paper is illustrated by eight quarto plates of anatomical details.

— The Grand Summer Rose Show of the LEICESTER AND LEICESTERSHIRE FLORAL AND HORTICULTURAL SOCIETY is fixed for Tuesday and Wednesday, the 3d and 4th of July.

— Dr. H. DINGLER describes (*Botanische Zeitung*, 1877, p. 74) a NEW SPECIES of LATHRÆA, *R. rhodopea*, a native of the dense shady Beech forests of Rhodope, in Thrace. It is intermediate in character between *L. squammaria* and *L. intermedium*, having the flowers and fruit of the one and the habit of the other.

— The other day the first number of a new "NATURAL HISTORY JOURNAL" was put into our hands, the scope and object of which entitle it to more than the passing notice of it given here. It is the production of the teachers and scholars of the Friends' schools scattered over various parts of the country, and is intended to encourage the study of natural history among the scholars from the youngest to the oldest, not merely for the sake of cultivating their powers of observation, but more especially for the ennobling and purifying influence it is believed to exercise on the development of the mind and disposition. Among other things it contains a list of wild flowers in bloom out-of-doors in various places, from Devon and Cornwall to Wigton and York, from December 20 to January 31, and also a list of garden plants in bloom during the same period. The former

includes seventy-one species, and the latter no fewer than 122. Judging from the part devoted to botany the journal is ably and carefully edited, and seems calculated to add to the number of distinguished botanists belonging to the "Society of Friends." Meteorology, ornithology, school reports, abstract of a lecture on carnivorous plants by A. W. EMMETT, &c., occupy the rest of this number. We wish it were possible to heartily recommend it for imitation in other educational institutions.

— The following prices were realised at the SALE of the collection of ORCHIDS formed by the late F. G. WILKINS, Esq., Leyton, which took place at Stevens' Rooms on March 1 and 2.—*Oncidium Lancanum*, 210*g.*; *O. ampliatum majus*, 241*g.* 6*d.*; two plants of *O. Phalenopsis*, in 12-inch pots, 58*g.* each; *Cattleya pigas*, 20*g.*; *Lelia elegans Turneri*, 320*g.* and 696*g.*; *Lelia* says Dawson, 210*g.*; *Odontoglossum vestitulum*, 882*g.*; *Aztec*; *Epidendrum vitellinum majus*, 253*g.* 6*d.*; *Odontoglossum Bliumii*, 200*g.*; 273*g.*, 294*g.*; *Oncidium macranthum*, 210*g.* and 325*g.* 6*d.*; *Dendrobium Warianum*, 252*g.* Total amount of sale, between £1300 and £1400.

— M. ROTHSCHILD, of Paris, is well known for his enterprise, not only in the publication of magnificent *ouvrages de luxe* like that on the parks and promenades of Paris, but also for the good service he has done in diffusing useful information by means of small low-priced but well-composed and well-illustrated books. Two such are now before us—*Les Ravageurs des Forêts et Les Ravageurs des Vergers et des Verges*, devoted especially to the insects injurious to forests, avenue and fruit trees and Vines. These little books are the work of M. H. DE LA BLANCHÈRE, and may be strongly commended to those who read French as excellent epitomes of the subjects on which they treat. With reference to the devastation caused by the Phylloxera in France, the author attributes the destruction indirectly to the practice of cultivating the Vineyard after year, for centuries perhaps, on the same soil.

— The usual monthly dinner of the HORTICULTURAL CLUB was well attended on Wednesday evening last, and the following new members were admitted:—Benjamin R. Cant, Colchester; William Lee, Brandenburgh Road, Gunnersbury; Charles Lee, Croxhey House, Hounslow; H. J. Elwes, Preston, Cirencester; James F. West, Lynechurch Lodge, Reigate; H. G. Quilter, Birmingham; and John Smith, Royal Gardens, Kew.

— Mr. BURRELL, in the course of an exhaustive paper on INDIAN TEA CULTURE before the Society of Arts, alluded to the splendid services of such men as SCOTT, WALLICH, JAMESON, FALCONER, ROYLE, and others, and made some remarks which illustrate the advantages of a progressive system of botany rather than a purely artificial one. Alluding to the discovery of the wild Tea plant in Nepal about 1816, and by other observers in other parts of India, such as Assam, Mr. BURRELL asks:—

"It naturally occurs to me to ask how came it that all the information was neglected? It all went before the authorities at Bengal, and reached England. Well, the answer is this:—At that time the Linnean system of botany was in the ascendant, its great author had made Tea a separate species, parting it from the Camellia, to which it was nearly allied. The great botanical authority at Calcutta, Dr. WALLICH—a Dane—was a pupil of that school, and whenever any of these Tea plants were submitted to him he decided they were Camellias, and not Tea plants at all, and took-pooched the possibility of any Tea being found wild."

It is only fair to add that subsequently no one was more zealous in the matter than Dr. WALLICH.

— One remarkable branch of HORTICULTURAL INDUSTRY is the extent to which plants of various kinds are grown for supplying those who publicly hawk them in the streets. The fine open weather has made the trade quite active, and Carnations, Hollyhocks, Polyanthuses, Daisies, Pansies, and many others are being bought up by the cottagers. Large breadths of these are grown in the neighbourhood of London, and being of inferior strains, are sold at a cheap rate. One London grower sends consignments of Carnations all the way to Newcastle-on-Tyne,

where the fine vigorous plants he cultivates find a ready sale. Everything is sold as of a double character—that is, Carnations, Hollyhocks, &c., in the habit of throwing double flowers; but whether the main bulk of the plants deserve this designation when they bloom is open to some doubt. But every year finds them being grown and sold by thousands, and it may be presumed, to the satisfaction of buyers.

— Several SPRING FLOWERING SHRUBS are coming into beauty at KEW. *Nuttallia cerasiformis* is one worth individual mention. It is of small size, and bears on erect branches a multitude of depressed racemes of white flowers in company with young leaves of the freshest green. It is a native of California, and though introduced long ago, does not seem common. A fine specimen may be seen near the Ferris, and another near the Temperate house. The fine example of *Prunus divaricata* near the new range is now in its finest condition.

— Mr. DANIELS, lately gardener to Lady FITZGERON, Mount Shannon, Limerick, has been appointed to the management of Fortham Park, Bury St. Edmunds; and Mr. PFYER, formerly gardener to Lord HASTINGS, Melton Constable, Norfolk, is appointed to the management of the gardens of Colonel PINNEY, Somerset, Ereligh, Taunton, Somersetshire.

— Mr. ANDREW MURRAY has addressed a letter to the Government on the desirability of adopting measures to exterminate INSECTS INJURIOUS TO AGRICULTURE. Mr. MURRAY'S letter was suggested by an article in the *Times*, which we here reproduce:—

"Our knowledge—that is, the knowledge of our men of science—is in a sufficiently advanced state to know what to do to check insect ravages. The life history of nearly all crop pests has been worked out. The time of egg-laying, the places selected for their deposition, the habits of the larva, the condition of the chrysalis, when there is one, the life of the fully-developed insect, are all known. The most effective way of destroying the insects, selecting either the egg, larva, or chrysalis state, are also known, and much of this has been known for years. It is to be hoped that this collection [the Collection of the life history of insects] will draw the direct attention to this question—'How is it that with so much knowledge we annually suffer such great losses?' The question has been asked in America, where in many States there is a State entomologist; and the answer has taken this form:—'The individual application of the knowledge of no good; it is necessary that attention be cleared of pests while surrounding properties still breed them. Combination is needed, and the interference of Congress can alone secure this.' Dr. LECOMTE, in his address before the American Association for the Advancement of Science, at the Detroit meeting, suggested that the importance of combination should be urged upon farmers, and that information as to probable benefits should be supplied to them. Bills have been introduced into Congress on the subject, but the report for 1867 of Mr. RILEY, which has just reached England, does not show more than that earnest attention is being given to the question. That Mr. MURRAY'S hopes do not end with the arrangement of his collection as a means of usefulness is foreshadowed by a paper on insect damage he read before the Royal Horticultural Society a year ago. He wishes to see some unified active steps taken for clearing the most districts at once of pests. If any action could by any means be secured, the work would be simple. A scientific inspection of a district would decide with regard to a particular pest the condition of development in which it would be on certain days. Instruction would be given as to the course to be adopted, and if this were simultaneously acted on throughout a district, the pest might be checked, if not entirely removed. It is sincerely to be hoped that either some society or the Department will take so important a matter up."

"The attempt is not new. It has been already tried on a greater or less scale in various ways, and with more or less success both in this country and on the Continent—the degree of success being almost invariably correspondent to the care taken and the extent of the district subjected to the experiment."

"General and simultaneous voluntary efforts have been tried in many countries by offering prizes for the destruction of insects at once of pests. In Sweden children in their search, &c., and where this has been done under the auspices of some central authority it has had good results. The difficulty, however, has usually been to get a central authority of sufficient weight and autho-

riety and extent of influence to charge itself with the task.

"I would humbly submit that some such permissive measure, conducted under the authority and direction of the Government, would be best suited to the requirements of this country. Compulsory legislation is probably premature, and at any rate could be more effectively demanded if the permissive action had been tried and failed. A central directing authority is absolutely essential: if the experiment is to be tried let us use our best means.

"I would suggest that next year the attempt should be made in two or three counties to begin with. Cheshire, Lancashire, and Derbyshire have suffered greatly for some years past from the Onion and Carrot flies. Let the diminution or extirpation of these flies in these counties be the first experiment. A trial to that extent would neither be troublesome nor costly, and it would to a certain extent serve as a test and guide for further proceedings. All that would be necessary would be the circulation in these counties through the clergymen, schoolmasters, municipal authorities, and local papers of an appeal urging every one to pull up and burn his infected plants (which are easily distinguished) on a particular day about a certain date, and to get the parochial authorities to take some trouble to see that this is done. Some brief lectures or explanations of what is wanted should also be given in as many parts of the counties as possible in a few weeks previously.

"Two or three years' perseverance in such a course should gradually diminish the numbers of the insects; and the process, if successful, should each year be extended to other insects and other counties until the whole kingdom is embraced.

"It may not be irrelevant to notice a rumour that the Colorado Potato Beetle has reached Europe in some places than one. In the event of that scourge finding its way into this country, it would surely be very convenient that some preparation for, or experience of the machinery suitable for, stamping out such pests should have been previously acquired."

—IN GARDEN ROOTS, as well as in those common to field culture, it is so much the fashion to appraise size at the expense of other qualities that it may not be out of place to draw further attention to the facts demonstrated in relation to the value of large roots by Professor ARMSTRONG, at the London Institution last week. The Professor said that roots were specially benefited by phosphatic manures as adding to them valuable nutritious constituents. It was well known that the largest roots contained proportionally the least nutritious matter—a fact of practical importance to the Potato sugar-refiners of Germany who paid duty on the roots they imported. This illustration might well be applied nearer home, where big roots are so highly and evidently so injudiciously favoured at our root exhibitions. If in a ton of Mangels of medium size there is more real nutriment or flesh-forming matter than there is in a ton of large roots, it is evident that the growth of large roots is a mistake and a waste of labour, equally if applied to such a popular article of human consumption as the Potato. We see evidenced the mistake made in cultivating kinds of great size, or rather in growing for tubers of great size. Primarily the Potato is an article of food, and its merits as such are not to be judged by the bulk eaten or grown, but by the amount of actual good found in the crop. Viewed in this light, and in accordance with Professor ARMSTRONG'S experience, it is more meritorious to raise a crop of medium-sized, thoroughly nutritious tubers than to produce a crop in which great size is attained at the expense of nutritious qualities. These things are worthy the attention of all root cultivators.

—There is at the present time a magnificent display of PHALLOSPIS in the Orchid-houses of Messrs. LOW, at Clapton; some idea of the extent of which may be gleaned from the statement that there are about 1000 spikes on the small plants, and each with from four to six flowers.

—Another case of POISONING BY LEAVES is recorded as having taken place at Coppock Hall, near Ipswich; twenty sheep had eaten some half-decayed Yew leaves, and of this number eight died. So often are cases of this kind occurring, that it is strange no better precautions are taken to keep cattle from such dangerous food. In this case the Yew branches had been used for church decoration at Christmas, and were not removed until just prior to the beginning of Lent. It may be worth the attention of churchwardens to inquire as to whether the continuance of

these decayed branches in places of worship for so long a period may not be detrimental to human life, as it is notorious that whilst much of certain kinds of leafage may be eaten almost with impunity by animals whilst fresh and green, yet it becomes most dangerous and comparatively poisonous when in a state of partial decay.

—At the last meeting of the Linnean Society Dr. MASTERS exhibited a very interesting series of "BUBES" AND BUD VARIATIONS on various trees, sent by Mr. WEBSTER, gardener to the Duke of RICHMOND and GORDON. These excrescences appear to be reducible to two main divisions—viz., those in which the precise modes of origin are not known, as in the so-called sports or bud variations, and those wherein the peculiarities arise from some injury to the terminal bud from frost, the attacks of insects, damage inflicted by birds, the agency of the wind, &c. In connection with the arrest of growth in the terminal bud is the increased development of lateral buds and a swollen condition of the main branch. In this way are formed the curious tufts and nest-like excrescences, as in

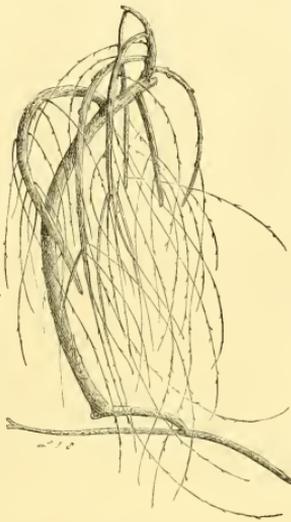


FIG. 53.—MONSTROUS GROWTH OF LABURNUM.

the Birch, wherein, as recently shown by Miss ORMEROD, the injury is due to a species of Phytomyza (see p. 249). Mr. WEBSTER'S specimens were numerous, and of a very interesting character, and have been deposited in the Kew Museum. The specimens exhibited showed outgrowths of this character in the Birch, wild Cherry, Poplar, &c. A branch of Scots Fir was shown bearing a tuft of shortened contracted shoots and densely clustered leaves, forming a condition analogous to that known as the Clabgrass Fir. Dr. MASTERS stated that he had seen in Switzerland a similar contracted form both as a sport and as a seedling. The Laburnum branch, of which we give a figure (fig. 53), was of very singular nature, the upper portion of the branch being thicker than the lower end, while the smaller branches curve downwards, as in the Weeping Ash.

—While the Royal Horticultural Society shows a tendency to waste what little strength it has in the attempt to conciliate the fashionable world of South Kensington, it is instructive to see what is done in Germany, in Belgium, and the United States, in the way of EDUCATING PRACTICAL HORTICULTURISTS. We have before us the reports of thirty-nine agricultural colleges in various of the United States, in almost all of

which instruction in the practice as well as in the principles of horticulture is given. The number of students is nearly 400, the prevalent idea being, that it is better "to educate a few thoroughly than many superficially." Model farms and experimental gardens are connected with most of these institutions, and special lines of inquiry and research are pursued in many of them. We cite as an illustration one extract from the report of the University of Minnesota, which ought to open our eyes as to the probable consequence of our own tardiness in these matters. The course of lectures for the present year embraces agricultural botany, horticulture, arboriculture, landscape gardening, and economic entomology. The following are some of the special topics discussed:—The botanical characters, properties, and peculiarities of the natural orders containing plants of interest to the farmer and horticulturist, with a special study of the most important individuals of these orders; the relations of heat, light, moisture, and food to plant growth, and the means of controlling their supply and intensity; plant-wooms and hotheds; soils and manures, and their manipulation; propagation of plants; grafting, budding, pruning and training; planting and transplanting; hybridising, crossing, and selecting; cultivation of the Apple, Pear, Plum, and other large fruits; cultivation of the Currant, Strawberry, Raspberry, Cranberry, and other small fruits; kitchen-gardening, market-gardening, and floriculture; seasons for planting forest trees; what trees to plant; methods of propagating; care in the nursery; special culture of each species; the different systems of landscape-gardening, and their applications; the principles of the art; desirable effects, and how to secure them; undesirable effects, and how to avoid them; a brief general view of the animal kingdom and the general characters of insects; characters and peculiarities of the families containing useful or injurious members, with a special study of the most important individuals of the families.

—The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, March 12, when the adjourned discussion on the paper read by Mr. J. LUCAS, at the last meeting, entitled "Hydrogeology: one of the developments of modern practical geology," will be resumed. The chair to be taken at 8 o'clock.

Home Correspondence.

—While All a Cure for Scale.—Many years ago I had under my charge, amongst others, a very large Ribston Pippin Apple tree on a wall facing the south, which somehow or other got so affected with scale that it ceased bearing fruit, and afterwards almost gave up producing foliage. At this time I was visited by an old gardener, who advised me to paint the tree all over with whale oil. I thought at the time the cure an extreme one; however, I had it painted about the middle of December, and waited patiently for the result, when, to my astonishment, by the following year the tree had much more healthy foliage than it had borne for several years previously. The second season the tree was covered with fine healthy foliage, and made shoots from 6 to 9 inches long, and there was not a trace of scale to be seen, and the tree afterwards continued to bear fine crops of fruit. Two years ago we received into our nursery 400 standard Apple trees from the South of England, which were literally covered with scale. On discovering this I had them planted in a quarter by themselves, and every one of them painted all over with the oil, as above, and I must confess they were a shining lot. However, this process cleared them wholly of scale, and the second season after the above dressing a healthier set of trees could hardly be found. Some months ago I received from a gentleman in this neighbourhood a few Camellias of a pretty large size, but not in very good health, and to my surprise I found them very much affected with scale. I confess I had my doubts about applying such a remedy to such plants, but at length I made up my mind to either kill or cure them, and I set a young man to paint the stems and branches all over, but he went further than I had bargained for, as he painted the foliage also, and I must say they placed in a gentle heat for about four weeks, and I find they are beginning to push out young wood as freely as the others, which gives me hopes that I have saved them from the scale without killing the plants. Should any one be tempted to try the above remedy, care must be taken that it is not any kind of mineral oil that is used. John Downie, West Coates, Edinburgh.

× Centropogon Lucyanus.—I can fully endorse all that your correspondent "L. S." writes as to the decorative qualities of this plant. It has been cultivated at Chiswick for some years, and a few well-grown specimens in 48 or 32-sized pots often grace the conservatory at South Kensington during the winter and spring. Still I believe it is really glorified by decorative florists generally, and I do not at the moment remember seeing it in any English trade list. That it really is a free-growing and reliable winter decorative plant when well grown (as I have seen it under Mr. A. F. Barr's care at Chiswick) there can be no doubt whatever. An excellent coloured figure is given in the *Revue Horticole* for 1868, pl. 291, together with a description by M. Houlet, whence I learn that, as stated in your last issue, the plant was obtained or raised by M. de la Roche, a nurseryman at Marseilles, the seeds being borne by a plant of Centropogon fastuosus, Decne, fertilised with pollen from Siphocampylus betulifolius, D. C., and that the name Lucyanus was given as a compliment to M. Lacy, some time President of the Marseilles Horticultural Society. It was sent out in 1857-8 by M. Geoffre, a nurseryman of the last-named city. I think the plant is a hybrid, and if so, doubtless this production, or other experiments in the same direction, must lead to Centropogon and Siphocampylus being merged together, as has been done already in the case of Libonia and Sericographis by Hooker and Benth in the *Genera Plantarum*, and in other botanical grounds in the nomenclature of the hybrid Sericobonia agnes, Linden and Andrieux (*Illustration Hort.*, 1875, pl. 30 and 64, Libonia penthosensis, Hort. Bull.), I cannot say. The last-named hybrid was raised between Libonia floribunda and Sericographis Giesbreghtiana 20 years ago. By I believe, Mr. H. Rowland, at Penrhos Castle, North Wales. To return to the × Centropogon, however, I may say that I am just a little sceptical as to its hybrid origin, my only reason, however, being the same as that which I give in the *Botanical Magazine*, tab. 225 (Curtis, 1793), which so nearly resembles × Centropogon Lucyanus in flower and foliage as well as season of blooming, that if it is really the same plant, it is a very singular case, wherein a hybrid closely resembles a natural species, that is, a plant imported as such direct from its native habitat. It is possible that this old Libonia surinamensis may have been one of the parents since I do not happen to know of any Libonia in the Continental nurseries as Centropogon fastuosus; and at any rate there are not many of the external characters of the Siphocampylus parent—albeit that it was the male—visible in the supposed hybrid offspring. I have not yet returned to the name of the Libonia parent, *Revue Horticole*, 1853, 10, nor yet to the figures of Centropogon (Libonia) surinamensis (Presl) in *Paxton's Magazine*, vol. xiii., p. 149; and *Annales de Gand*, 1846, p. 96, but shall do the first opportunity, as you may clear up the doubt pointed out above. >

The Lindley Library.—The value of the Lindley Library is much impaired through the want of access to it on the days of committee meetings of the Royal Horticultural Society. Could no arrangement be made that, on these days above all others, when nurserymen and gardeners are congregated, and would often be glad to avail themselves of the privilege, the library should be available the whole day? Frequently have I endeavoured to make use of the books, as these are the principal opportunities I have of getting to South Kensington. I have made an effort to look up the question of the Christmas Roses, but was shut out by the various meetings held in the library room. A valuable collection of books which is represented in the Lindley Library might be made available in connection with the Royal Horticultural Society, and might be kept in a room where reference might be made at all times, without the expense of a permanent librarian, by including the office of the Society and the library in one room. There appear to be plenty of good apartments at South Kensington at present. *P. Barr.* [This matter rests with the Council of the Society. The Trustees are most desirous that every facility should be given to use the library, but both Trustees and Council labour under the disease of impempenity. Eds.]

The Provincial Shows and Fund of the Royal Horticultural Society.—There have been various references, by Mr. Wilson and others, to the personal or collective risk incurred by the Council in starting these shows. There must be some misunderstanding in relation to this matter, for the Council incurred no risk whatever. When there was a risk of loss, or great responsibility, the Council declined holding the show. The important facts that the Council sent down Mr. Eyles to reconnoitre the ground and confer with the town authorities of Ipswich on the prospects of success, and that these were so problematic as to involve much risk,

and that the idea of holding the show was given up by the Council in consequence, seem to be wholly ignored. It was not until the refusal of the Council of the Royal Horticultural Society to hold the show was announced, and the enterprise was so far discredited and local enthusiasm—what little there was—quenched, that the great work of organizing the Royal Agricultural Show—had begun to be aroused in favour of a local horticultural show in connection with the Bury society, that I took the matter up, and undertook four things—to ensure a good show, a nice site and good special prizes, to secure a good site, and a guarantee against all loss up to £500. The Society accepted these terms, and as it also took the money for admission, your readers will see that it ran no risk whatever. So real, however, did the risk appear to be, that I worked for some time on a fund till it reached £1200, in order that should it all have been to pay—and every word of it would have been forthcoming if wanted—those who had kindly trusted me so generously for a public object could not have had to pay more than the value of the pound. It was not until all those objects were secured that a local committee was formed, and the Society agreed to visit Bury. Though there was the rival attraction of the Royal Agricultural Society, and the fact that the weather was so good on the day, the Society's share of the profits reached £200, which was, I believe, invested in a new glasshouse for horticultural purposes at South Kensington. From Bury to Manchester we went with high hopes, but that the blundering of the Council had created local support, and the grand show was held in an out-of-the-way place, and neglected. Almost equal misfortune followed the Royal Horticultural Society in their place; but it had a triumph at Bath, and saved the £1200. That the Council should have thought, might have kept it on the road for years. But no; the money was absorbed or frittered away, and for some years past the Society has been going on in the country, and not going on, never could understand why the guarantee principle was given up. It was simple, safe, and an equal share of risk and profit excited alike metropolitan and local zeal, interest, and enthusiasm; and that, with a handling of the profits for special expenses, it would have gone to the benefit of the exhibitors and revive the waning credit of the Society. I had hoped to the last for its resuscitation, but recent events seem to show that the union of horticulturalists in the country is not of the Kensingtonian dough of demagogues, but better than a rope of sand and conflicting interests. *D. T. Fish.*

Saxifraga hypnoides.—Lovers of carpet bedding will find in *Saxifraga hypnoides* a very useful subject in the flower garden. It may be used either for designs of carpet bedding, scroll beds, or ground cover of succulent beds. I planted five succulent beds last summer, and the groundwork consisted of the above and *Mesembryanthemum cordifolium*, and the effect was very pleasing. It will also be found as a useful winter bedding, as in the case of *S. sp.* as it perfects its growth in the autumn, and I think when it cannot fail to be more largely used for the purposes mentioned. *J. Clarke, The Gardens, Melton Constable, East Dereham, Norfolk.*

Cheap, Simple, and Efficacious Guard for Fruit.—Under the caption of carrying, or on the top of the wall, holdfasts projecting from 5 to 7 inches, with hook or eye in the end, one at each outside of the tree, one in the centre, which may project an inch beyond all the others. Prepare a curtain for each side of the tree, and fix it to the rod to the wall. Provide rings down the side of the curtain, with strings, and tie them close to the wall or to the adjoining string. The bottom rod should be fixed on posts 6 inches from the ground, 1 foot to 1 foot apart from the wall, the centre post, or rather further from the wall than the outside one. Five minutes will cover or uncover an indefinite number of trees, untying the sides, passing the curtain to the centre, and tying all together. I have used Frigi Domo or coarse half-wool netting, which I obtained at E. T. Archer's; the netting I do not see advertised this year. These I have used on alternate trees, Frigi Domo on the earliest. Netting has one advantage, it does not require daily uncovering, and is a shelter against occasional storms. *R. B.*

The Organ Plant.—Penrynol in Devonshire is known by the name of "Organs," or "Organ herb." It is, or was, very generally used there by the cottagers as a substitute for tea, and is considered by them to contain valuable medicinal properties. In some cases it has been used as a diuretic, and has been used, and believed to perform wonders with those

who have in a great measure to doctor themselves. The "Organ herb" is used externally as a discutient, and is taken internally with great benefit in asthma, hysteria, and chronic catarrh. Scarcely a cottage could be found in North Devon without a bed of "Organ" in the garden thereunto belonging. I do not believe that there is a concentration of "Organ" in any one soil, but it is cultivated in the garden of Marjoram, but solely applied to Penrynol. *John Col McAvail.*

Persian Melons.—Some years ago we received here fifteen varieties of Melon from Kabisar; some of them answered to the names given at p. 270. They were all tried, and the best was one we bore the name of Cocoa-nut, a good Melon to keep after ripening. The next best was a small yellow smooth-skinned fruit, the chief merit of which was its earliness and the easy way of eating it, as it is fit for use for March or April, and will keep for some time. They all proved difficult to keep, but a number of them were large and most handsome in appearance, but had no flavour, which I have often since considered was our fault. These large Melons are strong and gross in growth, and require a house like a vine in fully developed and mature them. In the same manner we used the growth was stunted and pinched; and under the circumstances it is hardly possible they could have been otherwise than watery. *F. F. Clivedon, Maidenhead.*

The National Rose Show.—Will you permit me to say, with reference to your notice of the various events which are announced to come off on July 4, that, with the exception of the committee meetings of the Royal Horticultural Society, I believe I am correct in saying that the Rose Show was never before the others. We do not think that a more fashionable promenade, such as the Botanic *file*, can possibly interfere with us; but we should be exceedingly sorry if the Gardeners' Benevolent Institution were in any way to be hindered. The object of the Rose Show institution (not knowing that the Rose exhibitors contemplated a dinner) thought it would be a good plan to have both on the same day, and now it seems almost impossible to alter. We endeavoured to change our day to the 29th, but we could not get the hat for that day—and I believe Mr. Cutler is in a like difficulty with respect to the "Allison." We must therefore only hope that in this huge metropolis there will be found enough to patronise all. *The Hon. Sec., Victoria Park, London.* [Why not lunch with the Roses and dine with benevolence? Eds.]

Lunar Influence on the Felling of Timber.—The inhabitants of Cuba are, according to Mr. Smith's note, quite at variance on this point with English, French, and Germans, who say that trees ought to be cut out in the moon's light. I have seen a notice from France did, and I believe still do, interdict the felling of timber during the increase of the moon. The same idea is acted on in Brazil—a well-known agriculturist, Signor Francisco Pinto, having affirmed that he had cut out the trees in the moon's light, in his own knowledge (derived from experiments made) be full of worms, and soon decay. The ascending force of the sap is said to be greatest during the increase of the moon, therefore the vessels are more spongy and liable to the attacks of worms, more prone to split and warp, being more difficult to season; but recent experiments have proved that timber cut in different parts of the lunar month possesses exactly the same qualities, provided the soil on which it grew and the age of the trees be the same. *Allen E. Watson, List, Hants.*

Does the moon influence the flow of sap? Yes; sometimes. In what way? By means of the tides. Above thirty years ago we, the members of the Victoria Association, settled the above questions to our satisfaction in a particular manner.—The first question having come before us, the great majority of those present treated the subject with complete scepticism, some even with ridicule; but two or three members strenuously held out in defence of the moon's influence. The latter were persons living within the basin of the Thames, consequently within the influence of tidal waters. Among other arguments they told us the market gardeners in their own neighbourhoods were all acted on their own belief. On the other hand, all those who were against the doctrine were residing within the basin of the Ravensbourne, the waters of which are not tidal. It was then agreed that we should make further inquiries in the neighbourhood of Deptford, Rotherhithe, &c. We thus found they held a very general belief in the moon's influence on vegetation, and we concluded at the next meeting that this influence was not direct, but secondary, through the flow of the tides. The market gardeners' plots were covered with bricks and mortar; what influence the moon has on them at present I know not, but by no means advise the sale of house property in some parts of the neighbourhood to be fixed to come off at a late period of a spring tide. *John Hall, Turner Road, &c.*

The Weather.—Abundance of snow and slight frost here, *St. Feknon, Royal Botanic Garden, Belfast, Feb. 27.*

—Last night we had 13° of frost, and the ground all around North Staffordshire is covered with snow. We hope to get ice to-morrow. I find *Roses, Clematis*, &c., are cut with frost last night, and bright sun to-day. Fruit trees are not forward enough to get injured. We have a fine show for Apricots under glass again, and most fruit trees look promising. *W. Hill, Kells Hall, Newcastle, Feb. 28.*

—We have a heavy snow to keep, as of the land, and a temperature of from 14° to 17° below freezing at night, but I do not think vegetation is forward enough here to receive any injury, perhaps the reverse. *W. W. Lawrence, Newcastle Abbey, Nottingham, Feb. 28.*

—On February 25 and March 1 the thermometer registered here 12° and 14° of frost respectively. A heavy fall of snow on February 26 covered the ground to the depth of 6 inches, and the plants preserved some early vegetables and seeds just vegetating. Although January and February have been such mild months, the soil has been so cold and soddened with water that vegetation is not so far advanced at this date as might be expected. The *Primroses*, *Jonquills*, and *Nectarine* flower-buds are far advanced, but being well protected on glass-cased walls are safe. Some *Prunus* and bush *Pears* on the Quince stock are, however, I am afraid, much injured in the flower-buds, and will be lost to the season. The *Apple*, *Quince*, and *Nectarine* flower-buds are likewise all blackened and destroyed, as well as some of the earliest *Gosberries* nearly in leaf. The ice-bombs here were felled on March 1, the latest date I ever recorded in this time for a late frost. The ground on March 2, and the weather since has been mild and wet. *William Tillyer.*

Saxifraga Burseriana.—This beautiful little alpine is again in full flower, and has been so for some weeks past. Its neat habit, forming as it does compact hillocks composed of small rosettes of greyish leaves, makes this species specially adapted for cultivation in pots. The flowers are pure white, borne on slender scarlet stems 1 to 1½ inches high. Messrs. Backhouse & Son, of York, have a large quantity of this lovely little plant. I took the trouble to measure one specimen and to count its flowers—the little tuft was only 3½ inches in diameter, on which was produced sixty flowers. *R. P.*

Fruit Prospects.—Judging from present appearances, fruit trees of all kinds promise an abundant show this season. Apricots, as yet only partially in flower, are very fine, and perfect in the formation of the fruit. The *Plum* and *Nectarine* trees, which are now in leaf, have a fine crop of buds, but will not be in flower for a fortnight. The present cold winds will be beneficial in retarding the early flowering kinds of fruit trees generally, which, owing to the extremely mild winter, are on warm soils somewhat more forward than is desirable with a probability of late spring frosts. There is, however, one advantage, that the wood having been so well ripened last season, as a natural consequence the seasons will be more vigorous and better able to bear severe weather than when the wood is imperfectly matured. And with favourable weather we may anticipate a heavy fruit crop this season. *W. Cox, Madresfield Court.*

Lobelia Emperor William.—At p. 215 Mr. Davidson speaks in favour of a variety of *Lobelia* called *Emperor William*, ever since which I can fully endorse, inasmuch that I can unhesitatingly recommend it to every one who may require a first-class *Lobelia* in preference to any I have ever seen. As its origin is British, it is quite correct, it being raised here by a friend of mine, Mr. Crowninshield, a gardener to J. Aspinall, Esq., who finding it to be an acquisition soon worked up a large stock of it, and his good nature induced him to distribute some cuttings to his neighbours. One of these friends, under the name of *Emperor William*. In the meantime Mr. Bester, late manager of the Pine-apple Nursery Co., happened to call upon him, and was so struck with its effectiveness as a border, that he offered to take the entire stock, but when ignorant of the fact that it had been distributed in the neighbourhood or not, I am unable to say, at any rate the remaining stock passed into his hands, after which it was advertised for sale by him, in the *Gardener's Chronicle*, under the name of *L. pumila magnifica*, at 1s. each, and described as the finest of all blue *Lobelias* (see No. 83, vol. iv). Any one, therefore, possessing *L. pumila magnifica* (true) has the variety Mr. Davidson so justly describes as the best he has ever seen. *E. Morgan, The Dells, Harrow-on-the-Hill.*

The Season.—In reference to the unusual forwardness of the season, allow me to mention that on

February 25 I picked two stalks of sweet-wetted long-jointed bloom in my garden here, and several more have come into flower since. Almost trees were seen in blossom here on February 10, and on the 20th I saw a standard *Plum* tree in full bloom. A gentleman who had resided here for thirty-two years never remembers anything approaching to the precocity of this season here. He informs me that the cuckoo has been heard in the Isle of Man before the expiration of last month. *Mary E. Hume Rothery, Merton Lodge, Twivel, Cheltenham.*

Garden Walks.—I hear in mind an inquiry in a late issue of *The Chronicle* from a correspondent to your readers, as to the best way of making garden walks. He will have seen, subsequently, abundant instruction on this art, with suggestions of a great variety of materials. I can very strongly recommend to your correspondent the siliceous gravel beds in the neighbourhood of Reading, after more than thirty years' experience in a carriage drive and garden walks. The former was laid out as soon as the Great Western Railway was opened to this town. My grounds lie immediately on the great colliery, which affords a natural drainage; the broken stone of the district for a depth of 5 or 6 inches formed a sufficient foundation for the gravel. This varies much in size, from flints to fine yellowish or white sand-grains. The coarser may be readily separated for a carriage-drive, and the residue used for garden walks. My carriage-drive was carefully formed with a gentle fall from the centre to either side, with a coat of the gravel about 6 inches in depth over the foundation of stone before-mentioned. This being the regular road for the turnpike road to the house and offices, has necessarily been in use occasionally for the heavy carriage of coals, manures, hay, straw, &c., and cartage for various purposes, so that considerable portion of the drive has not required any repairs or additions during the period I have mentioned. Some addition of gravel has been made in some places where it was found the centre had been laid too flat; but I think it may safely say that has not exceeded a truck-load of the gravel. The walks were formed for the most part of the same gravel passed through a coarse screen, and have been equally successful in point of wear and colour. The cost of this gravel at Reading is 6s. a ton placed on a truck on the railway. The distance from Reading is a material point as respects expense—this brings the cost to this place to about 6s. a ton in addition. The distance from Reading to Cirencester is, I believe, about 60 miles by the road. I visited the gravel firm which now supplies the gravel is Messrs. Brinkworth, contractors, Reading, *Charles Lawrence, The Querns, Cirencester.*

Reports of Societies.

Royal Horticultural.—*March 7.*—At the general meeting held on this occasion, the Treasurer, H. Webb, Esq., in the chair, some formal business only was transacted. The committee meetings, as on the last occasion, were held in the large conservatory, and though the weather was very cold and winterly, the contributions of choice plants were both numerous and good, and another bright and cheerful little show was the result.

SCIENTIFIC COMMITTEE.—Dr. Hooker, C.B., Pres. R.S., in the chair.

Divided Barley.—A letter was read from Rev. Mr. J. Berkeley, relating to the samples of Barley referred to him in a previous communication. Mr. Berkeley confirmed Dr. Masters' opinion as to the absence of fungus, except that in some cases there was a trace of the ubiquitous *Cladosporium herbarum*, but that had nothing to do with the blue colour of the grain.

Munsey Wheat.—A letter was read from Mr. E. Falkner on this subject—a subject generally discredited by the committee.

Colts Disease.—A letter, accompanied by specimens, was read on the table from Mr. W. Saunders, and the matter was referred to Mr. Berkeley.

Prunus cerasifera.—Dr. Hooker showed flowering branches of the beautiful *Plum* now in full bloom at Kew, near the Succulent-house. Dr. Hooker remarked that it has never bore fruit, although there was a quantity of pollen.

Plants Exhibited.—Mr. Green exhibited flowers of *Malva coccinea* and *Æchmea glomerata* from the gardens of Sir George Macleay, Colonel Trevor Clarke, Rev. H. Harpur-Crewe, and Mr. Elwes showed numerous other bulbous plants in flower, and commented on their condition.

Action of Pollen on Seed.—In reference to this matter, which occupied the attention of the committee on the last occasion, Colonel Clarke made the following statement:

—At the last meeting of this committee, when I brought before you an example of the direct influence of foreign pollen upon the seeds of Peas, I remarked that

Mr. Laxton had not observed any case of this kind. I found, however, subsequently that very valuable and interesting paper of this gentleman's, which I had not before seen, facts of this kind had been accurately noted and described by him. My attention was directed to a letter of Mr. Laxton to the Scientific Committee, in which he certainly seemed to give his decided opinion that the colour of the seed was not directly affected. I desire to make his statement generally known, and to hope that it would be to detract in any way from Mr. Laxton's very valuable investigations of the subject."

Crocus.—Colonel Clarke further stated that—

"The pale blue *Crocus* exhibited by me is one which I have had for many years as *velutichinus*. I received it from the gardener of the Earl of Devonshire, and it is one of Herbert's collection. I have been inclined to believe, however, latterly, that it is true *Crocus* *leucanthus*, and in fact the long-lost and remarkable *C. verus leucanthus* of Sabine's Catalogue, which is a *leucanthus* (basal spathe of Baker), and seems to conform generally with *verus* proper. A bunch of three or four varieties, scarcely distinguishable generally, except that each of *Crocus lagenaeformis*, Herbert. One, however, has indications of lineation at the base of the flower outside, thus approaching the old garden form called by Ker *mosaicus*."

FLORAL COMMITTEE.—H. Little, Esq., in the chair. First-class Certificates were awarded to Messrs. Veitch & Sons for the fine varieties *Crataegus* shown by them at the last meeting, and figured at p. 277 in our last issue; for *Denndastia davallioides* *Voungii*, for *Osmunda palustris*, an evergreen Brazilian plant, with the aspect of *O. spectabilis*, and for *Rhododendron Taylori*, a valuable early flowering variety, raised by them at the last meeting, and figured by the descendants of a cross between *Rhododendron jasminiflorum* and *R. javanicum*; the colour is a deep pink shaded with carmine. To Mr. B. S. Williams for a hybrid *Azalea*, raised by Mr. Carmichael, a variety of the amona type, but having larger flowers of a dark rosy purple colour; a useful decorative plant. To Sir Trevor Lawrence, Bart., M.P., Burford Lodge, Dorset (Mr. Spyers, gr.), for a distinct and well marked variety of *Androsymbium crataegifolium* *Barbartenianum*. To Mr. John Wills, South Kensington, for *X Dracena terminalis* alba, a very distinct and well marked white variegated hybrid between *D. nigrescens* and *D. regina*—one of the valuable set of seedlings raised by Mr. Banté and fully described in our vol. iv., 1874, p. 615. To Mr. Turner, Slough, for *Tree Carnations* *Guelder Rose*, a very fine full white, and *Rose Perfection*, a large, full, bright rose-coloured, and deliciously scented flower; and to W. Turner, Slough, for *Tree Carnations* *White*, a very fine flower for *Cinerarias* *Mary* and *Thomas Winter*—the former a charming flower of a clear bright rose colour, of great substance, and exquisite form, and the latter a little larger, of a pucey purple shade of colour, and great form. These two varieties were also well marked remarkable group of seedlings, a decided advance on anything seen before, and which gained from the committee a very high commendation for the strain. The demands on our space to-day forbid our giving other than a few words of notice to the objects which were acknowledged by the committee by the awards of medals, &c. To His Grace the Duke of Westminster, Eaton Hall, Chester (Mr. Selwood, gr.), the committee awarded a silver gilt medal for a magnificent example of *Dendrobium Fierardi*. It had twenty-two well-cloned spikes of flowers, averaging about 3 feet in length, the total number of fully developed blossoms being 1124—an example of culture seldom highly creditable to the grower. A silver gilt medal was also voted to Messrs. James Veitch & Sons for a miscellaneous group of plants, which included a charming collection of *Orchids*, numerous examples of a good strain of *Cyclamen persicum*, and a showy collection of hybrid *Campanulas*. Small silver medals were awarded to Mr. W. H. Turner, Cholmeley Park, Highgate (Mr. Newman, gr.), and Sir Henry Peck, M.P., Wimbledon House (Mr. Ollerhead, gr.), for admirable groups of *Orchids*, the examples of *Phalaenopsis Schilleriana* from the first-named gentleman being specially attractive. Small silver medals were also awarded to Messrs. William Paul & Son, Waltham Cross, for a remarkably fine display of cut blooms of *Camellias*, consisting of a dozen boxes of fine blooms, and to Messrs. Turner, Slough, for a fine group of white *Camellias* and standard *Aucubas*, finely berried. Votes of thanks were accorded to Mr. B. S. Williams and Mr. John Wills for admirable groups of miscellaneous flowering and fine foliage plants, and to Mr. Turner for the last-named exhibitor including bright and well-grown medium-sized specimens of several of his new *Dracenas*; to W. Terry, Esq., Peterborough House, Fulham (Mr. Roberts, gr.), for a small but select group of *Orchids*; and to Mr. Ollerhead for an attractive display of hairy *Primroses*, *Polyanthuses*, *Trimulias*, and *Hepaticas*; to J. L. Tyerman, Esq., Preydon, Cornwall, for cut specimens of some fine hairy flowers, principally *Narcissus*, and to Sir George Macleay, Kew, for a fine group of cut flowers of *Æchmea glomerata* and *Malva coccinea*. Messrs. Paul & Son, The Old Nurseries,

Cheshunt, exhibited flowering plants of the valuable, old, but sadly neglected Fortune's Yellow Rose, and the "striped" variety of which we have heard so much but seen so little, named Beauty of Glazewood, and drew attention to the approximate identity of the two plants. The committee have examined the plants in different stages of growth and bloom, resolved, on the proposition of Mr. C. Noble, seconded by Mr. C. Turner, "that in the opinion of this committee the Rose known as Fortune's Yellow and Beauty of Glazewood are identical." The old Fortune's Yellow, generally, is of a bright orange colour, and occasionally it is seen of the buff tint, as shown to-day, and sometimes, too, it has a tendency to come faintly striped, but it is no excuse for its being sent out as a novelty. The best example we can call to mind of the bright orange form was the remarkable plant which occupied the roof of the old ridge-and-furrow Faxon-house at Chiswick, that was pulled down a few years ago to make room for the orchard-house.

FRUIT COMMITTEE.—H. Webb, Esq., in the chair. The only subjects that came under the notice of this body was a fine dish of Garibaldi Strawberries, from Mr. Edward Bennett, Rabley Nursery, Barnet; and examples of St. Michael and Maltese Blood Oranges, grown by Messrs. T. Rivers & Sons, Sawbridgeworth, to both of which valuable commendations were awarded. A letter received from Mr. D. P. Bell, with reference to the cancelling of the name of Clive House Seedling, as applied by him to a Grape which the committee had certificated, was read, and it was resolved to cancel with the certificate the name of Alnwick Seedling.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, MARCH 7, 1877.

MONTH AND DAY.	BAROMETER.	TEMPERATURE OF THE AIR.		WIND.	RAINFALL.
		Thermometer from 6 a.m. to 6 p.m.	Thermometer from 6 p.m. to 6 a.m.		
Mar. 1	30.0	48	38	W	0.0
2	30.2	+3.0	54	W.S.W.	0.10
3	30.1	+0.5	53	W	0.0
4	29.6	-1.0	45	W	0.34
5	29.7	-0.1	43	N.W.	0.0
6	29.5	-0.8	37	N.W.	0.0
7	29.3	-0.6	41	N.W.	0.3
Mean	29.77	-0.4	43.5		0.15

March 1.—Fine, but cloudy and cold day. Misty. Hoar frost in morning. Mild. Rain fell in evening.

2.—A dull cloudy day. Mild. Rain fell in morning.

3.—A very dull day. Mild. Frequent thin rain.

4.—Overcast. Frequent dull and drab showers. Extremely dull in morning. Gale necessary.

5.—A fine but not a very bright day. Cool.

6.—A very dull cloudy day. Cool.

7.—A dull, cloudy day, but fine at intervals. Frequent showers of hail and snow. Rain at night.

LONDON: Barometer.—During the week ending Saturday, March 3, in the vicinity of London, the reading of the barometer at the level of the sea decreased from 29.56 inches at the beginning of the week to 29.14 inches by the early morning of February 26, increased to 30.39 inches by the morning of March 1, and decreased to 30.06 inches by the end of the week. The mean reading for the week at sea level was 29.96 inches, being 17 inch above that of last week, and 0.05 inch below the average.

Temperature.—The highest temperatures of the air observed by day ranged from 55° on the 25th of February to 40° on the 28th; the mean for the week was 47°. The lowest temperatures of the air observed by night varied from 22° on March 1 to 44° on February 25; the mean for the week was 32°. The mean daily range of temperature in the week was 14°, the greatest in the week was 17° on March 2, and the least 10°, on February 25 and March 3.

The mean daily temperatures of the air and the departures from their respective averages were:—February 25, 48°-9; 26, 44°-4; 27, 46, 44°-3; 27th, 34, 33°-5; 28th, 31°-5; 29, 31°-5; 30, 30°-9; 31, 30°-4; 2d, 43°-4; 3d, 30, 47°-3; 4th, 36°-8. The mean temperature of the air for the week was

39°-5, being 0.6 below the average of sixty years' observations.

The highest readings of a thermometer, with blackened bulb in vacuo placed in sun's rays, were 102° on Feb. 27, 88° on Feb. 28, 88° on Feb. 28; on March 2 the 28th; on March 3 the reading did not rise above 60°. The lowest readings of a thermometer on grass with its bulb exposed to the sky were 19° on February 28, and 18° on March 1; on March 3 the reading was 28° on Feb. 28, 33°. The mean for the seven low readings was 21°.

Wind.—The direction of the wind was W.S.W. and N.W., and its strength moderate. The weather during the week was somewhat fine, though cloudy and drab, and somewhat stormy.

Rain fell on three days during the week, the amount collected was 0.36 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 55° at Cambridge, and 55° at Blackheath and Sunderland; at Bradford, 50° was the highest temperature; the mean value at all stations was 52°. The lowest temperatures of the air were 17° at both Sheffield and Eccles, and 18° at Nottingham; at Portsmouth and Plymouth 27° was the lowest temperature; the mean for the week was 22°. The range of temperature during the week was the greatest at Eccles, 36°; and the least at Portsmouth and Plymouth, both 25°; the mean range from all stations was 30°.

The mean of the seven high day temperatures was the highest at Truro, 61°, and the lowest at Sunderland, 42°; the general mean from all stations was 45°. The mean of the seven low night temperatures was the lowest at Bradford, 30°, and the highest at Truro, 40°; the general mean from all stations was 33°. The mean of the seven high day temperatures was the highest at Sunderland, 61°, and the least at Norwich and Liverpool, both 42°; the mean daily range from all stations was 12°.

The mean temperature of the air for the week from all stations being 3° lower than the value for the corresponding week in 1876. The highest was 45° at Truro, and the lowest 35°, at Bradford.

Rain fell on four or five days in the week at most places. The amounts varied from 1½ inch at Sheffield to 0.05 inch at Eccles, one-tenth of an inch at Truro and Sunderland; the average fall over the country was three-quarters of an inch.

The weather during the week was generally fine, though cloudy and changeable. Snow or hail fell generally over the country on February 27.

SCOTLAND: Temperature.—The highest temperatures of the air varied from 56° at both Dundee and Paisley to 53° at Edinburgh, Aberdeen, and Leith; the average value from all stations was 54°. The lowest temperatures of the air ranged from 18° at both Perth and Dundee, 24° at Glasgow, and 21° at Aberdeen; the average value from all stations was 21°. The mean range of temperature from all stations was 33°.

The mean temperature of the air for the week from all stations was 35½°, being 6½° lower than the value for the corresponding week in 1876. The highest was 56° at Greenock, Paisley, and Leith, and the lowest 34½° at Aberdeen and Perth.

Rain.—The amount of rain measured during the week varied from half an inch at Greenock, to three-hundredths of an inch at Edinburgh, Leith, and Perth; at Dundee no rain fell. The average fall over the country was two-tenths of an inch.

DUBLIN.—The highest temperature was 56°, the lowest 24°, the range 31½°, the mean 41½°, and the fall of rain three-fourths of an inch.

Answers to Correspondents.

CAMELLIAS: F. H. The leaves are evidently sunburnt. Either there are lenses in the glass itself, or drops of water hanging about the glass have concentrated the sun's rays upon the affected portion of the leaves.

CINERARIAS: E. F. The flowers received are all bright in colour, and many of them larger than usual, but coarse, and not up to the florist's standard of form and substance. No doubt they are a showy and useful lot for general decorative purposes, and with care and attention and seedling may obtain a good strain from the larger forms. Mr. James has flowers quite as large, but of very superior to yours in quality.

COCCUS MIDELELLANA: E. Fischer. Coccus is a molluscivorous genus, not diocious. The species in question does not die after flowering, like Cayota.

CYANTHUS: H. E. A good strain, well known to us. **GROWTH ON THE YEW: B. and Others.** This is by no means uncommon. It is the result of the puncture of an insect—Credomyia taxii.

INSECTICIDES: C. H. *U. V. Bruchus rufimanus.* As bred in England as in France. **A. M.—W. Cramp.** The Leopard moth, *Zenura rusticata*. **A. M.**

ONION-FLY: C. H. The directions you allude to are perfectly intelligible. When the writer said "the pots should be plunged perfectly level," he could not have meant level with the ground, because in a line or row it would have given different directions to "one-third of their depth." What he means, therefore, is, that the pots should be set level, i.e., water-level.

NAMES OF PLANTS: T. F. Canarina Campanula, a very old plant, introduced so far back as 1596 from the Canary Islands, and figured in the *Botanical Magazine* in 1779, p. 219. It is a very common plant, without a cone.—**K. S. W.** Kennedy prostrata var. major.—**J. Lane.** It would appear from your note that you intended to send two flowers, but only one came to hand, and it was a very curious variety of *Aerides Fieldingii*, and you may see a coloured plate of something like it in Morren's *La Belgique Botanique*, 1876, p. 219. It comes near the var. Lobbia in the shape of the lip, which is usually folded up at the sides in the typical *A. Fieldingii*, *H. G. Koch*.

NEPHROPLETIS: F. Cooker & Sons. Your Fern appears to be not *Nephrolepis exaltata*, but *N. tuberosa*, which usually has such tubers on the roots. If you would send us a good piece of the frond it will enable us to send you the question.

STRELTZIA REGINE: W. S. This plant succeeds best in an intermediate temperature. Although it will live in a greenhouse it does not well, neither will it in a high temperature. Where it is kept growing through the winter this is not calculated to induce a disposition to flower. It is a strong grower, and requires considerable pot-room; it can be increased by division of the crowns. Plants with a single crown should have a 10 or 12-inch pot, well drained, and good loam with sand, and 2 inches of peat, during the spring and summer, in a night temperature of 55° or 60°, proportionately higher in the day; keep drier at the roots and cooler during the winter; and they cannot fail to flower the following summer.

CATALOGUES RECEIVED.—Messrs J. A. Bruce & Co. (Hamilton, Ontario, Canada), Illustrated Seed Catalogue for 1877. Messrs J. A. Bruce & Co. (Edinburgh, Street, Chester), Catalogue of Farm Seeds.—Messrs. Downie & Laird (17, South Frederick Street, Edinburgh), Catalogue of Florists' Flowers, Stoves and Greenhouses.—Messrs. C. E. & S. Ware (11, Farm Nurseries, Tottenham, London), Catalogue of Florists' Flowers, and Catalogue of Perennials, Aquatics, Bulbs, and Plants.—Messrs. J. & S. G. H. & S. (Downham Market), Select List of Kitchen Garden, Agricultural, and Farm Seeds.

COMMUNICATIONS RECEIVED.—J. D. W. G. S.—J. H. Equiper.—R. D. J.—A. F. (thanks).—H. G. R.—D. R. K.—C. E. G.—W. T. G.—M. D.—T. F. S.—W. C.—F.—Max Kolb (with thanks).—T. M.—R.—W. T. T.

Markets.

COVEY GARDEN, March 8.

Trade remains quiet, with no alteration worth noticing. A few Garibaldi Strawberries have been sent to the market by Mr. Bennett, and are making about 5s. per cone. **James Webber, Wholesale Apple Market.**

PLANTS IN POTS.			
<i>Azalea</i> , per dozen	0 4-0	<i>Heliotropium</i> , per doz.	0 2-6
<i>Begonia</i> , per doz.	0 7-10	<i>Hyacinths</i> , per doz.	0 8-10
<i>Bouvardia</i> , doz.	12 0-0	<i>Lily of Valley</i> , each	6 0-0
<i>Geranium</i> , per doz.	1 0-0	<i>Pelargonium</i> , per doz.	1 6-0
<i>Coleus</i> , per dozen	3 0-0	<i>Myrtles</i> , doz.	3 0-0
<i>Crocus</i> , per dozen	3 0-0	<i>Primula</i> , per doz.	3 9-0
<i>Lycalena</i> , per doz.	0 3-0	<i>Pelargoniums</i> , scarlet.	1 0-0
<i>Cyperus</i> , doz.	0 6-10	per doz.	6 13-0
<i>Dracena terminalis</i> , per doz.	0 4-0	<i>Primula sinensis</i> , doz.	4 0-0
—viridis, per doz.	18 0-0	<i>Richardia aethiopica</i> ,	1 0-0
<i>Ferns</i> , in var., per doz.	0 3-0	per doz.	0 9-10
<i>Ficus</i> , Italian, each	0 6-0	<i>Salvia</i> , per doz.	0 4-0
<i>Fuchsia</i> , per dozen	9 0-10	<i>Tulips</i> , per dozen	8 0-10
<i>Heaths</i> , variety, doz.	0 2-10	<i>Volunia</i> , per doz.	12 0-10
CUT FLOWERS.			
<i>Azalea</i> , 12 sprays	0 6-0	<i>Lily of the Valley</i> , 12	0 2-0
<i>Camellias</i> , 12 blooms	1 0-0	<i>Lettuces</i> , per doz.	0 4-0
<i>Cornations</i> , per dozen	1 0-0	<i>Mignonette</i> , 12 bun.	0 9-0
<i>Crocus</i> , 12 bunch	0 2-0	<i>Narcissus</i> , 12 sprays	2 0-0
<i>Lycalena</i> , per doz.	0 3-0	<i>Ranunculus</i> , per doz.	1 0-0
<i>Primula</i> , 12 bunch	0 2-0	—romal, 12 sprays	0 3-0
—single, 12 bunch	0 0-0	<i>Scilla</i> , 4 per dozen	0 2-0
<i>Epiphyllum</i> , 12 bins	1 0-0	<i>Prima</i> , 12 bunch	1 0-0
<i>Eschschol</i> , per doz.	0 2-0	<i>Roses</i> , indoor, per doz.	3 0-10
<i>Euphorbia</i> , 12 sprays	0 2-0	<i>St. Paul</i> , 12 spr.	0 2-0
<i>Geranium</i> , per doz.	0 3-10	<i>Tropaeolum</i> , 12 bun.	2 0-0
<i>Heliotropium</i> , per doz.	0 2-0	<i>Tulips</i> , per dozen	1 0-6
<i>Hyacinths</i> , per dozen	6 0-0	<i>Valeriana</i> , per doz.	0 2-0
—Roman, 12 spr.	1 0-0	<i>Wallflowers</i> , per doz.	0 10-0
VEGETABLES.			
<i>Artichokes</i> , per bush	4 0-0	<i>Leeks</i> , per bunch	0 3-0
<i>Asparagus</i> , Fr., bun	20 0-0	<i>Lettuces</i> , per doz.	0 4-0
—English, bun	8 0-10	—Cos, per doz.	6 0-0
<i>Beans</i> , French (new),	1 0-0	<i>Mint</i> , green, bunch	1 0-0
<i>Beet</i> , per doz.	1 0-0	<i>Mushrooms</i> , per doz.	0 8-0
<i>Brussels Sprouts</i> , bush	7 0-0	<i>Onions</i> , per bush	5 0-8
<i>Cauliflower</i> , per doz.	1 0-0	<i>Peas</i> , per bush	0 8-0
<i>Carrots</i> , per bunch	0 6-0	<i>Parley</i> , per bush	0 4-0
—New 7/1, per bun.	2 0-0	<i>Penn. green</i> , per lb.	1 0-0
<i>Cucumbers</i> , per doz.	1 0-0	<i>Peppers</i> , per doz.	0 2-0
<i>Endive</i> , per doz.	1 0-0	<i>Radiishes</i> , per bunch	10 3-0
<i>Garlic</i> , per bush	0 6-0	—Spanish, doz.	1 0-0
<i>Kidney</i> , per bush	0 6-0	<i>Spinach</i> , per doz.	0 2-0
<i>Kidney</i> , per bush	0 6-0	<i>Turnips</i> , per bundle	0 4-0
<i>Kidney</i> , per bush	0 6-0	<i>Tomatoes</i> , per doz.	2 0-0
<i>Kidney</i> , per bush	0 6-0	<i>Turnips</i> , per bundle	0 4-0
<i>Potatoes</i> —Kent Regents	10s 6d	<i>Essex Regents</i>	10s 10d
to 4s; Kidneys, 10s per ton.			

FRUIT.

Apples, per 1/2 sieve	s. d.	Oranges, per 100	s. d.
Colts, per lb.	1 0 - 1 6	Peaches, per doz.	0 0 - 0 0
Grapes, per lb.	6 0 - 10 0	Pears, per doz.	0 0 - 10 0
Lemons, per 100	2 0 - 0 0	Pine-apples, per lb.	4 0 - 4 0

SEEDS.

LONDON: *March 7*—There has been more business doing this week in farm seeds, country dealers having manifested a determination to delay no longer getting in a portion, at any rate, of their supplies for the spring. A good spell of fine weather is, however, needed to impart life to the trade in English seeds, the supply coming forward shows this week a marked falling off; this, of course, tends to strengthen the values of foreign parcels. The stock of American Clover now left in the trade would soon clear the market of this description. As regards white Clover seed, the last few days have developed nothing new, present quotations are considered quite safe, even for holding over. Alsike and Trefoil are both steady; in the latter article a good number of transactions are reported. For grass seeds there is an active demand, at unchanged currencies. Small spring Tares are offered on easier terms. The demand for Canary seed is almost nil; notwithstanding the almost unprecedentedly low figure at which it is now obtainable, buyers still hold aloof. Other seeds, for the lack of business, are without alteration in price. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade was somewhat quiet at Mark Lane on Monday, and prices had a downward tendency. To effect sales holders of Wheat found it now and then necessary to give way to the extent of about 1s. per quarter, but fine dry samples were worth perhaps as much as Monday's eight. In Barley quotations were flat for the inferior sorts. Malt was steady, with a limited inquiry. Oats were a trifle easier in some instances, and for these, especially the supporting market for white Beans, Peas, and flour were nominally unaltered in value.—On Wednesday fine samples of English Wheat were held at full prices, and inferior produce attracted scarcely any attention. Foreign Wheat was purchased to a limited extent, at about previous quotations. Choice Barley realized full rates, but medium and inferior produce sold slowly, on former terms. Oats were in slow request, at late rates; and Beans and Peas moved off slowly on former terms. The flour trade was quiet at previous quotations.—Average prices for the week ending March 7:—Wheat, 50s. 12s.; Barley, 40s.; Oats, 26s. 3d. For the corresponding week last year:—Wheat, 43s.; Barley, 32s. 7d.; Oats, 25s. 4d.

CATTLE.

At Copenhagen Fields on Monday there was a short supply of beasts, but trade was not at all brisk, yet the quotations of Monday's eight were well maintained throughout. Trade in sheep was dull, and the rates were with difficulty realised; inferior quality especially met with a dull sale. Calves continued scarce and dear. Quotations:—Beasts, 4s. 6d. to 5s. and 5s. 6d. to 6s.; calves, 6s. to 7s.; sheep, 4s. 6d. to 5s. 6d. and 6s. to 7s. 6d.; and pigs, 4s. 4d. to 5s. 4d.—The market underwent no material change on Thursday. Prime beasts met a moderate inquiry, and brought steady value. The sheep trade ruled firm, especially for prime qualities, and the tendency of prices was against buyers. Prime calves were scarce and dear, and pigs dull of sale.

HAY.

The Whitechapel report for Tuesday states that trade was steady, quotations being generally well supported. The supply was moderate. Prime Clover, 100s. to 130s.; inferior, 85s. to 95s.; prime meadow hay, 90s. to 120s.; inferior, 70s. to 85s.; and straw, 40s. to 50s. per load.—On Thursday there was a steady demand for good hay-stuffs; inferior sorts dull. Quotations:—Clover, best, 100s. to 130s.; inferior, 85s. to 95s.; hay, best, 100s. to 120s.; inferior, 65s. to 75s.; and straw, 40s. to 50s. per load.—Camden Market quotations:—Superior meadow hay, 128s. to 137s.; inferior, 110s. to 117s.; superior Clover, 132s. to 140s.; inferior, 110s. to 120s.; and straw, 54s. to 58s. per load.

POTATOS.

The Borough and Spitalfields markets reports state that sound Potatoes are in moderate request, trade generally steady, but the supplies somewhat excessive. Kent Regents, 90s. to 120s. per ton; Essex do., 70s. to 115s.; Regents, 70s. to 80s.; flukes, 120s. to 160s.; Kidneys, 100s. to 130s.; and Scotch Regents, 100s. to 130s.—The imports into London last week consisted of 30,476 bags from Hamburg, 8,597 Bremen, 4,776 Antwerp, 203 Brussels, 942 Harlingen, 635 sacks Boulogne, 97 bags Rotterdam, and 61 from Dunkirk.

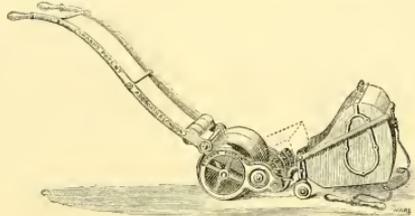
COALS.

The market on Monday was steady, and previous prices were current for house coals, but Hartleys were 6d. per ton lower. There was a steady business in the market on Wednesday, with a fair supply of house coals. Quotations:—Bebeade West Hartley, 175s. 9d.; Wilkin, 165s. 6d.; Walk End, 165s. 6d.; East Hartley, Lyons, 165s. 6d.; Hawthorns, 165s. 9d.; Lambton, 185s.; South Hetton, 185s. 6d.; Tunstall, 165s. 9d.; Clifton, 175s. 6d.; Hartlepool, 175s. 6d.; Easington, 175s. 6d.; East Hartlepool, 185s. 3d.; South Hartlepool, 175s. 3d.; Tees, 185s.

SHANKS' NEW PATENT LAWN MOWERS,

Under the Patronage of Her Most Gracious Majesty the Queen, and most of the Nobility of Great Britain.

The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. A. S. & SON would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The *Sole-Plots* or *Grass Blade* is made with *Two Edges*, enabling the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced, which prevents the Grass escaping the Box when the Machine is in use during the prevalence of wind.



PRICES,

Including Carriage to any Railway Station or Shipping Port in the Kingdom:—

NEW HAND MACHINE.		NEW PONY and DONKEY MACHINE.	
10-inch Machine	.. .. . £3 10 0	25-inch Machine	.. .. . £13 10 0
14-inch Machine	.. .. . 4 15 0	28-inch Machine	.. .. . 15 15 0
16-inch Machine	.. .. . 5 15 0	30-inch Machine	.. .. . 17 0 0
18-inch Machine	.. .. . 6 15 0		
20-inch Machine	.. .. . 7 0 0		
24-inch Machine	.. .. . 9 10 0		

The Hand Machines are all fitted with Silent Movement, and can be used either with or without the Front Rollers.

NEW HORSE MACHINE.

30-inch Machine	.. .. . £20 10 0	40-inch Machine	.. .. . £28 0 0
36-inch Machine	.. .. . 24 0 0	48-inch Machine	.. .. . 32 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

Price, for the 28-inch and 30-inch Machines, 30s. extra; 35-inch Machine, 35s. extra. Silent Movement, 12s. 6d. extra. 15s. for Pony, 21s.; Donkey, 25s. per set.

A Staff of experienced Workmen always kept in London, so that Repairs can be done there as well as at the Manufactory.

SHANKS' PATENT LAWN MOWERS

Are warranted to give ample satisfaction, and if not approved of can be at once returned.

ALEXANDER SHANKS & SON,

Dens Ironworks, Arbroath; and 27, Leadenhall Street, London, E.C.

27, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can choose from a Stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power. Orders executed same day as received.

Small Lawn Mowers—6-inch, 25s.; 7-inch, 35s.; 8-inch, 50s.

MR. WORTHINGTON SMITH'S SALUS,

Founded on Compounds of SULPHUR and POTASSIUM,

PREVENTION OF THE POTATO DISEASE.

J. C. WHEELER & SON, SEED GROWERS, GLOUCESTER

Beg to inform the Trade that they are the Sole Agents in Great Britain for the Sale of this valuable material.

The retail price of 14 lb. of Salus, which is sufficient for 1 acre of Potatoes, is 14s.; or in smaller quantities, 7 lb. for 7s.; or a good sized packet, sufficient to dress 1 bushel of Seed Potatoes, for 1s., or post-free for sixpence.

WHOLESALE PRICES ON APPLICATION TO

J. C. WHEELER & SON, Seed Growers, GLOUCESTER.

LONDON OFFICE: 59, MARK LANE, E.C.

NEW PLANTS, 1877.

CHARLES LEE & SON,
SUCCESSORS TO
MESSRS. JOHN AND CHARLES LEE,
OF THE

Royal Vineyard Nursery,
HAMMERSMITH, near LONDON,
Have the pleasure to offer the following very beautiful and interesting

NOVELTIES,
now offered by them for the first time:—

BEGONIA COLTONI.
This distinct and beautiful Begonia was raised at the Royal Vineyard Nursery. The colour of the flowers is a quite new Begonia, being of an orange-crimson. It is a most abundant bloomer, and the flowers are of the largest size. It received a First-class Certificate from the Floral Committee of the Royal Horticultural Society in 1875. Good plants, price 10s. 6d. each.

BEGONIA RODWELLI.
This lovely Begonia was also raised at the Royal Vineyard Nursery. The flowers are of a bright vermilion-scarlet, and of the same size as the plant is very hardy and free flowering. It received a First-class Certificate from the Committee of the Royal Horticultural Society. Good plants, price 10s. 6d. each.

CORNUS MAScula AUREA ELEGANTISSIMA (J. & C. Lee).

This elegant and lovely hardy shrub was raised from seed in our Isleworth Nursery, and has been proved to be perfectly constant in its beautiful variegation. The broad masses of pure gold surrounding a bright green centre is of itself a sufficient attraction, but when in July the leaves become suffused with the brightest carmine it is impossible to give an idea of the beauty and elegance of the plant, which will bear a favourable comparison with the best variegated stoves, greenhouse exotics. Suffice it to say, that it has been seen and admired by many amateurs and nurserymen, and has been awarded a First-class Certificate at South Kensington. The habit of the plant is semi-decumbent, and very graceful. Price of maiden plants, 12s. each; larger specimens, 21s. each. A Coloured Plate may be had on application for 2s.

JUNIPERUS VIRGINIANA ELEGANS (J. & C. Lee).

This very elegant variety of the Red Cedar was raised from seed in our own gardens in 1865. It is scarcely necessary to remark upon the hardness of this plant, but it is due to its character to state that the most unexpected variegation with which the whole plant is suffused is perfectly constant, and has never been injured by frost in any of its twenty years of the best summer, although it is fully exposed in the open air. The plants in pot and free growth, and received the honour of a First-class Certificate from the Floral Committee of South Kensington, in July, 1875. Price 15s. each; larger specimens, 21s. each. A Photograph of the plant may be had on application for 2s.

POPULUS CANADENSIS AUREA VAN GEERTI (1876).

The golden variety of this noble Poplar Asters was introduced by Mr. Charles Van Geert, of Antwerp, has fully borne out in our Nurseries the description he gave of it, and has retained its golden colour much longer than either the Golden Catalpa or the Golden Oak during the late tropical summer.

EXTRACT FROM MR. VAN GEERT'S DESCRIPTION.
"We have the pleasure of offering an extremely remarkable variety of the Canadian Poplar, with a foliage which presents during the whole summer the finest hue of golden-yellow. It is in our opinion a more valuable acquisition, and yet more prized by us, because so very conspicuous who has admitted it in our nursery, for the coloured foliage now so frequently met with among shrubs falls almost entirely away during the larger trees. The Catalpa aurea and the Quebec Ruber cordocera are the only trees known as possessing the same golden foliage; but the former is only a second-class tree, and the latter has not the vigor of the common Oak. Our golden Poplar, on the other hand, is of a first-class tree, and its leaves are quite as large as those of the common Canadian Poplar, and the yellow hue, instead of looking sickly, has a warm and vigorous appearance. The larger the tree is, and the more it is exposed to the sun, the more vivid is the golden hue."

Having received in February last a large consignment of this magnificent novelty from Mr. Van Geert, are enabled to offer nice plants at 7s. 6d. each.

ABIES EXCELSA AUREA (J. & C. Lee, 1876).

This is decidedly the finest golden Conifer of large growth yet introduced. It is of free growth, and requires to be planted in the full sunshine. In such a position the golden tree is suffused with the richest gold. A First-class Certificate has been awarded to this valuable tree at South Kensington. Price of nice plants, 12s. 6d. each; larger specimens, 21s. each.

LAURUS CAMPYLOLEPIS (Wood, 1876).

We can still supply a few hundreds of this extraordinary and elegant Laurel. Price 2s. 6d. each; per dozen, 18s.

CHARLES LEE & SON,
HAMMERSMITH, W.

ECONOMY IN THE GARDEN
BEST SECURED
BY THE USE OF

CARTER'S
COLLECTIONS OF
VEGETABLE SEEDS
PRODUCE A CONSTANT SUPPLY OF THE BEST VEGETABLES 'ALL-THE-YEAR-ROUND.'

NO 1	PRICE 5/	12 6
NO 2	SPECIALY ADAPTED	15 -
NO 3	FOR	21 -
NO 4	COTTAGE VILLA	31 6
NO 5	MEDIUM OF LARGE	42 -
NO 6	GARDENS.	63 -

NO CHARGE FOR PACKING.

FROM THE HIGH HOLBORN DISPENSARY, 27 & 28, HOLBORN, LONDON.

CARTER'S GUINEA FLOWER SEED PACKET,

- AS SENT, POST FREE, CONTAINS:
- 12 choicest varieties FRENCH ASTER, an assortment of.
 - 12 choicest varieties BETTERRIDGE'S PRIZE ASTER, an assortment of.
 - 12 choicest varieties GERMAN STOCK, an assortment of.
 - 12 choicest EVERLASTING FLOWERS for Winter Bouquets.
 - 12 ORNAMENTAL GRASSES for Winter Bouquets.
 - 12 SHOWY HARDY ANNUALS, for Bedding and Borders, including King of Tom Thumk, Nasturtium, Saponaria, Blue Neophaea, Viscaria, cardinals, Tagetes pumila, and Silene comita.
 - 6 GREENHOUSE SEEDS, including Calceolaria, Cineraria, and Primula.
 - 6 varieties TROPICAL ORNAMENTAL-FOLIAGED PLANTS, including Cannas and Ricinus.
 - 12 varieties SHOWY FLOWERS (to be sown in Frames and then transplanted or sown in the open borders at the end of April) for Summer and Autumn Bedding, including choice of Pyramidal, Italian, Celosia, Amaranthus ruber, Perilla mackenziana, and Zinnia.
 - 6 HARDY PERENNIALS, for Autumn and Spring Flowering, including Wallflower, Tom Thumk Golden, Alyssum white compacta, Cineraria maritima, and Delphinium, new seedling varieties.
 - 10s. MIGNONETTE, New Crimson Giant.
 - 10s. SWEET PEAS, mixed.
 - 10s. SWEET PEAS, Scarlet Invincible.

Other Collections, price 10s. 6d., 15s., 21s., 6d., 40s., 63s., and 84s., all post-free.

BETTERRIDGE'S

New Prize Exhibition Asters for 1877

- Blushing Bride**—A perfect gem, the outer ring of the flower of a pretty pale pink colour, gradually shading off to a centre of the purest and white; *price 2s. 6d.*
- salmon guard-petals**, *price 2s. 6d.*
- Bridgemoor**—Outer ring of the flower of a delicate lavender, shading to a clearly-defined and even-formed pure white centre. *price 2s. 6d.*
- Prince Albert Victor**—Petals peculiarly folded, and alternated with deep purple and white. A splendid exhibition Aster. *price 2s. 6d.*
- The Collection of Three Varieties**, *price 2s. 6d.*

CAUTION:
The entire Stock of these superb Asters is in our hands.

FOR FULL DESCRIPTIONS SEE
Carter's Illustrated Vade Mecum.
It is the handsomest Seed Catalogue and most comprehensive Guide to the Amateur Gardener yet published. Price 12s., post-free, to purchasers on application.

Carter's
The Queen's Seedmen,
237 and 238, HIGH HOLBORN, LONDON, W.C.

To the Trade.
PRIMROSES, double black, 12s. 6d. per 100,
Good plants, 10s. 6d. per 100.
RODGER McCLELLAND AND CO., 64, Hill Street, Newry.

Hardy Florists' Flowers.
THOMAS S. WARE'S NEW SPRING
CATALOGUE of the above, including Pansies, Violas (Bedding), Delphiniums, Daisies, Fisks, Pzonies, Phlox, Pteridiums, and others, for immediate Planting, may be had free on application.
Hale Farm Nurseries, Tottenham, London.

SURPLUS NURSERY STOCK.

- TAMARIX, 200 sorts, 2 to 3 feet, 12s. 6d. per 100
- SPIREA FORTUNEI, 142 per 100
- FUCHSIA GRACILIS, 20s. per 100
- YEW, English (fine), 1 to 2 feet, 3s. 6d. per 100
- PINUS INSIGNIS, 6 to 18 inches, 50s. per 100
- BERBERIS DARWINII, 1 1/2 to 2 feet, 26s. per 100; 2 to 4 feet, 30s. per 100
- COTONEASTER MICROPHYLLA, 2 to 3 feet, 16s. per 100
- BUELLIA GIBBSII, 1 to 1 1/2 feet, 15s. per 100
- DRACANA INDIVISA, 4 to 6 feet, 12s. per dozen, 75s. per 100; stronger, 30s. per dozen
- CISTUS, strong, many sorts, 4s. per dozen
- CLIANTHUS PUNICUS, strong, 9s. to 12s. per dozen
- GEANTHUS, many sorts, 6s. to 12s. per dozen
- MULBERRIA COMPLANATA, 1 to 2 feet, 10s. per dozen
- POPLAR, Lombardy, 3 to 4 feet, 35s. per 100
- " Canadian, 4 to 6 feet, 20s. per 100; 5 to 8 feet, 30s. per 100
- " macrophylla, 5 to 6 feet, 30s. per 1000; 6 to 10 feet, 10s. per 100
- PRIVET, Evergreen, 2 to 4 feet, 20s. per 1000
- SYCAMORE, 3 to 4 feet, 20s. per 1000
- RODGER McCLELLAND AND CO.**, 64, Hill Street, Newry.

B. WHITMAN, The Nurseries, Reddish,

near Stockport, begs to offer the following fine healthy NURSERY STOCK, many times transplanted, and of the pyramidal form for Parks, Avenues, &c., as the ground must be cleared in consequence of expiration of lease:—
YEW, English, 4 to 12 inches, 20s. per 100, 90s. per 1000; 1 to 1 1/2 feet, 32s. per 100, 370s. per 1000; 1 1/2 to 2 feet, 35s. per 100, 400s. per 1000; 2 to 3 feet, 40s. per 100, 450s. per 1000; 3 to 4 feet, 45s. per 100, 500s. per 1000; 4 to 5 feet, 50s. per 100, 550s. per 1000; 5 to 6 feet, 55s. per 100, 600s. per 1000; 6 to 8 feet, 60s. per 100, 650s. per 1000; 8 to 10 feet, 65s. per 100, 700s. per 1000; 10 to 12 feet, 70s. per 100, 750s. per 1000; 12 to 14 feet, 75s. per 100, 800s. per 1000; 14 to 16 feet, 80s. per 100, 850s. per 1000; 16 to 18 feet, 85s. per 100, 900s. per 1000; 18 to 20 feet, 90s. per 100, 950s. per 1000; 20 to 22 feet, 95s. per 100, 1000s. per 1000; 22 to 24 feet, 100s. per 100, 1050s. per 1000; 24 to 26 feet, 105s. per 100, 1100s. per 1000; 26 to 28 feet, 110s. per 100, 1150s. per 1000; 28 to 30 feet, 115s. per 100, 1200s. per 1000; 30 to 32 feet, 120s. per 100, 1250s. per 1000; 32 to 34 feet, 125s. per 100, 1300s. per 1000; 34 to 36 feet, 130s. per 100, 1350s. per 1000; 36 to 38 feet, 135s. per 100, 1400s. per 1000; 38 to 40 feet, 140s. per 100, 1450s. per 1000; 40 to 42 feet, 145s. per 100, 1500s. per 1000; 42 to 44 feet, 150s. per 100, 1550s. per 1000; 44 to 46 feet, 155s. per 100, 1600s. per 1000; 46 to 48 feet, 160s. per 100, 1650s. per 1000; 48 to 50 feet, 165s. per 100, 1700s. per 1000; 50 to 52 feet, 170s. per 100, 1750s. per 1000; 52 to 54 feet, 175s. per 100, 1800s. per 1000; 54 to 56 feet, 180s. per 100, 1850s. per 1000; 56 to 58 feet, 185s. per 100, 1900s. per 1000; 58 to 60 feet, 190s. per 100, 1950s. per 1000; 60 to 62 feet, 195s. per 100, 2000s. per 1000; 62 to 64 feet, 200s. per 100, 2050s. per 1000; 64 to 66 feet, 205s. per 100, 2100s. per 1000; 66 to 68 feet, 210s. per 100, 2150s. per 1000; 68 to 70 feet, 215s. per 100, 2200s. per 1000; 70 to 72 feet, 220s. per 100, 2250s. per 1000; 72 to 74 feet, 225s. per 100, 2300s. per 1000; 74 to 76 feet, 230s. per 100, 2350s. per 1000; 76 to 78 feet, 235s. per 100, 2400s. per 1000; 78 to 80 feet, 240s. per 100, 2450s. per 1000; 80 to 82 feet, 245s. per 100, 2500s. per 1000; 82 to 84 feet, 250s. per 100, 2550s. per 1000; 84 to 86 feet, 255s. per 100, 2600s. per 1000; 86 to 88 feet, 260s. per 100, 2650s. per 1000; 88 to 90 feet, 265s. per 100, 2700s. per 1000; 90 to 92 feet, 270s. per 100, 2750s. per 1000; 92 to 94 feet, 275s. per 100, 2800s. per 1000; 94 to 96 feet, 280s. per 100, 2850s. per 1000; 96 to 98 feet, 285s. per 100, 2900s. per 1000; 98 to 100 feet, 290s. per 100, 2950s. per 1000; 100 to 102 feet, 295s. per 100, 3000s. per 1000; 102 to 104 feet, 300s. per 100, 3050s. per 1000; 104 to 106 feet, 305s. per 100, 3100s. per 1000; 106 to 108 feet, 310s. per 100, 3150s. per 1000; 108 to 110 feet, 315s. per 100, 3200s. per 1000; 110 to 112 feet, 320s. per 100, 3250s. per 1000; 112 to 114 feet, 325s. per 100, 3300s. per 1000; 114 to 116 feet, 330s. per 100, 3350s. per 1000; 116 to 118 feet, 335s. per 100, 3400s. per 1000; 118 to 120 feet, 340s. per 100, 3450s. per 1000; 120 to 122 feet, 345s. per 100, 3500s. per 1000; 122 to 124 feet, 350s. per 100, 3550s. per 1000; 124 to 126 feet, 355s. per 100, 3600s. per 1000; 126 to 128 feet, 360s. per 100, 3650s. per 1000; 128 to 130 feet, 365s. per 100, 3700s. per 1000; 130 to 132 feet, 370s. per 100, 3750s. per 1000; 132 to 134 feet, 375s. per 100, 3800s. per 1000; 134 to 136 feet, 380s. per 100, 3850s. per 1000; 136 to 138 feet, 385s. per 100, 3900s. per 1000; 138 to 140 feet, 390s. per 100, 3950s. per 1000; 140 to 142 feet, 395s. per 100, 4000s. per 1000; 142 to 144 feet, 400s. per 100, 4050s. per 1000; 144 to 146 feet, 405s. per 100, 4100s. per 1000; 146 to 148 feet, 410s. per 100, 4150s. per 1000; 148 to 150 feet, 415s. per 100, 4200s. per 1000; 150 to 152 feet, 420s. per 100, 4250s. per 1000; 152 to 154 feet, 425s. per 100, 4300s. per 1000; 154 to 156 feet, 430s. per 100, 4350s. per 1000; 156 to 158 feet, 435s. per 100, 4400s. per 1000; 158 to 160 feet, 440s. per 100, 4450s. per 1000; 160 to 162 feet, 445s. per 100, 4500s. per 1000; 162 to 164 feet, 450s. per 100, 4550s. per 1000; 164 to 166 feet, 455s. per 100, 4600s. per 1000; 166 to 168 feet, 460s. per 100, 4650s. per 1000; 168 to 170 feet, 465s. per 100, 4700s. per 1000; 170 to 172 feet, 470s. per 100, 4750s. per 1000; 172 to 174 feet, 475s. per 100, 4800s. per 1000; 174 to 176 feet, 480s. per 100, 4850s. per 1000; 176 to 178 feet, 485s. per 100, 4900s. per 1000; 178 to 180 feet, 490s. per 100, 4950s. per 1000; 180 to 182 feet, 495s. per 100, 5000s. per 1000; 182 to 184 feet, 500s. per 100, 5050s. per 1000; 184 to 186 feet, 505s. per 100, 5100s. per 1000; 186 to 188 feet, 510s. per 100, 5150s. per 1000; 188 to 190 feet, 515s. per 100, 5200s. per 1000; 190 to 192 feet, 520s. per 100, 5250s. per 1000; 192 to 194 feet, 525s. per 100, 5300s. per 1000; 194 to 196 feet, 530s. per 100, 5350s. per 1000; 196 to 198 feet, 535s. per 100, 5400s. per 1000; 198 to 200 feet, 540s. per 100, 5450s. per 1000; 200 to 202 feet, 545s. per 100, 5500s. per 1000; 202 to 204 feet, 550s. per 100, 5550s. per 1000; 204 to 206 feet, 555s. per 100, 5600s. per 1000; 206 to 208 feet, 560s. per 100, 5650s. per 1000; 208 to 210 feet, 565s. per 100, 5700s. per 1000; 210 to 212 feet, 570s. per 100, 5750s. per 1000; 212 to 214 feet, 575s. per 100, 5800s. per 1000; 214 to 216 feet, 580s. per 100, 5850s. per 1000; 216 to 218 feet, 585s. per 100, 5900s. per 1000; 218 to 220 feet, 590s. per 100, 5950s. per 1000; 220 to 222 feet, 595s. per 100, 6000s. per 1000; 222 to 224 feet, 600s. per 100, 6050s. per 1000; 224 to 226 feet, 605s. per 100, 6100s. per 1000; 226 to 228 feet, 610s. per 100, 6150s. per 1000; 228 to 230 feet, 615s. per 100, 6200s. per 1000; 230 to 232 feet, 620s. per 100, 6250s. per 1000; 232 to 234 feet, 625s. per 100, 6300s. per 1000; 234 to 236 feet, 630s. per 100, 6350s. per 1000; 236 to 238 feet, 635s. per 100, 6400s. per 1000; 238 to 240 feet, 640s. per 100, 6450s. per 1000; 240 to 242 feet, 645s. per 100, 6500s. per 1000; 242 to 244 feet, 650s. per 100, 6550s. per 1000; 244 to 246 feet, 655s. per 100, 6600s. per 1000; 246 to 248 feet, 660s. per 100, 6650s. per 1000; 248 to 250 feet, 665s. per 100, 6700s. per 1000; 250 to 252 feet, 670s. per 100, 6750s. per 1000; 252 to 254 feet, 675s. per 100, 6800s. per 1000; 254 to 256 feet, 680s. per 100, 6850s. per 1000; 256 to 258 feet, 685s. per 100, 6900s. per 1000; 258 to 260 feet, 690s. per 100, 6950s. per 1000; 260 to 262 feet, 695s. per 100, 7000s. per 1000; 262 to 264 feet, 700s. per 100, 7050s. per 1000; 264 to 266 feet, 705s. per 100, 7100s. per 1000; 266 to 268 feet, 710s. per 100, 7150s. per 1000; 268 to 270 feet, 715s. per 100, 7200s. per 1000; 270 to 272 feet, 720s. per 100, 7250s. per 1000; 272 to 274 feet, 725s. per 100, 7300s. per 1000; 274 to 276 feet, 730s. per 100, 7350s. per 1000; 276 to 278 feet, 735s. per 100, 7400s. per 1000; 278 to 280 feet, 740s. per 100, 7450s. per 1000; 280 to 282 feet, 745s. per 100, 7500s. per 1000; 282 to 284 feet, 750s. per 100, 7550s. per 1000; 284 to 286 feet, 755s. per 100, 7600s. per 1000; 286 to 288 feet, 760s. per 100, 7650s. per 1000; 288 to 290 feet, 765s. per 100, 7700s. per 1000; 290 to 292 feet, 770s. per 100, 7750s. per 1000; 292 to 294 feet, 775s. per 100, 7800s. per 1000; 294 to 296 feet, 780s. per 100, 7850s. per 1000; 296 to 298 feet, 785s. per 100, 7900s. per 1000; 298 to 300 feet, 790s. per 100, 7950s. per 1000; 300 to 302 feet, 795s. per 100, 8000s. per 1000; 302 to 304 feet, 800s. per 100, 8050s. per 1000; 304 to 306 feet, 805s. per 100, 8100s. per 1000; 306 to 308 feet, 810s. per 100, 8150s. per 1000; 308 to 310 feet, 815s. per 100, 8200s. per 1000; 310 to 312 feet, 820s. per 100, 8250s. per 1000; 312 to 314 feet, 825s. per 100, 8300s. per 1000; 314 to 316 feet, 830s. per 100, 8350s. per 1000; 316 to 318 feet, 835s. per 100, 8400s. per 1000; 318 to 320 feet, 840s. per 100, 8450s. per 1000; 320 to 322 feet, 845s. per 100, 8500s. per 1000; 322 to 324 feet, 850s. per 100, 8550s. per 1000; 324 to 326 feet, 855s. per 100, 8600s. per 1000; 326 to 328 feet, 860s. per 100, 8650s. per 1000; 328 to 330 feet, 865s. per 100, 8700s. per 1000; 330 to 332 feet, 870s. per 100, 8750s. per 1000; 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H.R.H. the Prince of Wales.



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3/6	" " " " " "	26	0	20	0	8	0
4	" " " " " "	30	0	22	0	8	0
4	" " " " " "	33	0	24	0	8	0
4	" " extra large	36	0	27	0	10	0
4	" " African	42	0	35	0	13	0
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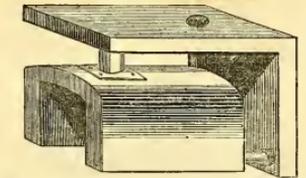
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These Boilers possess all the advantages of the old Saddle Boiler with the following improvements—viz, the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L" SADDLE BOILER boils about twice the quantity of water with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes—

Sizes.		To heat of 4-in. Pipe.		Price.	
High.	Wide.	Feet.	£	s.	d.
20	18	300	7	0	0
20	18	34	4	0	8
20	18	38	5	0	0
24	18	400	7	0	0
24	18	34	4	0	8
24	18	38	5	0	0
24	18	42	6	0	0
24	18	46	7	0	0
24	18	50	8	0	0

Larger sizes if required.

From MR. CHARLES YOUNG, Nursery, Batham Hill, S.W.

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

PRICE LISTS of HOT-WATER PUMPS and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES and SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

When ordering Boilers please refer to the above advertisement.

AN EXTRAORDINARY BOILER.

During the Great Boiler Contest at Birmingham, in 1874, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler run without 'Night Attention'?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 200 feet of 4-in. pipes, and yet had more than a bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon for Gardeners. This was THE CHAMPION, Deards' Patent Close Coil Boiler, for Drawings and Prices of which send two stamps to

MESSES. DEARDS, Boiler Works, Harlow, who now have their Boilers at work in every county of England except three. About the only one left in THE WOODS, &c., smaller kind of Boiler, equally as satisfactory, and certainly "the best thing out." Awarded five First Prize Silver Medals.

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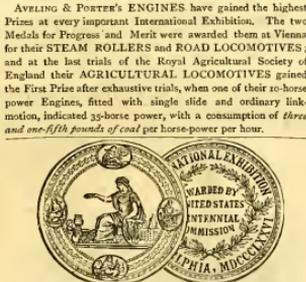
STEAM PLOUGHING MACHINERY, ROAD LOCOMOTIVES, TRAMWAY LOCOMOTIVES, STEAM ROAD ROLLERS.

For Prices, Description, and Reports of Working, apply to the Manufacturers.

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ROCHESTER, KENT; 79, CANNON ST., LONDON, E.C.; and 9, AVENUE MONTAIGNE, PARIS.

AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the late trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 20-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of three and one-fourth pounds of coal per horse-power per hour.



WRIGHT'S PATENT ENDLESS-FLAME IMPACT HOT-WATER BOILER.

Awarded the only English Medal for the best Hot-Water Apparatus at the United States Centennial Exhibition at Philadelphia, 1876. For prices and full particulars please see our pamphlet, entitled "Our Boilers and Heating," which will be handed post-free on application.

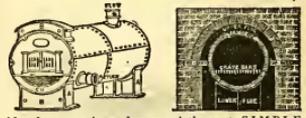
WILLIAM WRIGHT & CO., HOT-WATER ENGINEERS, AIRDIRIE, N.B.

HORTICULTURAL WINDOW GLASS.

A large variety of sizes, 12 oz., 12z. 6d.; 21 oz., 12z. 6d. per 200 feet. Large sizes, in Cases, for Cutting up, 15 oz. 4ths, 36s.; 3ds, 46s. per 300 feet. 21 oz. 4ths, 36s.; 3ds, 46s. per 200 feet. Prices forwarded for large and special quantities.

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STEVENS' TRENTHAM GREENHOUSE BOILER,



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

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

Our Boilers are the only ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all other being false imitations.

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FOR HORTICULTURAL, PUBLIC, AND OTHER BUILDINGS. The most important discovery for saving the cost of fuel, for steadiness in heating power, and dispensing with night stoking. One Apparatus will do the work of several Boilers, and in some cases produce a profit.

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Description of Socket—A. The Rubber Ring as rolled into the Socket. B. The Ring before inserted in the Pipe. These Rings are made any size to order. All ordinary sizes are kept in stock.

Illustrated Price List on application. J. L. HANCOCK, VULCANISED INDIA-RUBBER WORKS, 266, GOSWELL ROAD, LONDON E.C.

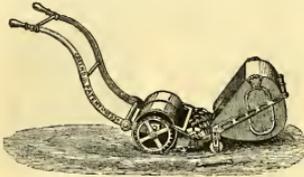
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Or Noiseless Lawn-mowing, Rolling, and Collecting Machines for 1877.

The Winner of every Prize in all cases of competition.



The superiority of these Machines over those of all other makers is universally acknowledged. They will Cut either long or short Grass, Bents, &c., wet or dry.

These advantages no other Lawn Mowers possess.

They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant.

Every Lawn Mower sent out is guaranteed to give entire satisfaction, otherwise it may be returned at once free of cost to the Purchaser.

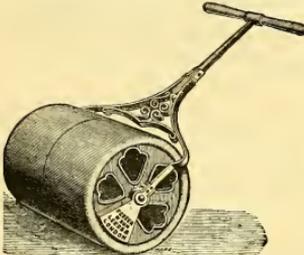
N.B.—Those who have Lawn Mowers to repair will do well to send them either to our Leeds or London Establishments, where they will have prompt attention, as an Efficient Staff of Workmen is kept at both places.

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For Lawns, Drives, Bowling Greens, Cricket Fields, and Gravel Paths.

SUITABLE FOR HAND OR HORSE POWER.



They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom; or direct from the Manufacturers,

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THE PATENT "EXCELSIOR" LAWN MOWER,

The simplest and best ever introduced.

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Sole Consignees for Great Britain, Ireland and France.



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Patronised by Her Majesty the Queen, for Windsor Castle and Frogmore Gardens, the late Sir J. Paxton, and the late Professor Lindley, &c.

MADE OF PREPARED HAIR and WOOL.
A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. A good covering for Pits and Forcing Frames.

PROTECTION FROM COLD WINDS and MORNING FROSTS.

"FRIGI DOMO" CANVAS.

2 yards wide 1s. 10d. per yard run.
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ELISHA T. ARCHER, only Maker of "Frige Domo," Brockley Road, Forest Hill, London, S.E.; and of all Florists and Seedsmen. All goods carriage paid to London.
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NETTING FOR FRUIT TREES,
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TANNED NETTING for protecting the above from Frost, Blight, Birds, &c. 4 yards wide, 3d. per yard, or 100 yards, 2s.; 4 yards wide, 6d. per yard, or 100 yards, 4s.
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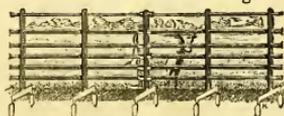
Established over a Quarter of a Century.



Is in use over many thousand miles, And has been awarded the Medals and highest Commendation of all the leading Agricultural Societies.

It is constructed with POWERFUL WINDING STRAINING PILLARS, RIGID INTERMEDIATE IRON POSTS, STRONG and DURABLE WIRE CABLE STRANDS, Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

Continuous Bar Iron Fencing.



With bars secured by F. M. & Co.'s Patent Self-locking Joints, which effectually prevent the uprights being pushed aside, and are independent of loose pins, wedges, or staples.

IRON ENTRANCE and FIELD GATES,
IN WROUGHT and CAST IRON,

Designed for the Mansion, Villa, or Farm, WICKET and GARDEN GATES, In Great Variety of Patterns.

Iron Hurdles, Railing, Tree Guards, FRUIT ESPALIERS, WALL FRUIT TRAINERS, &c.
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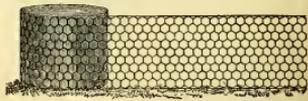


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The Sole International Prize Medals for GALVANIZED WIRE NETTING

Have been awarded to Messrs. J. B. BROWN and CO., at the VIENNA EXHIBITION, 1873, and at the PHILADELPHIA CENTENNIAL and INTERNATIONAL EXHIBITION, 1876.



Prices per Lineal Yard, 24 inches high:—

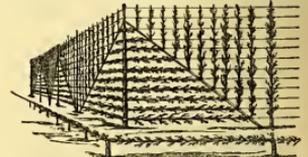
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1 1/2 in.	Dogs or Poultry.	19	3 1/4 d.	18	4 3/4 d.	17	5 1/4 d.
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"* Price Lists, with further particulars of WIRE NETTING, IRON FENCING, POULTRY FENCES, DIAMOND and other TRELLIS WORK, on application.

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Extreme standards of T or angle iron, for ends or stays, for straining the wires from, or self based; also stays for these standards, at prices as under:—

Intermediate Standards, 10 ft. apart, at half these prices.

Painted Galv. 4 1/2 ft. high... 4s. 6d. .. 6s. 6d. 7 ft. high... 7s. 6d. .. 10s. 6d. 5 ft. high... 5s. 0 .. 7s. 6 8 ft. high... 8s. 0 .. 11s. 0 6 ft. high... 5s. 9 .. 8s. 6 9 ft. high... 9s. 0 .. 12s. 0

STRAINING SCREWS and NUTS, one to end of each wire, 3s. per dozen.

No. 13 WIRE, 10 inches apart, 2s. 3d. per 100 yards.

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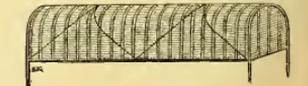
90, CANNON STREET, LONDON, E.C.

SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW and CO., 29, Oldford Street, Manchester.

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REDUCED PRICES. SEASON 1877.

Superior Quality. Galvanized after made. NEW PATTERN WITH DIAGONAL STAYS.



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Two end pieces included with each dozen. The above are strongly recommended, being much smaller in the mesh than the ordinary diamond pattern, and proof against the smallest birds. Having a large stock of the above, Orders can be executed on receipt.

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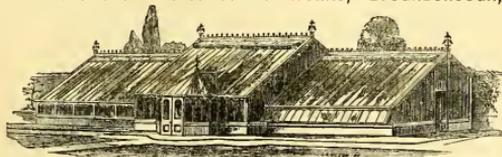
Special quotations for large quantities.

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BADDINGTON WIREWORKS,

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MESSENGER & COMPANY, CONTRACTORS, MIDLAND HORTICULTURAL BUILDING AND HOT-WATER ENGINEERING WORKS, LOUGHBOROUGH,



Desire to inform their numerous Patrons and the Public generally, that having erected new, more extensive, and commodious works, fitted with the best steam-power machinery, for the construction of Horticultural Buildings in wood or iron, plain or ornamental, large or small, they are in a position, from their great facilities and experience, to carry out with dispatch, in the best manner, at very moderate cost, the orders with which they are entrusted. Only thoroughly well-seasoned *The Plans of Landscape Gardeners, Architects, and others carried out. Richly Illustrated CATALOGUE post-free for 33 stamps.*
Illustrated CIRCULAR of Messenger's Improved Patent Tubular Saddle Boiler free.

timber used. Glasshouses erected on Messenger's patent principles are, owing to mechanical arrangements, very strong, most durable, light, elegant, perfect efficiency for purpose intended is guaranteed; are economical in cost and maintenance. Messenger's Patent Boilers, Flexible Jointed Hot-water Pipes and Valves, are now in use in many thousands of instances, with the greatest success. Particulars on application. Plans, and Estimates forwarded. Ladies and Gentlemen waited upon.

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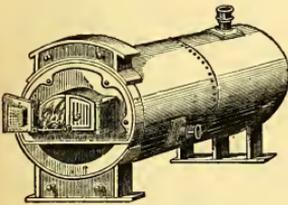
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HOT-WATER BOILERS, PIPES, CONNECTIONS.

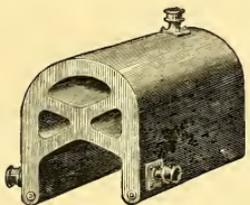


NEW PATENT "CLIMAX" BOILER (1874). See p. 666, 1874, *Gardeners' Chronicle*.
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PATENT "EXCELSIOR" BOILER (1874).
The largest and most complete Stock in the Trade; upwards of Twenty Thousand Pounds' worth to choose from.

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"TRENTHAM IMPROVED" BOILER, with Water-way End and Smoke Consumer.
"TUBULAR," and every other Boiler of known merit or excellence.
Prize Medal Awarded at the National Contest, Birmingham, 1874.



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"CRUCIFORM" BOILER.

MILL'S PATENT AUXILIARY FUEL ECONOMISER, which can be attached to any ordinary Boiler. These Tubes are the greatest Economisers of Fuel and Preservatives of Boilers, Fire-bricks, and Furnace Fronts ever yet introduced to the public.
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HOT-WATER APPARATUS ERECTED COMPLETE.
PRICE LIST on application; or, Six Stamps for DESCRIPTIVE CATALOGUE, 4th Edition.

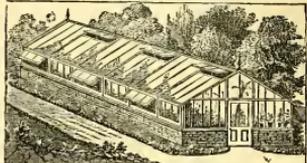
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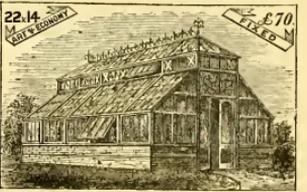
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Horticultural Buildings of any description and dimension. Designs prepared. Estimates free of charge.
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Metallic Hothouse Builder to Her Majesty.
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HOTHOUSE BUILDER and HOT-WATER APPARATUS ENGINEER. Established A. D. 1818.
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BOOKS OF DESIGNS, 2s. each.
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See Illustrated CATALOGUE, Two Stamps.
Designs and Estimates free of cost.
WORKS: ANCHOR STREET, CHELMSFORD.

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JOHN LAING AND CO. can at present recommend with every advantage and practical Men, of tested ability and first-rate character. Ladies and Gentlemen in WANT of GARDENERS and BAILIFFS, or GARDENERS for first-rate Establishments of Similiar Situations, can be suited, and have full particulars at Sir St. John's Park and Rathall Park Nurseries, Forest Hill, London, S.E.

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GARDENER (HEAD), to any Nobleman or Gentleman wanting a thoroughly experienced and trustworthy Man.—**A GENTLEMAN** giving up his Establishment, wishes the death of his late Gardener, and recommends a Gardener as above. Ten years in present situation; has had the Management of fourteen Greenhouses, and a large number of other under him.—**FLEMING,** Sandboys, Watlington, Liverpool.

To Nobleman and Gentlemen.

GARDENER (HEAD), age 40, married.—**WILLIAM MERRITT,** Gardener for the last eight years to the Vicarage of St. Andrew, Batterley Park, Gordons, Thirsk, Yorkshire, wishes for a re-engagement as above. Is well known and successful in Grape Growing, and also in Flower and other Fruits, Flowers, and Forcing of Early Vegetables, required in a large establishment. Can be well recommended.—**WILLIAM MERRITT,** Batterley Park Gardens, Thirsk, Yorkshire.

GARDENER (HEAD), where one or more are kept.—Age 40, married, no encumbrance; thoroughly practical in all branches of the profession, early and late forcing, Vines, Peaches, Strawberries, Melons, Cucumbers, Stove and Greenhouse Plants; good Flower and Kitchen Gardener. Excellent character from late employer.—**A. B.,** 2, King Street, Leamington.

GARDENER (HEAD), where one or more are kept.—Age 40, married, no encumbrance; thoroughly practical in all branches of the profession, early and late forcing, Vines, Peaches, Strawberries, Melons, Cucumbers, Stove and Greenhouse Plants; good Flower and Kitchen Gardener. Excellent character from late employer.—**A. B.,** 2, King Street, Leamington.

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GARDENER (HEAD, WORKING).—Age 42 married; thoroughly competent to Manage Flower, Fruit, and Kitchen Gardening, also Flower and Kitchen Gardening. Good character and excellent testimonials.—**G. WICKING** 204, Mayall Road, Heme Hill, Dulwich, S.

GARDENER (HEAD, WORKING), where one or more are kept.—Age 40, married, no family; twenty-five years' experience in all branches of Gardening, Early and Late Forcing; has a thorough knowledge of the various kinds of Fruit, Flowers, and Poultry if required. Good character.—**A. B.,** 89, Eleanor Road, Waltham Cross, London, N.

GARDENER (HEAD, SINGLE-HANDED), where one or more are kept.—Single; is thoroughly understands the profession.—**S. C.,** 14, Warren Road, Croydon, Surrey.

GARDENER (HEAD, or good SINGLE-HANDED).—Married; no family; has a practical knowledge of Horticulture, Flower and Kitchen Gardening. Good character. Lodge or house preferred.—**S. B.,** 6, Otway Terrace, Upper Norwood, London, S.E.

GARDENER (HEAD), or GARDENER and PROPAGATOR. Married; no family; thoroughly practical in all branches of the profession. Fourteen years' first-class testimonials.—**BETA,** Box, Post-office, Otley, near Leeds.

GARDENER.—Age 34, married, no family; of a good knowledge of the profession. Good reference.—**C. L.,** 11, St. Peter's Place, Hater Hill, S.E.

GARDENER.—JOHN COWAN, the Vine-grower at Liverpool, would be glad to recommend to any Nobleman or Gentleman requiring a first-class Gardener, a man in the prime of life, who thoroughly understands Horticulture, and having had many years' experience in some of the best places in England and Scotland.

GARDENER.—WILLIAM IRVINE, Gardener to Lord Howard, will be pleased to recommend his services to any Lady or Gentleman in want of an energetic, clever man as Gardener, and will answer all particulars concerning him.—**WILLIAM IRVINE,** Gardener, Clock Street, Glasgow.

GARDENER (SINGLE-HANDED).—Age 25; married, no family; thoroughly understands the profession. Three years' good character.—**J. G.,** Post-office, Woodford Green, Essex.

GARDENER (SECOND).—Age 27; can be well recommended.—**T. CREAMER,** Cottage, Canterbury Road, Forest Hill, London, S.E.

GARDENER (SECOND), where three or four are kept.—Age 21, single; seven years' experience. First-class reference.—**T. O.,** Upper Mill Place, Chichester, West Sussex.

GARDENER (SECOND), in a good Establishment.—Age 28, married; good character and references. Wife understands Dairy and Poultry if required.—**F. G.,** 1, St. Paul's Church, Highbury, W.C.

GARDENER (SECOND), in a Gentleman's Garden.—Age 21.—**A. CROOK** who is recommended a steady Man as above; has had five years' experience in a Nursery.—**A. L.,** Castle Hothingham, Essex.

GARDENER (SECOND), in a good Establishment.—Age 21; has a knowledge of Vines, Peaches, Melons, Cucumbers, Stove and Greenhouse Plants. Good character from present employer.—**X. V.,** Post-office, Leatherhead, Surrey.

GARDENER (SECOND), in a good Establishment.—Age 22; nine years' experience, including Vines, Fines, Melons, Cucumbers, Stove and Greenhouse Plants, &c.—**W. B.,** 54, Fleet Road, South Hampton, London, N.

GARDENER (UNDER), under Glass.—Age 21. References on application.—**A. B.,** The Gardens, Wortley Hall, Sheffield.

GARDENER (UNDER, or SINGLE-HANDED), who thoroughly understands Kitchen Gardening, Peaches, Melons, Cucumbers, Stove and Greenhouse Plants. Good character.—**T. W. ANDREWS,** a Providence Cottage, North Road, Forest Hill, S.E.

GARDENER (UNDER), or ASSISTANT in a Gentleman's Garden.—Age 21.—**S. G. GARDNER,** 103, St. Paul's Road, Highbury, London, N.

GARDENER (UNDER), or IMPROVER.—**A. YOUNG;** two years' experience under an experienced and successful exhibitor.—**A. B.,** Turville Heath, Henley-on-Thames.

FOREMAN, in a good Establishment.—Age 25; twelve years' experience in all branches of the profession, three years as Foreman in present situation. Good testimonials.—**F. FOSKOE,** East Grinstead, Sussex.

FOREMAN, in a Nobleman's or Gentleman's Garden.—Age 24; has a general knowledge of the profession. Good character from present and previous employers.—**The Gardens, Lifford Hall, Ouseley, Northamptonshire.**

FOREMAN, in a Nobleman's or Gentleman's Garden.—Age 25; has a thorough knowledge of practical Gardening, Vines, Peaches, Grapes, Strawberries, and Greenhouse Plants, Early and Late Forcing. Three years good personal character as to honesty and capabilities. Will be highly recommended.—**State wages given in present place, to A. B.,** 8, Elgin Terrace, Maidw Vale, W.

FOREMAN, or SECOND.—Age 23; good knowledge of Stove, Greenhouse, and other Plants, and also of Kitchen Gardening. Good character. Can be highly recommended.—**M. N.,** Orinley, Worcester.

To Nurserymen.

FOREMAN, under a Manager, as Grower of Fruit and Flowering Plants.—**W. GARDNER,** 103, St. Paul's Road, Highbury, London, N. Good reference.—**G. S.,** 8, Mill Place, King's Road, Chelsea, S.W.

JOURNEYMAN, in a Nobleman's or Gentleman's Garden.—Age 23; two and a half years' good character.—**BROOK,** Gardeners, Raydon Hall, Eastcote, near Pinner, Middlesex.

JOURNEYMAN, in the Houses, in a Nobleman's or Gentleman's Establishment.—Age 40. Five years' experience, and two years' good character in present situation.—**W. H. CLINE,** Gardeners, Worslop, Notts.

PROPAGATOR, or FOREMAN and PROPAGATOR.—Age 30, married; well understands Arables, Camellias, Roses, Rhododendrons, Clematis, Vines, Soft-wooded Staff, &c.—**Good references.—R. H.,** Post-office, New Wimbledon, S.W.

PROPAGATOR, and Grower of Soft-wooded Plants for Market.—Age 24.—**G. OSBORNE,** Kay's Nursery, North Finchley.

PROPAGATOR (HARD-WOODED), where Plants are required in quantity.—Six years in present situation, where Clematis, Royal Horticulturists, Miscellaneans, and all kinds of New and Rare Hardy Plants are propagated and grown, on the most approved methods.—**ROY,** Messrs. Charles Lee & Son, Nursery, Wood Lane, Isleworth, W.

IMPROVER, under a Foreman, in the Houses.—Age 18; has had nearly two years' experience in a first-class Gentleman's Garden, previous to that in a good Nursery, by the very best recommendations.—**Apply,** by letter, to F. BATCHELOR, Weston Green, Thames Ditton, Surrey.

IMPROVER, in a Gentleman's Garden (Gardening, &c.) in Pleasure Ground or Kitchen Garden.—Age 20. In life in both preferred. Good references as to character.—**WILLIAMS MARTIN,** The Cottage, Chilworth, Rousey, Hampshire.

ASSISTANT (GENERAL), to any respectable Nursery firm.—Highly respectable; well up in collecting Orders, invoicing, &c., a good Penman, and well acquainted with Hardy Plants, Trees, and Shrubs.—**W. Thomas Thornton,** Heatheride, Basingst.

TO BOTANISTS.—The Advertiser is anxious to obtain an appointment as ASSISTANT to any gentleman going abroad on Botanical Research.—**ALPHA,** Gardeners, Finsbury Circus, Clerkenwell.

BOOK-KEEPER, CLERK, or other position of Trust, in a first-class reference.—**K. W.,** 2, Burrell Street, Ipswich.

LAND AGENT and STEWARD.—Has been accustomed to the Management of an Estate of nearly 500 Acres, also has had the Superintendance of the House and Farm, and has been in the prime of life, and his late employer, with whom he has been many years, well acquainted, and all give a personal character to any Lady or Gentleman who may require the services of one who is thoroughly practical in everything connected with the Management of an Estate. Can be well recommended him as being a person of the highest probity.—**AGRICOLA,** care of 275, Strand, London, W.C.

To Nobleman and Gentlemen.
PAINTER AND SIGN-PAINTER, or other position of Trust, on an Estate.—**W. GARDNER,** 103, St. Paul's Road, Highbury, London, N. Good reference.—**F. G.,** 7, Emma's Cottages, Gipsy Road, Lower Norwood, Surrey.

EP P S S C O C O A : GRATEFUL-COMFORTING.

By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by careful application of the fine properties of well-selected Cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle miasms are floating around us ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure Food and a properly nourished frame.—*Civil Service*—**W. D. ANDERSON,** Sole and General Packeter, JAMES EPPS AND CO., HOMOEOPATHIC CHEMISTS, 48, Thredenolde Street, and 170, Piccadilly.

KINAHAN'S LL WHISKY.

Kinahan's finding, through the recommendation of the Medical Profession, the demand for his **EXTRACTED OLD LL WHISKY** for purely medicinal purposes very gradually increasing, he has been pleased to inform by Dr. Hassall—"I have very carefully and fully analysed samples of this well-known and popular Whisky. The samples were 20s and 25s and 30s, and were found to be pure, well-matured, and of very excellent quality. It is of a very high and successful full confidence in the purity and quality of this Whisky."—**W. GARDNER,** 103, St. Paul's Road, Highbury, London, N.

DINNEFORD'S FLUID MAGNESIA.

The best remedy for ACIDITY of the STOMACH, HEARTBURN, HEADACHE, GOUT, and RHEUMATISM, and for all the ailments for which the Constitution, Ladies, Children, and Infants, require.

DINNEFORD AND CO., 175, New Bond Street, London, and all Chemists.

HOLLOWAY'S OINTMENT and PILLS.

"Safety against Danger."—Surrounded on all sides by the cause of diseases (especially if the old proverb hold, "As the worm in the bud will eat its way through the apple"), it is constant watch if it would retain and preserve his health. These purifying Pills present the most certain and effectual means of removing the cause of disease, and restoring the system to that regularity which it requires to preserve its health. It is peculiarly well adapted for the young and delicate, who can with impunity only take tender treatment.

SALES BY AUCTION.

Periodical Sale of Poultry and Pigeons (4917).

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 26, at half-past 12 o'clock precisely, surplus stock of CARRIERS from Colonel Hassard; TURBITS from Mr. S. Sater; and a great variety of Game POULTRY and PIGEONS from the Yards and Lots of well-known breeders and exhibitors.

On view morning of Sale, and Catalogues had.

Consignment of Plants from Ghent, &c. (4918).

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 21, at half-past 12 o'clock precisely, CAMELLIAS, AZALEAS, and Calceolarias from Ghent, and other plants from the ROSES, from a well-known English Nursery; Trained and Standard FRUIT TREES, Hardy and Ornamental TREES and SHRUBS, and HERBAGE PLANTS, from KUSTIG GARDEN-WORK, GLADIOLI, LILIUMS, &c.

On view the morning of Sale, and Catalogues had.

Lilies, &c.

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 26, at half-past 12 o'clock precisely, 2000 Bulbs of LILIUM AFRATUM, and 2000 very fine bulbs of LILIUM CRISTATUM, not arrived from Japan in the best possible condition; four cases of ARACARIAS, a quantity of MAPLES from Japan, and an importation of good bulbs of the following: LILIUM NELCHERENSE. The white flowers of this magnificent Lily are deliciously fragrant, and of great size; it bears several flowers on a stem, each flower nearly a foot long. Also some excellent bulbs of the following new varieties of Liliun nelcherense, viz. LILIUM NELCHERENSE ROSEUM—the exterior of the flower of this variety is pink, the interior white. LILIUM NELCHERENSE FLAVUM—a handsome light yellow-coloured form of this charming Lily. LILIUM NELCHERENSE TUBIFLORUM—a magnificent pure white Lily, with very long flowers; figured in Wight's Icones Plantarum Indiarum. LILIUM NELCHERENSE TUBIFLORUM LUTEUM—very handsome variety, figured in the same work.

And some splendid Bulbs of other choice LILIES, including Bloomerian ocellatum, purpureum, Humboldtii, pardalinum, pulchellum, and others from California, including CA. CHORIUS, CYCLOTHRAS, BRODIEAS, TRITEUCALIS, CALIPALAS, ERYTHROGONON, and others. Also some fine blooming Bulbs of the handsome TENSE CANALICULATUM, and the rare BANDES flowered BEGONIAS, AMARYLLIS, with a variety of other Bulbs and Tubers.

On view morning of Sale, and Catalogues had.

The Unrivaled Collection of Specimen Stoves and GREENHOUSE PLANTS of the late F. G. WILKINS, Esq. of Leyton.

MR. J. C. STEVENS has received instructions from the late F. G. WILKINS, Esq., on THURSDAY, March 22, at half-past 12 o'clock precisely, the magnificent COLLECTION of STOVE and GREENHOUSE PLANTS formerly in the possession of the late F. G. WILKINS, Esq., Leyton, comprising Heaths, Aloxetia, Crotons, Anthurium, Anas, Palms, Ferns, Trained Ficus, &c. This collection is without doubt one of the finest in the kingdom.

On view the day prior and morning of Sale, and Catalogues had.

Imported and Established Orchids.

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 26, at half-past 12 o'clock precisely, a large consignment of ONCIDIUM MACKINTOSH, just received from C. Zimmerman, in the finest possible condition, and consisting of fine plants of the pretty ONCIDIUM ROSRUM and the rare BANDES MEDUSE, ONCIDIUM SERMOTUM, ODONTOGLOSSUM CLAVIUM, and several other fine CATACLYPSAS. An important lot of GYPSOPHYLLUM POMPERIUM and G. ELLISI; several small collections of established Orchids.

On view the morning of Sale, and Catalogues had.

Orchids.

MR. J. C. STEVENS will sell by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, March 27, at half-past 12 o'clock precisely, a COLLECTION of ESTABLISHED ORCHIDS, including many very choice and rare species, and of the following:— Odontoglossum septrum Odontoglossum cirrhosum Odontoglossum phytocladum Odontoglossum Hartwegii Odontoglossum plumaceum Odontoglossum Wagneri Odontoglossum macranthum hastiferum Odontoglossum superbiense Odontoglossum superbiense Odontoglossum superbiense Trichopetalum glomeratum Odontoglossum crispum Andrei Dendrobium Macranthum and several good established Orchids.

ODONTOGLOSSUM VEXILLARIUM, ODONTOGLOSSUM KEZLII,

and a fine lot of the beautiful

ODONTOGLOSSUM CORONARIUM.

Also an importation of the following:—

C. C. LOGYNE GLANDULOSA,

DENDROBIUM BARBATUM,

DENDROBIUM AUREUM,

and the true DENDROBIUM ALBUM.

Wight, in describing this beautiful Dendrobium in *Icones Plantarum Indiarum*, writes, "I have never met with it; large pure white flowers."

On view the morning of Sale, and Catalogues had.

City Auction Rooms, 38 & 39, Gracechurch Street, E. C.

MESSRS. PROTHEROE AND MORRIS will sell by AUCTION, at the City Auction Rooms, as above, on THURSDAY, March 22, at half-past 12 o'clock precisely, a consignment of CARNACTIONS, FICUSSES, and PINKS of fine growth; a superb assortment of 500 Standard and Dwarf ROSES, selected from the best of the following: AMELIA, PLAINS, CONFIERE, and EVERGREEN SHRUBS, choice GREENHOUSE PLANTS, DAHLIAS, LILIUM AFRATUM, Imported and other FLOWER SEEDS, &c.

On view the morning of Sale. Catalogues had at the Rooms, and at the Auctioneers', 85, Gracechurch Street, E. C., and Leytonstone, E.

Cheltenham

HIGHLY IMPORTANT UNRESERVED SALE of the entire stock of GREENHOUSE STOVE and GREENHOUSE PLANTS, which for many years past have been exhibited at the leading Shows throughout the Kingdom, and which, under the management of Mr. James Cypher, who during the last two years has been the winner of 500 First Prizes and of £1005 in prize money, exclusive of a great number of Colours.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. James Cypher (who is giving up exhibiting, in consequence of the loss of his own accommodation, the Queen's Road Nurseries, Cheltenham, on WEDNESDAY, March 21, at 12 and 12 1/2 for half-past 12 o'clock precisely. The following form a portion only of the specimens to be offered:—

STOVE PLANTS.

Table with 4 columns: Name, Height above the Pot. Ft. In., Width. Ft. In., Pt. In. Includes PRITCHARDIA PACIFICA, COCOS WEDDELLIANA, LIVISTONA ALTISSIMA, GEOMA FUMIDA, DAVALLIA MOORIANA, GLEICHENIA MENDELII, URUPETRIS, FLABELLATA, CIBOTIUM BIKERIANI, ADIANTUM SCUTUM, ENCEALARTONIA, CROTON WEISMANNI, IRREGULARE, EUCARIS AMAZONICA, ANTHURUM, CRYSTALLINUM, ENCEALARTONIA, AMABILIS, COLEI, FRANCISCA EXINIA, IMANTOPHYLLUM MINIATUM, AZALEA SIR H. HAVELOCK, PIPERACEAE, FLAG OF TRUCE, MADAME MIELLEZE, ERICA VICTORIA REGINA, VENTRICOSA COCCINEA, CANADALEANA, AMULA, HEDAROMA TULIPIFERA, PIMELEA DECUSSATA, STACTIS IBERICA GILBERTI, NICKSONIA ANTARCTICA, PHORNIUM VEITCHI, CORDYLENA INDIVISA.

The Stock may be viewed at any time. Catalogues may be had (6d. each, returnable to purchasers) of Mr. J. CYPHER, at the City Auction Rooms, 38 & 39, Gracechurch Street, E. C., and Leytonstone, E.

MR. E. P. NEWMAN will sell by AUCTION, on the Premises, at Mr. Walker's, Stafford Bridge, Hillingdon, Uxbridge, on MONDAY and TUESDAY, March 20 and 21, at 12 o'clock each day, 7000 Fine Bundles GARDEN and FINE STAKES; 3000 Hundred Feet STICKS; 16000 BEEBEEB and OAK POLES; 10000 PALMS, 5000 PALM TREES, 10000 HURDLES, &c.

On view on Saturday preceding the Sale, and Catalogues can be obtained at the office of the Auctioneer, 41, High Street, Uxbridge, Middlesex.

Ladbroke Nursery, Notting Hill, W.

TO NURSERYMEN, GILDED, and OTHERS. MR. JAMES REEVES is instructed to sell by AUCTION (without reserve), on THURSDAY, March 22, at 12 o'clock, a large lot of choice seedling Greenhouses, Pits, and Hot-water Cylinders, &c.; Plants in Pots, Azaleas, Ferns, Greenhouses, Crysalis-cases, and other articles, suitable for the trade. Apply to STANHOPE PHAETON.

On view on any day previous to the Sale. Catalogues with full particulars of the Auction, at 129, High Street, Notting Hill, W.

Exhibition, Conservatory, Greenhouse, and Stove PLANTS.

ATTRACTIVE SALE of a splendid Collection of SPECIMEN PLANTS, the property of a leading Firm of Exhibitors in the North of England, who are giving up growing.

ARTINGSTALL and HIND beg to notify the receipt of preliminary instructions to sell by AUCTION, on WEDNESDAY, March 21, at the Green Water Exchange, Manchester, a valuable collection of EXHIBITION PLANTS.

Catalogues in preparation, which may be obtained on March 1 on application to the Auctioneers, 21, Princess Street, Manchester.

J. WARD begs to announce that, owing to an OBJECTION to his two EXHIBITION VANS BEING SOLD on the Premises, he is obliged to hold on GROUND ADJOINING the place of Sale of the Exhibition Plants belonging to the late F. G. Wilkins, Esq., March 22.

FOR IMMEDIATE DISPOSAL, a SMALL ESTATE of about 12 acres, with House and commodious Buildings, situated near, contiguous to Railway Station, well placed for Nursery Grounds, coaching or insurance being near. All things to be sold in a short distance. Free steam water, immediately Apply.

M. E. L., care of George Kelly, 33, King Street, Parliament Street, Westminster, S. W.

TO BE LET, about 28 miles from London, and near a Railway Station, a KITCHEN GARDEN, containing about an Acre in a high state of Cultivation, and well stocked with Fruit, and other Produce. The Range of Hills, Forest, with water and a quantity of Cold Pits. Also about 65 ACRES of PASTURE LAND. For particulars apply to Messrs. WILKINSON, THYNNE, 21, Green Park Street, Westminster, S. W.

To Florists, Nurserymen, and others.

TO BE LET, or the GROUND LEASE TO BE SOLE, a very VALUABLE PROPERTY, with large frontages to Edgware Road and St. John's Wood Road, where the business of a Florist has been many years carried on. There is a good House and other excellent buildings on the ground. Apply to Messrs. WILKINSON, ABBOTT and RUSHWORTH, 25, Savile Row, W.

TO BE LET, a NURSERY and MARKET GARDEN, in the neighbourhood of Reigate, containing rather more than an acre, planted with Fruit Trees. There is a good Cottage, Hot-house, Greenhouse, and Orchard-house, well-stocked with Peach and other trees. Rent £25. The present occupant is retiring, and offers upwards of 25 years' Letters to be addressed to Messrs. TAYLOR, HOARE, and TAYLOR, 25, Great James Street, Bedford Row, E. C.

Pelargoniums, Poliarioniums.

JAMES HOLDER and SON have a fine healthy Stock of the above to offer at the following low prices for Cash, viz. 50s. per 100, distinct sorts, hamper and package included; also extra strong plants, in 3s. 6d. per dozen, 4s. 6d. per doz. per doz., 6s. per 100, hamper and packing extra. Crown Nursery, Reading.

Important Notice.

JAMES HOLDER and SON beg to inform the public, and the public generally, that the PELARGONIUMS advertised by them are not the Zonal Class, but consist of Show, French, and Fancy varieties. The Seed and Collection of first-class Pelargoniums and other testimonials received from various parts of the country.

Loebelia, Emperor William.

H. B. MAY offers strong plants of this fine LOEBELIA at 3s. per dozen, post-free; 1s. per pair, 12s. per 100. GENIATIAS, in 4ths, showing bloom; 4s. and 5s. per 100. Dysons's Lane Nursery, Edmonton, N.

To Trade.

GERMAN LILIES of the VALLEY, extra strong for sale in quantities, can be supplied on very advantageous terms by ordering at once. For prices and samples apply to C. HUTCHINSON, 65, Horton Lane, Bradford, Yorkshire.

Verb-nas, Verb-nas, Verb-nas.

WILLIAM BADMAN offers Purple King, White, Scarlet, Crispum, and Rose Verb-nas, in single pots, 1s. per 100; or in bulk, 1s. per 1000. Liquid rooted Cuttings, 6s. per 100; 5s. per 1000, package included. C. HUTCHINSON, 65, Horton Lane, Bradford, Yorkshire. Country Nursery, Gravesend, S. E.

To Potato Planters.

CHRISTMAS QUINCY begs to state that he has received a consignment of AMERICAN POTATOES of the season best improved, and those, with selections of the best seed, leading English sorts, makes his warehouse one of the best in the kingdom. Catalogues and samples with cuttings, on request, on application. N. B. Wholesale LIST on receipt of Trade Card. CHRISTMAS QUINCY, Seed & Potato Merchant and Grower, Peterborough.

HARDY HEATHS, 100,000 :—
 13 plants in 24 varieties, 6s.
 24 plants in 24 varieties, 12s.
 30 plants in 24 varieties, 18s.
 40 plants in 40 varieties, 24s.
 For varieties see CATALOGUE.

ANDROMEDA, various.
LEDUMS, various.
JAMES SMITH, Darley Dale Nurseries, Matlock.

VERBENAS, VERBENAS, VERBENAS.
 Strong, with stout stems, perfectly free from disease, White, Purple, Scarlet and Pink, 6s. per 100, 3s. per 500. rooted cuttings, in 21 distinct and beautiful varieties, first price 6s. per 100, 3s. per 500.

H. BLANDFORD, The Darkest Nurseries, Blandford.

E. BURGESS begs to offer the following :—
 Strong Standard and Dwarf PEARS, ROSES, Evergreen and Deciduous Flowering SHRUBS, English Oak, ELMs, and LIMES, up to 10 feet, and Spruce FIRS. Prices on application.

The Nurseries, London Road, Cheltenham.

Presented (by post) on application,
NEW CATALOGUE for 1877.
 For remarks on Plants offered, see prices, see last week's large Advertisement. Plants true to name, well hardened off, and in price. See New Catalogue.

WILLIAM ALGER and **SON**, The Oldfield Nurseries, Altrincham.

To the Trade.—Turnip Seeds.
H. AND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.

Seed Growing Establishment, Wisbech.

To the Trade.
STANDARD and DWARF ROSES of the leading sorts—splendid Plants, to better in the Trade, well-ripened wood—about 15,000 Standards and 5,000 Dwarfs, GRANTED true to name.

For full particulars apply to
GURANT and **SON**, Park Nurseries, Portland, Ireland.

Green Vines of sorts in four kinds.
ROBERT PARKER, having a surplus stock of Small-leaved VINES in pots, suitable for edgings, pattern beds, covering banks, &c., will be pleased to dispose of them in quantities, at very low prices. Name, size, and prices per dozen, 10s. or 1000, will be given on application.

Leicic Nursery, Looting, Surrey, S.W.

Herbaceous and Alpine Plants (Illustrated).
THOMAS S. WARE'S CATALOGUE of the above for the present year is Now Ready, and includes New Kinds, and Choice Perennials, Biennials, and Ornamental Grasses, Bog Plants, and Aquatics; also a few Bulbs. Post-free on application.

Hale Farm Nurseries, Tottenham, London.

Wood's Early Frame Radish (for Stock).
WOOD AND INGRAM can supply a limited quantity of the above Seed, grown from specially selected and transplanted plants, which may be relied upon as being as true and pure as the original stock sent out by their first and only grower.

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The Best Hardy Bedding Plant.
CLEMATIS JACKMANI.—Flowers rich color, 4 inches across, to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only kind of clematis which may be kept up free growth, 12s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application.

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ALTERNANTHERAS, good stuff, shaken out and forwarded free.

ALTERNANTHERA AMENA, 12s. per 100.
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 CLOVES, all England's trim, 20s. per 100 pairs.

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LOBELIA PUMILA MAGNIFICA (true).
 This Lobelia is said to be identical with the one recently offered under the name of *White Lobelia*, see *Gardeners' Chronicle*, March 10, p. 313. Fine, strong-rooted cuttings, 4s. per 100, 2s. per 500.

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Extra Strong SEAKALE, 1s. per dozen.
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Special Culture of Fruit Trees and Roses.
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PINUS AUSTRIACA, 10 to 16 feet.
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PORTUGAL LAURELS, perfect pyramids, 6 to 8 feet.
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 The above are all transplanted spring, 1876, and will remove any disease which may be present.

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Curled	1 quart
Australia	1 pkt.
CUCUMBER	2 pkts.
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LEEK, Musselburgh	1 quart
LETTUCE, Paris White Cos	1 quart
Dreadnought	1 quart
Worcester Cabbage	1 quart
MUSTARD	4 pkts.
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James' Keeping	1 quart
PARSLEY, Extra Curled	1 pkt.
PARSNIP, Hollow-crowned	2 oz.
RADISH, Wood's Early Frame	1 quart
Long Scarlet	1 quart
Red Turnip	1 quart
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SAYOY, Green Curled	1 pkt.
SPINACH, Round	2 oz.
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TURNIP, Early Snowball	1 quart
Early Kidney	1 quart
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STRAWBERRY MARROW	1 quart
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New Continental Roses for 1877.

H. BENNETT'S own selection, in the best possible
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Descriptive LISTS may now be had post-free on
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A remarkable and splendid variety, far superior to any
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tuberous-rooted, double flowered, mixed colours, 2s. 6d.
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PINK, from named collection, 1s. and 2s. 6d.
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MIMULUS, superb strain, same as exhibited every year at the
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Gem, specimen from plants, panula grandiflora,
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CHESTNUTS, Horse, 11 to 12 feet.
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LIMES, 12 to 14 feet.
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CHESTNUTS, Spanish, 9 to 10 feet.
POPLARS, Lombardy, 15 to 20 feet.

All with clean stout stems.

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PLATANUS OCCIDENTALIS (true), 10 to
28 feet high, and girthing 4 to 8 inches at 4 feet
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LIMES, 12 to 20 feet high, and girthing 6 to
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The CAMELLIAS are also still very fine.

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Vigorous growing, free flowering, beautiful habit, quite distinct, and described by Dr. Masters as one of the best hybrid varieties of Fuchsia. The blooms, 3 inches in length, are of great substance. The tube and sepals are of a light rosy carmine, corolla deep carmine.

This is a valuable decorative plant. It was awarded First-class Certificates at the Crystal Palace and Royal Botanic Society, Regent's Park, and is figured in the *Floral Magazine* for February.

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Perhaps the Finest Rose for Bedding ever sent out.

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Its inflorescence may be imagined when it is stated that flowers were cut daily from June to November 20, 1876.

Good Plants will be sent out, in strict rotation, at 10s. 6d. each,
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DENDROBIUM MCCARTHILE

MASDEVALLIA HARRVANA COEULESCENS
ODONTOGLOSSUM CIRRHOSUM
ONCIDIUM SUPERBIENS
CATTLEYA TRIANÆ SPLENDENS
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And several good established Plants of ODONTOGLOSSUM VEXILLARIUM, O. ROEZLII, a fine lot of the beautiful O. CORONARIUM; also an importation of the handsome CELEOGYNE GLANDULOSA, DENDROBIUM BARBATULUM, D. AURUM, and the true D. ALBUM.—Wight, in describing this beautiful Dendrobium, in *Iones Plantarum Indicæ Orientalis*, says: "This is one of the handsomest of the genus I have yet met with; large pure white flowers."

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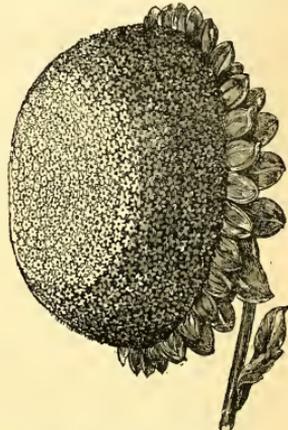
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The Finest Strain of Quilled Aster
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Blushing Bride.—A perfect gem—the outer ring of the flower of a pretty pale pink colour, gradually shading off to a centre of the purest snow-white; pale salmon guard-petals. Form of flower beautifully full 2 d. and rounded. For packet 2 6
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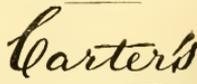
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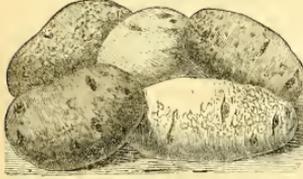
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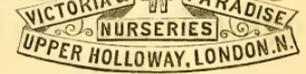


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SATURDAY, MARCH 17, 1877.

THE COLORADO BEETLE.

IN a recent notice of Mr. Riley's last entomological report we pointed out the grounds there were for fearing that the Colorado beetle might be introduced into this country. We now propose to devote a short space to considering how it should be dealt with if it should come; and that the reasonableness of our prescription may commend itself to our readers, we must give them a very brief summary of the conditions under which it is likely to present itself.

The eggs are laid on the leaves, the larvae feed on the leaves, and the pupæ undergo their metamorphosis underground, and as there is no importation of growing Potato plants from America to England its coming in any of these forms need not be dreaded. But the perfect insect has wings, flies on board ships in the American harbours, and may easily be brought over in them. Therefore, if the insect comes at all, it is almost certain that it will arrive in the beetle stage. When winter comes it burrows into the ground, often to a considerable depth, and remains there in a torpid state, coming out in spring. In other words, it goes down in the beginning of October and comes up in the end of May, hence the only time when we have to fear its coming is from the beginning of June to the end of September.

We see that our Board of Trade and our Colonial Department have both been taking precautions against its arrival during the rest of the year—when the beetle is sound asleep 12 or 18 inches underground. We can guarantee the success of their precautionary measures until the beetle wakes up again; when it does so, the importation of Potatoes and relative measures of precaution will be at an end!

On reappearing the first business of the beetle is to begin to propagate a fresh brood, and the female will lay her eggs on the young shoots of the Potato plant in about a week after her reappearance. The eggs are hatched in about a week after being laid. The larvae take about a fortnight to become full fed. They then descend and bury themselves in the earth, and in three or four days become pupæ, in which state they remain for about ten days, after which the perfect insect appears.

It is said that the perfect insect does not pair for about seven days after its appearance, but this is opposed to the analogy of insects in general, which do not usually lose any time in pairing after emerging from the pupa state; but, assuming that it is as stated, the above periods give about thirty-five days as the time required to produce a new generation, and as the number of eggs which each female is said to lay is from 700 to 1000, perhaps an increase of 300 fertile females would be a fair estimate for each. The total increase at that rate from one female in one year is put down at upwards of 38,000,000.

Now applying these premises to our own position let us see during what month the insect is most likely to arrive in England. The period when there is least fear of their coming over is during the thirty-five days (June) when the first brood is, so to say, being manufactured. The numbers of the old last year's insects are comparatively few, and the new hordes are not yet

the north end of the lake there was abundance of the alpine aquatic form of *Carex vulgaris*, and at a considerable distance from the shore *Isotetes lacustris*, *Subularia aquatica*, and *Lobelia Dortmanna* were obtained by wading. On the north side there are patches of beautiful strand composed of disintegrated granite and porphyry, with which the mountain abounds. Leaving the lake we continued the ascent till we reached a point about 2700 feet, where there is a rocky ravine or gorge called Coire na h-Urcharie, through which a small stream runs. This stream has its rise in the last spring met with before reaching the summit. It flows westwards, and has a very abrupt and precipitous course. In the ascent from the loch to this point we gathered *Saxifraga aizoides*, *S. hypnoides*, *Gnaphalium supinum*, *Alchemilla*

ravine and the spring, which is 3363 feet above the sea, we gathered fine specimens of *Silbaldia procumbens*, *Aira alpina*, *Ranunculus acris*, alpine form; *Veronica humifusa*, *Salix herbacea*, *Cerastium pubescens*, and *C. compactum*, the last being in considerable quantity and in fine flower. At a short distance above the spring, or about 3500 feet, Phanerogamic vegetation and soil almost wholly disappear, and only lichens and a few mosses are seen on the large blocks of porphyry, with which the upper part of the mountain is covered. At 3900 feet we reached the verge of the precipices immediately overlooking Coire na Ciste, where there is a cairn. From this we proceeded along the top of these precipices, which face north-east, and form the back of the mountain. All the corries were filled with snow. The summit was reached amidst

mingled with sensations of a different kind, when we take our attention from the objects at a distance to the spot on which we stand. On looking beneath us, a few paces from the summit, we see the edge of a frightful precipice, which cannot be approached without caution, and from which the boldest must shrink with terror. What adds to the danger of the trembling spectator, the edge is in a wholly constant, loose fragment, which a little pressure is often sufficient to displace, and, when of any considerable size, their own weight soon urges down the precipice with a rushing noise and tremendous crash. This sound, produced by the rattling of the stone as it impinges successively during its fall on the projecting points of the perpendicular rock, is reverberated among the surrounding cliffs, and filling the vast adjacent cavity, thunders along the valley below. The effect accordingly on the ear is grand and impressive, and has occasioned the common but perilous amusement of heaving stones from the top of the precipice into the dreadful abyss."

The summit of the mountain, which is 4406 feet above the sea, is crowned by a cairn about 6 feet high. This was mounted by the party, who, standing shoulder to shoulder, shouted into space a toast which will never be forgotten by any who joined in it, viz., the health of Professor Balfour, the veteran President of the Club. Close by the cairn a single very minute plant of the starry *Saxifraga* (*Saxifraga stellaris*) was picked, thus being the highest flowering plant in Britain. A few feet below the summit, and on the very verge of the precipice, we met with a rare moss (*Andreaea nivalis*), in great cushion-like masses.

The next day (26th) we visited the precipices or "snow corries" on the north-east side of Ben Nevis. Our course was following the stone burn, or as it is called in Gaelic, Ailt a Mhuilinn, which takes its rise in Coire Less, a little to the south of the snow corries. In the ascent we again observed many species of plants common to similar moorish and subalpine situations in the North of Scotland. Several species of mosses and lichens were collected, including *Mnium subglobosum*, *Dicranum falcatum*, magnificent specimens of *Sphagnum compactum*, and *Cladonia deformis*. At about 2000 feet above the sea we noted in one or two spots abundance of *Cornus suecica*, both in flower and fruit, along with *Lycopodium alpinum*, *Equisetum rigum*, *Rubus Chamaemoras*, and *Hookeria lucens*, a moss not usually found at such an elevation. On the northmost rocks, or those nearest the point of ascent, little of interest was met with.

Proceeding southward, and climbing into all accessible places, we met with *Vaccinium uliginosum*, *Thalictrum alpinum*, *Silene acaulis*, *Potentilla alpestris*, *Saxifraga oppositifolia*, *S. nivalis*, *Cherleria scoldies*, *Salix reticulata*, *Oxyria reniformis*, *Veronica humifusa*, *Silene maritima*, *Armeria maritima*, and *Carex atrata* sparingly. *C. rigida* was more plentiful, and very large, but most of the specimens had their fruit affected by *Ustilago urceolorum*, a fungus almost peculiar to *Cyperaceae*. *Saussurea alpina*, *Draba incana*, *Juncus trifidus*, and *J. triglumis* were noticed. The only species of *Hieracium* met with were *H. anglicum* and a single specimen of *H. chrysanthum*, *Veronica saxatilis* was seen in one spot in flower. This removes the query put after the plant in Watson's *Zoogeographical Zoology*. Few Ferns were observed, the only species worthy of note being *Aspidium Lonchitis* and *Hymenophyllum unilaterale*. The two best plants collected were undoubtedly *Saxifraga rivalaris* and *Juncus castaneus*. The former was found in the first snow corrie, and the latter by the marshy sides of a small stream proceeding from the second snow corrie. This is a new country for the *Juncus*, so far as botanical works go. It is noted, however, in a guide-book to the district, as being found on the mountain. Below the upper snow corrie *Carex pulla* was abundant and in fine flower, and some of the large blocks of stone were almost completely covered with patches of *Andreaea alpina* in fruit. These snow corries and precipices are very grand, and at some points perfectly overwhelming when viewed from below. Imagine a precipitous front of rock, at least 1500 feet high, bending forwards at many of its points with a threatening aspect, and extending itself to a distance of more than a mile and a half, with enormous projecting masses or shelves, which fill the great re-entering angle of the mountain, and divide it into vast recesses or aisles of the wildest aspect. Of this stupendous and impressive object the grand and singularly picturesque feature is what

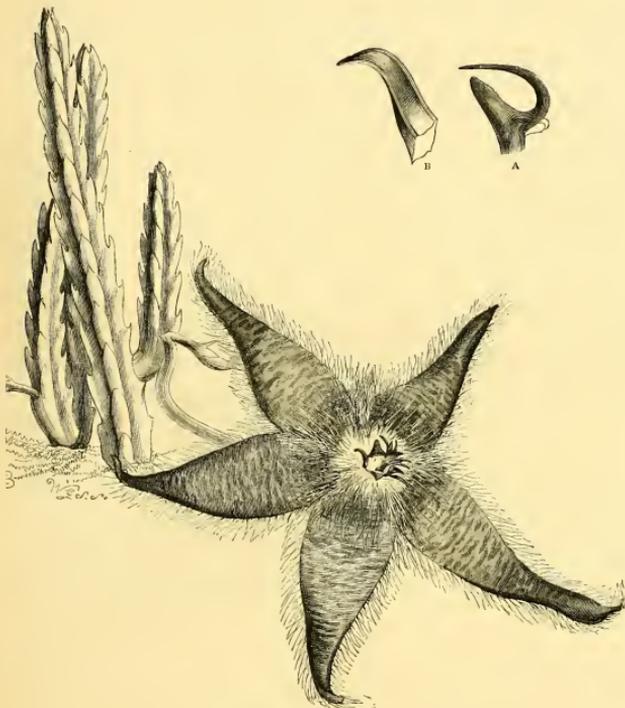


FIG. 54.—STAPEFIA UNGUIFETALA. A, ROSTRUM AND ALA; B, LIGULA (MAGNIFIED).

alpina, *Silene maritima*, *S. acaulis*, *Luzula spicata*, *Poa alpina*, and *Cryptogramme crispata*. The ravine is only 200 or 300 feet in length, and is certainly the best botanising spot on this side of the mountain. Here we met with *Thalictrum alpinum*, *Sagina saxatilis*, *Rhodiola rosea*, *Epilobium alsinifolium*, *E. alpinum*, *Armeria maritima*, *Cochlearia officinalis*, *Polypodium alpestre*, beautiful specimens of *Cerastium Smithii*, and *C. trigynum*, the last being in great abundance near the upper part of the ravine, and for 200 feet above it. The most remarkable plant of all was a form of *Saxifraga stellaris*, which grew in large mossy-looking patches, resembling *Montia fontana*, the leaves being as small, the branches as delicate, and the flowers nearly as tiny as those of that plant. Several species of *Hepatica* were also collected, including *Jungermannia cochleariformis* and two varieties of *Saxipania undulata*. Between the upper end of the

torrents of sleet and rain, thick mist, and a fierce cold wind, which unfortunately prevented us from seeing fully one of the most boundless prospects in Scotland. The leading characters that give the interest to this sublime and unrivalled scene are elevation, immensity, and extent. On a clear day are seen mountain ranges in all directions, intermingled with extensive water surfaces; the view ranges from the Murray Firth and the mountains in the shires of Ross and Sutherland in the north and north-east to Ben Lomond and the island of Colonsay in the south and south-west, comprehending a distance of about 180 miles. The scene is one which can scarcely be equalled or at least surpassed in the diversity of magnificent and striking objects, and in majesty and grandeur. The late Dr. Macknight, in speaking of what he saw from the summit says that, "the feelings excited at this commanding elevation are not, however, entirely un-

may be called the angularity of its appearance, both as a whole and in its subordinate parts. The face of the rock, in the progress of waste and decomposition, is everywhere furrowed or fretted by lines, which at a distance seem to shape it into innumerable fasciculi of small columns or fluted pillars, resembling columnar distinct concretions. These again are joined together in an endless variety of groups, ascending into pointed summits and serrated ridges, which form the most elegant mountain-lines, and which accumulate in the projections and recesses, towering successively behind each other, till the whole terminate at the summit of the mountain. But notwithstanding all this diversity of form and position, these rocks cannot be said to be rich in alpine vegetation, either in the number of species or number of individuals of a species.

Several distasteful gatherings were made both on the 27th and the previous day above 2000 feet. These were submitted to the Rev. Eugene O'Meara, of Hazelhatch, for examination, and the following is a list of the species which he detected:—*Coincinosidus Smitthii*, *Enanthe camelus*, *E. diodon*, *E. triodon*, *E. tetradium*, *Hemantidium bidens*, *H. majus*, *H. Soleirolii*, *Nivalia angustata*, *N. alpina*, *N. crassivenia*, *N. concocinifera*, *N. gibba*, *N. limosa*, *N. icostanum*, *N. rhomboides*, *N. serians*, *N. viridis*, and *Saurirella linearis*.

On the morning of the 27th the Club broke up. Our party proceeded by an early boat to Beaulieu or Fairlie town, and thence by coach to Glencoe, with its amazing scenery, and Inveroran to Tyndrum, and then by rail to Killin, and conveyance to Bridge of Lochy, in Perthshire. In several places by the roadsides about Inveroran the *Drosera obovata* was observed. On the 28th, Cama-crag, or the Crooked Rock, on the Breadalbane mountains, was visited, where *Woodia hyperborea*, *Myosotis alpestris*, *Hieracium pallidum*, *Gentiana nivalis*, and several other alpine plants were gathered.

The other party left Fort William later in the day on the 27th, and proceeded by Curranfer and Ardlough to Stronachan, at the head of Loch Sunard, in Argyllshire. They ascended the Beacpipe, a mountain the summit of which is 2800 feet above the sea, but they found it very unproductive. By the sides of the loch, however, a few good plants were collected, including *Malaxis paludosa*, *Pinguicula listanica*, *Utricularia minor*, *Osmanda repens*, *Lythrum Salicaria* (this plant was also observed in several spots by the sides of the Crinan Canal), *Drosera anglica*, *Jasione montana* abundant, *Scutellaria galericulata*, *Nephridium zelandicum*, and *Sedum anglicum*. This party returned by Ballahulish and Glencoe, and so ended a very pleasant week's botanical excursion. Specimens of the plants collected during the trip were exhibited.

ARTIFICIAL FLOWERS AND FRUIT.

THE first competitive exhibition of artificial flowers and fruit at the Crystal Palace may be regarded as a successful show, if the variety of materials out of which the so-called "flowers" are made be taken as the measure of success. Those who are curious to see how caricatures of flowers can be manufactured out of the most dissimilar materials should certainly visit this collection. Here they will find gold, silver and iron, wood, ivory and paper, hair, leather and feathers, silk, wool, wax, paper, chenille, muslin and wax, employed in the construction of a large collection of highly-coloured ornaments, the botanical determination of which would sorely puzzle the authorities at Kew. We have called them caricatures, but we doubt whether that is quite the correct word to use, since that word implies knowledge of the subject depicted, and power to produce it in an amusing form. The great majority of these flowers indicate on the part of the makers a surprising amount of ignorance of the form and structure of the objects which they have attempted to imitate. At the same time we must do them the justice to applaud their ingenuity in the fabrication of their special materials.

We recently referred to the successful career of the late Mr. Ormson as a horticultural builder, which was mainly attributable to his early education as a gardener, and consequently to his knowledge of what plants required for their growth. In like manner many manufacturers of artificial flowers make themselves acquainted with the construction of the flower

which they propose to copy before they can hope to attain a creditable result. Our remarks will be better understood if we refer to the only really well-made group of flowers in the whole collection, that exhibited by Mrs. Clara Mogridge (*née* Minton), of 13, Charlotte Street, Bedford Square. This group consisted of *Allamanda*, *Eschscholzia*, *Impatiens*, *Anturium*, *Stephanotis*, *Ondotloglossum Pescatorei*, *Plumbago rosea*, a species of *Franciscana*, and two species of *Dendrobium*, all accurately copied from Nature, and most tastefully arranged with a few equally well-made variegated leaves. The next best collections, though scarcely so natural, were those of Mr. H. Minton, and the twelve varieties of *Roses* shown by Mr. Edward Fox, of Market Street, Brighton; in these the foliage was nearly as true to Nature as the flowers, which is more than we can say for any other group in the exhibition, which no gardener could look through without making the same remark. There was not so much fault to find with the shape of the leaves as with their colour, the rich dark green of well grown *Camellias* was nowhere to be seen on plants bearing these flowers. A tall plant of "white thorn" in full bloom was decorated with foliage of richly coloured autumnal hues, and the same incongruity was observable more or less throughout. From these remarks we wish to exclude the flowers and foliage of the *Primroses* and *Viola*s, exhibited in small Sussex "twig" baskets by Mr. Fox, of Brighton.

There was a very small display of fruit, which consisted of Apples and Pears, Plums, Apricots, Peaches, Nectarines, Cherries, Strawberries, and Nuts. The white *Bigarreau* Cherries, and the Plums shown by Mr. J. Johnson, of Notting Hill, were the best among them, but none of the rest were so good as they can be made.

We shall be very pleased if this first attempt at a show of this kind should result in an improvement on the part of the exhibitors generally, or in inducing more experienced manufacturers to show upon another occasion. We regret to say that the general impression left on our mind by the majority of the exhibits was similar to that of the collector of choice violins on being shown a home-made article, and on being told, "I made this fiddle out of my own head, and I have wood enough left to make another."

FERTILISATION OF PLANTS.

(Continued from p. 321.)

MR. DARWIN devotes a portion of chapter 8 to "the transmission of the good effects of a cross," and shows that when a previously intercrossed, a crossed, and a self-fertilised plant are allowed to be fertilised naturally by insects, the good effects of the "cross" is seen in the greater fertility and vigour of the offspring of the first two than in that of the self-fertilised; and that this benefit may be continued, not only to the grandchildren, but for many years, as appears from A. Knight's varieties of Peas, which were originally raised by crossing, and which kept true for more than sixty years, during which time they retained their superiority, though invariably self-fertilised. This fact, as Mr. Darwin observes, is due to the "force of inheritance being very strong in plants." On the other hand, continued interbreeding between very closely related plants brings ultimately no benefit at all as far as fertility is concerned; and, with reference to colour, such interbreeding is closely analogous to self-fertilisation; that is, tends to produce great uniformity of tints, but still much less so than the self-fertilised plants, for Mr. Darwin observed that the seventh to the tenth generations of *Ipomoea* were absolutely uniform in tint, "like those of a constant species living in a state of Nature." That last sentence is not followed up, but is suggestive of queries. Why are wild flowers so uniform? They must be abundantly intercrossed, and as in Nature we often get a great variety of soils and climatal conditions within reasonable distances, we should think there would be abundant resources for crossing distinct stocks, yet there are many species identical not only in the same country, but in opposite hemispheres of the globe! However this "retention of specific type" may be explained, the practical benefit of Mr. Darwin's observations to horticulturists is plain, for, as he says:—"We learn from them that new and slight shades of colour may be quickly and firmly fixed, independently of any selection, if the conditions are kept as nearly uniform as is possible, and

no interesting [much less crossing with a new stock] be permitted."

Mr. Darwin gives a table (D.) of "the relative fertility of crossed, intercrossed, and self-fertilised parentage, the fertility being estimated by the number of seeds per capsule, number of capsules, or else the weight of seeds per capsule, the first being the most valuable method." Eliminating the *Ipomoea*, from table D., all cases judged by capsules, as well as that by weight of seeds, and also deducting five cases of plants crossed by a new stock, there are left eleven instances for comparison between the intercrossed and self-fertilised; and if 100 be standard for the intercrossed, that of the self-fertilised is 91.5—a result which, considering the data, is very nearly a ratio of equality, and had he introduced into table D., "Hiero" and the "white variety of *Mimulus*," the ratio would have been probably, if not in favour of the self-fertilised, at least one of equality (see p. 50, for when *Ipomoea*, under a net, gives a ratio of 100 : 90, and another instance, uncovered, gives a ratio of 100 : 89, we see at once that there must be conditions which may vary the proportions to a considerable extent one way or the other. Indeed, Mr. Darwin himself says:—"It should be observed that the results [of this table] cannot be considered as fully trustworthy, for the fertility of a plant is a most variable element, depending on many causes, such as the soil, the amount of water given, and the temperature, if it is exposed." Next, selecting from table D. the five cases of plants crossed by a new stock, the highest and lowest ratios are 100 : 30, and as 100 : 75, their mean being as 100 : 49.4, which shows a much more decided degree of fertility for crossed plants than that of intercrossed or self-fertilised.

The mean ratio deduced from the number of capsules produced by the plants of intercrossed and self-fertilised parentage would be very misleading, for the ratios vary from 100 : 3.5 to absolute equality; though the intercrossed plants doubtless as a rule yield more than the self-fertilised. As they are more numerous plants, this is what one would anticipate; but the seeds per capsule may be the same; thus, of *Nothofagus prostrata* thirty intercrossed flowers produced twenty-seven capsules, each with five seeds; thirty-two self-fertilised flowers yielded six capsules; each, however, had also five seeds; hence their fertility is the same, but the proportion of capsules as 100 : 21.

Table E. gives the innate fertility of four plants crossed with a fresh stock, calculated as 100, and compared with those of intercrossed and self-fertilised respectively, as follows:—*Mimulus* as 100 : 4 and 100 : 13; *Eschscholzia* as 100 : 45 and 100 : 41; *Dianthus* as 100 : 45 and 33; and *Petunia* as 100 : 54 and 46.

Table F. gives the relative fertility of the flowers of thirty of the "parent plants" when intercrossed and when self-fertilised. Of these six are equal, and four of the self-fertilised are most fertile. The ratios of fertility for the "cleistogame" flowers of the *Vandellia* and of *Ononis minutissima* are omitted from this table. They would have lessened the difference in the mean proportion, as they are so highly self-fertile. Mr. Darwin puts 100 : 67; as the ratio for the conspicuous flower of *Vandellia*, but on p. 20, he says he thinks that 100 : 100 would be more correct. Subtracting this case with the above, we have twenty left, which give an average ratio of 100 : 64; but, if we substitute 100 : 100 for the conspicuous flower of *Vandellia*, 100 : 106 for the cleistogame flowers of the same plant, and 100 : 111 for those of *Ononis* (deduced from the number of seeds given in p. 167), we get a total mean ratio of 100 : 96, which is, of course, practically *nearly*; but this conclusion does not destroy the fact, that the whole number of intercrossed plants given in this table are more fertile than the self-fertilised in the proportion of two to one. Mr. Darwin observes that "this fertility ranges from zero to a fertility equaling (or exceeding) that of the [inter] crossed plants. Of this fact no explanation can be offered." Moreover in table G., which is analogous to F., only treating of descendants instead of the parent plants, the infertility of the self-fertilised plants does not decrease, indeed in *Dianthus* it steadily increases. We have already observed, "There is, therefore, no evidence at present that the fertility of plants goes on diminishing in successive self-fertilised generations."

As the chapter (9) is here devoted to self-sterility and self-fertility it will be better to defer further remarks until another issue, when my communication will deal with self-fertilisation especially. *George Henslow*.

(To be continued.)

OPEN-AIR VEGETATION

AT THE ROYAL BOTANIC GARDEN, EDINBURGH.*

The weather during the month of February was in general very pleasant, and drier than it had been during the four previous months. Owing to this comparatively dry state of the ground much outdoor work has been accomplished.

During the month the thermometer was seven times at or below the freezing point, indicating collectively 36°, while the United February frosts during the last twenty-three years amounted to 1492°. The highest markings were during 1855, when 220° were registered, and the lowest during 1869, when 6° only were noted. Up to February 21 this year only 4° were noticed, but since that date frost continued to the end. The lowest markings were on the 5th, 20th, 22d, 26th, 27th, and 28th, when 31°, 30°, 24°, 28°, 20°, and 24° were respectively registered, while the highest markings were on the 20th, 7th, 9th, 15th, 18th, and 24th, indicating 39°, 44°, 40°, 41°, 35°, and 40°. This comparative mild state of the weather has brought forward vegetation, which had been so long kept back by the excessive moisture of the previous months, as will be seen by annexed list of spring flowering plants. It contains the names of the selected species fixed on for annually recording their dates of blooming:—

	1877.	1876.
<i>Erubilla hymalis</i>	February 1	January 26
<i>Rhododendron atroviolaceum</i>	" 5	" 25
<i>Leucodion verum</i>	" 8	" 25
<i>Galanthus nivalis</i>	" 11	" 26
<i>Crocus susianus</i>	" 14	" 20
<i>Scilla maritima</i>	" 14	February 1
<i>Galanthus plicatus</i>	" 16	January 29
<i>Crocus verus</i> and varieties	" 16	" 28
<i>Androsace cordata</i>	" 18	January 29
<i>Daphne Mezereum</i>	" 23	January 26
<i>Rhododendron grandifolium album</i>	" 24	February 17
<i>Scilla sibirica</i>	" 24	" 26
" <i>biifida</i>	" 24	" 24
<i>Soyricium grandifolium</i>	" 26	" 20
<i>Bulbocodium verum</i>	" 26	" 26
<i>Horia sibirica</i>	" 27	" 21
<i>Begonia Faguetii</i>	" 27	" 21
<i>Tussilago alba</i>	" 29	March 8
<i>Rhododendron Nobilemum</i>	" 29	February 17
<i>Austriaca grandiflora</i>	" 29	" 17
<i>Tussilago nivea</i>	" 29	March 18

On February 28, notwithstanding a slight fall of snow and a hard frozen surface, above fifty species of plants were counted in flower on the rock garden; the most interesting at that time being *Rhododendron procerum* Susiana, *Erica carnea*, *Erica carnea* alba, *Daphne Mezereum*, *Andromeda floribunda*, *Primula denticulata*, *Primula vulgaris rubra*, *Corydalis angustifolia*, *Iberis trachelium*, *Crocus Imperati*, *C. nivalis*, and *C. susianus*, *Leucodion verum*, *Galanthus plicatus*, *Diondia Epipactis*, and *Helleborus colchicus* and seven other varieties. The frost of the 28th had partially injured some of the blooms of the more tender species, while it had the desirable effect of destroying slugs and other vermin harbouring near the surface.

ON THE ROAD TO AMSTERDAM:—ANTWERP.

On the high road to Amsterdam, whose International Horticultural Exhibition and Botanical Congress are fixed for April 12 next, lies Antwerp. For those who have the time, it is well worth a visit. There are steamers direct from St. Katherine's Wharf to Antwerp; but we will suppose that the horticulturist has accompanied us by the land route, making a halt on the way at Ghent, whose treasures have often been described in these columns.

To reach Antwerp from Ghent, you proceed not to the Station de l'Etat, by which you arrived from Lille, but to the Station du Pays de Waes, whence you start on a single-lined railway. The Pays de Waes, which you then traverse, is an unbroken plain made fertile by human industry, divided here and there by rows rather than hedges of mixed copse-wood—Poplar, Willow, Alder—which now and then rise into trees. There is no picturesqueness, but a considerable look of comfort, about the scenery. The land seems to yield a sufficiency of most things, even of tall trees in places, to give shade in summer and break the force of the winds in winter. One of the stations is at Mile-Pommes (a Thousand Apples);

* Read at the March Meeting of the Botanical Society, Edinburgh, by Mr. M'Nab, Curator.

the next is St. Nicolas, a large prosperous town, at least as rich in religious intolerance as in fruits; for the *Times* correspondent tells us that, owing to the supremacy of the priest, a Protestant would be unable to hire a house there, and that a Belgian gentleman married to an Englishwoman was looked down upon until it was ascertained that she was a good Catholic. The field crops along the line, including a great breadth of Potatoes, are interspersed with patches of Hemp, Haricots, Buckwheat, Tobacco, and other little luxuries. Potatoes last autumn showed patches where their haulm much or entirely decayed by means contiguous to other patches in full verdant vigour, and seemingly ailing nothing. Whether the difference is one sort or of the times of planting, a passing railway traveller had no means of learning. His attention would be principally absorbed in the jolts he receives from the rough state of the line. A week spent on it in going to and fro, would be an effectual remedial course for patients whose organs require a good shaking. At last you feel a breeze on your cheek which betrays the neighbourhood of wide-spread water; a stately colonial style of pier in the air, the train stops, but you are not yet at your journey's end. The broad stream of the Escart or Scheldt has to be crossed in a steamboat, which lands you at the Antwerp station of the Pays de Waes. If ignorant what quarters to choose, you may safely go to the Hôtel St. Antoine, at one of the corners of the Place Verte (which is not green but gravelly).

THE PARK.

The park of Antwerp deserves a visit, first because it shows what may be done with a triangular piece of ground in the midst of town buildings, with the help of water, rocks, a peninsula, and a bridge; secondly, because it illustrates the good effects produced by combining the same sorts of trees and shrubs into homogeneous groups and masses, instead of mixing them up promiscuously, so as to produce a blurred appearance, making every group alike, or at least without any distinctive character. In a public garden, which is to be an ornament an arboretum, there must, of course, be just a little spotiness, especially with the specimens have made larger growth, so that plants now standing singly are united, or have made a new approach to each other in clumps.

Unusual varieties of usual trees at least show their merits and their demerits. The purple-leaved Maple deserves honourable mention; the fastigiate and variegated-leaved Elms remove all doubts as to their ugliness; an uncommon plain-leaved Holly is prepossessing, and promises usefulness. The Rosemary-leaved Willow and the red-berried Elder are turned to good account amongst the rocks. The silver Lime tree is both sweet and graceful. A scrap of reed-bed in the lake, of a point of the peninsula, looks natural, and serves as covert for water-fowl, but betrays the shallowness of the water, which had better have been concealed as much as may be.

THE ZOOLOGICAL GARDENS.

For those who have to wait an hour or two for a train to the Zoological Gardens, close to the station, after a pleasant lounge, and contain an inviting *restaurant*. With this, the architect, the refreshment tables and chairs, and the Noah's arkful of animals, the Antwerp Zoo, though quite on the outskirts, has less the air of country than the park. "How nice it would have been," a philosopher said, "had all our towns been built in the country!" To obviate the omission, endeavours are made to bring bits of the country into most large towns. A French *sarrazin*, M. Haulier, goes further. He proposes to introduce country air into cities, to be drawn from elevated woods and other salubrious spots, pumped thence through pipes laid down like those for gas and water for distribution to public buildings and private dwellings. Only think of that, all ye who are shut up in factories, theatres, reading-rooms, ball-rooms, schools, offices, and other places where experiments are tried on how little oxygen human beings can exist. When you are unable to go and breathe sea breezes, it will be something to have sea breezes sent to you, even on the payment of so much per cubic yard.

The Antwerp Zoo, besides good specimen trees and shrubs and examples of the effectiveness of certain plants. (*Hypargyreus paniculata*, for instance), when appropriately employed, exhibits during the season admirable carpet-bedding, some exactly like richly ornamented cake, others resembling embroidered

hearth-rugs competing in contrasted colours with cloth patterned ottoman covers, inviting you to do what you must not, namely, sit or lie upon them. On a large scale, and well carried out, such carpet-bedding is beyond the means of private individuals with moderate fortunes, and must be left to millionaires, public companies, Belgian and Dutch zoologists, and the parks and gardens maintained by wealthy cities. To those travelling on that line of railroad the carpet-bedding in the Jardin Vauban at Lille (once the Jardin de l'Impératrice) is well worth a halt. By going early, before the hour of general promenading, you may see the artist-gardeners at work with their scissors and brushes, their pegs and pins. No dandy's lack can be more assiduous to provide a hair or a violet, or a leaf or a spray, from exceeding due proportions and assuming an unkempt look. The materials, in fact, are within most gardeners' reach, and when once obtained will serve from year to year, with proper care of housing and propagation. Every year the designs may be varied. The same forces may be mastered to combine in perfectly different patterns; taste to design, adapt, or copy which, may always be expected to be a good thing. It is the keeping up and the increasing high finish which such carpet-bedding is penible to success. And then, the quantity of plants required—not trifling for the making even of a modest carpet-bed—is enough to frighten many amateurs.

MADAME LEGRELLLE'S GARDEN.

Little known to the crowd of tourists is the rich garden of Madame Legrelle Dhanis, at Berchem, a suburb of Antwerp, Rue de la Chapelle, No. 12, behind La Pépinière, which said *pépinière*, or nursery, is the old yellow-ground, or hanging-place, promoted to the more cheerful condition of a garden, beside which is the summer resort of the Harmonie Royale Society. You reach it by following the Boulevard, starting from the statue of Leopold I. Many of the Antwerp boulevards deserve imitation. In the middle is a double row of trees (Planes are the favourites), with a broad footpath between them. On each side of the trees is a carriage-road, thus leaving an open space between them and the lines of houses, which are consequently less shaded by their branches. There are certainly great ornaments in a town; still they may be too near a dwelling, preventing the circulation of air and the entrance of the sun's rays, besides harbouring insects and shedding withering leaves.

Amateurs were, and no doubt still are, admitted to Madame D'hanis' garden on the presentation of their card. Immediately after entering the gate, you are struck by standard Myrtles, large-leaved and small-leaved, in tubs, which must be at least sixty or seventy years old, in the enjoyment of perfect health, and, as we might say, retaining all their faculties. The antechamber in which you sign your name in the register of visitors, contains a few pictures worth looking at. Naturalists will have their attention attracted by a choice collection of insects, birds, and shells. A conservatory leading out of the billiard-room is not a mere tropical plant-house, but serves as an evening reception-room, where after-dinner coffee may be chatted over. Evidences of a lady's taste are visible in the fountains backed by looking-glasses, which thus play double—fountain and reflection; in the disposition of the lamps and the seats, one group of which latter have a fine *Ceratostyia mexicana* overhanging them, or a weeping *Populus monophylla*. Remarkable specimen plants are not wanting; as *Zamia mexicana*, 200 years old; of *Livistonia* Beiro, *Cycas revoluta*, *Angiopteris evecta*, *Cyathea medullaris*, *Encephalartos Altensteinii*, *Bonapartea tenuifolia*. Variegated *Phormium*s in flower (at the time of my visit) shot up their tall stems after the fashion of Agaves. Beneath the stately Palms and Tree Ferns, *Begonias* (as *B. longipilis* and *semperflora*) in richness below, while *Gloxinias* of exquisite spots and hues peep out here and there to court approval.

Indeed, the main interest of this garden is centred in the houses, which have been filled, to use the title expression, "regardless of expense." One, for instance, contains a little fortune invested in a unique collection of Marantas, and comprising, besides other things, M. Wagneri, tubispatria, Makoyana, Veitchii, majestica, regalis, roseo-picta, all fine specimens in perfect health. *Cyrtipedium parviflorum* flourishes in low terrestrial-Orchid-house, whose 28° Centigrade (82° Fahr.) does not need over-weighy hot-beds. Seen in August although very much compared with the air outdoors. A house for variegated-

leaved plants tempt many to linger, by its variegated Pine-apple in fruit, and its variegated Cucurbit and Pandanus utilla. During their passage from house to house amateurs will be attracted by the rich cushions of Selaginella apoda, Eucharis amazzonica, the scarlet flowers and crimped leaves of *Cortyleia fragrans*, the curious slimmness of *Bignonia Rozeiana*, by *Anturium crystallinum* or *Bescheronia multiflora*. Then there is an avary to see and experimental beds of seedlings whose quality has yet to be ascertained; the bouquet of the whole being the handsome room containing the medals, gold and silver, framed and placed, won at horticultural shows so numerous and liberal that, were the said medals to be melted in the crucible, they would make Madame D'hanis a small service of plate. We retire thankful for the privilege of witnessing how admirably a lady amateur can follow up her favourite pursuit.

It may be useful to some to know, *apropos* to Antwerp, that valuable information respecting Belgian gardening may be obtained from Monsieur Jean Baptiste Debecker, Horticulteur et Marchand Grainier, rue Carnot, 107. †



THE AUCUCULA AND POLYANTHUS.—"Thrum Eye" is the second writer in this classic column who considers that I have made a dead set against "self alpinas," and there may be other correspondents in the end.

Perhaps, therefore, it may be well to explain that I have advanced no mere fancy of my own. I did but state the thoroughly determined points which, in the alpine Auricula, constitute the first-class flower. These have long been fixed, understood, and worked up to, and no one in order to humour some pretty seedling is authorized to break down boundary lines and confuse distinctions in strict florists' flowers. It is not that I wish self alpinas dead, or that there were no such things as self and fancy Polyanthus. I admire them all as flowers, they are all beautiful, and well worth growing in their place. But if an Auricula, entirely deficient in the leading and recognised property of its class as a florist's flower, or if a Polyanthus glaringly at variance with its florist standard, be brought, by claim, into competition with the highest flowers of full properties, then I either must receive a crushing defeat, which it is hardly fair to expose it to, or to the more refined and rare and gifted flowers must be brought down to the lower level—a degradation which florists will not suffer their flowers to endure. A most eminent florist, the Rev. Geo. Jeans, used to say when seedling Auriculas were sent for his criticism, "I have grown very particular in the case of show seedlings usually deficient in these properties" (the more solid ones of florist flowers).

I am sorry I cannot see "Thrum Eye" through the disguise of his name, for a bird in the band is, in this sense, worth two in the bush; but I should scarcely take him for a veritable florist, or he would know how much the progress always being made in florists' flowers is due to that same technical conservatism of which he complains.

Herein precision is the principle of progression, and laxity is the reverse. A florist flower is a classical flower. It is, as it were, a picture, not a panorama. It is not grown merely to see what is the effect of so many bunches of it in a pot, or yards of it on a ribbon border. Florists cannot but rejoice in the blaze of beauty that a whole collection of Auriculas, Tulips, or Carnations exhibits when in bloom, but their pride and enjoyment are immeasurably heightened because that each component blossom is a study, Nature-painted, in itself.

"Thrum Eye" thinks that "in this strict floral conservatism lies the danger for the fancy Polyanthus," and that "if the hard and fast lines of florists have not exterminated the gold-laced kinds, it is certain that really good forms are rarities." So they are; but the reason of rarity is not refinement, but neglect. The flower has been forgotten. It never lacked a vigorous variety while it was cared for. The florist Polyanthus is not a particularly "miffy" thing, and if seedlings be raised from the wreck that remains of a beautiful old favourite there will be no need to seek constitution and brilliancy from the border varie-

ties; while as for refinement the fancies will have to follow the advances of a fairer, gentler rival that is ever before them. When "Thrum Eye" thinks the future of the fancy Polyanthus may be to extinguish the florist Auricula, or make it "pale its ineffectual fires," he can hardly have seriously compared the flowers.

No one placing side by side a black gold-laced Polyanthus such as Cheshire Favourite, and a white-edged Auricula such as Smiling Beauty, can have any doubt as to which is the more gifted sister, though both are beautiful. The Auricula, with all its variety in frosted silver foliage, as well as green, and with the rare loveliness of the green, grey, white edges, and the rich coloured velvet of the self, is a flower of far greater worth than the Polyanthus.

I have written more on this subject in the current issue of the *Journal of Horticulture*, but I had rather ask "Thrum Eye" to study the work of an abler pen than mine, on "The Philosophy of Florist Flowers." I humbly venture to say it will do him good. It was written for the *Florist* of 1849 by the Rev. Geo. Jeans, under the modest signature of "Iota." I append an applicable extract:—

"As for a person unaccustomed to any species of flower making a wrong selection for his approval, it happens in everything else as well as in flowers, and therefore loses its force. Lace, for instance, is made for the same purpose that the flower was created—to please the eye; and an unpractised eye would be as apt to pass by the rare and costly, and to select the valueless in both as beautiful. The Auricula, with all its variety, is the most showy qualities are not the most useful; nor is that which will most permanently please that which first catches the unaccustomed eye. But that which is sterling, which will attract without fatiguing the sight, and gratify without offending the judgment, will be the most valued. The farmer, ever first to notice, and therefore it is no more a reproach to the study which investigated these facts, or to the art which is founded upon them, that the eye of a novice should make a choice which the same eye when tutored by experience would reject, than it is an argument against a more cultivated taste in diet that a child prefers green fruit to ripe, and leaves wholesome food for gingerbread."

And again—

"The work of the florist is simply to follow whither Nature leads, selecting always that track in which there is the greatest promise of success; and in his judgment in never departing from this, and in using the best means for securing the accomplishment of his desires, depends the correctness of his practical science. And, though mistakes have, of course, been made, and a system of such development in Nature, and all its parts in each particular object of our culture, yet these still become fewer as progress is made in developing the natural powers and characteristic excellences of the plant, whereby the philosophy of its improvement is seen; and we do not work in the dark, because there is a system of such development in Nature, and a definite point of perfection, the constant approach to which constitutes improvement in each species."

F. D. Horner, Kirby Mabeard, Ripon.

AUCUCULA.—There appears now every probability that Auriculas will not be in flower so early as was generally expected six weeks ago. Then the Southern growers were asking themselves what they could do to retard the growth, but now they are beginning to consider what can be done to induce development. In another month the floral forces will be gathering for competition at the two great exhibitions, one in the North, the other in the South, and the question naturally arises, will any flowers be forthcoming from the North at the latter meeting-place? The anticipated early bloom threatens to be an anomaly late one. The dull sunless moist weather certainly excites to growth, but it is very gradual and slow. The bright dry, sunny March of last year considerably quickened the progress of the plants, but this year this exciting influence is wanting. Just now Auriculas may be allowed the benefit of warm showers, for there is no danger of injury to the pipes while the calyx covers the tube or pip; and these warm showers greatly strengthen and improve the plants and tend to increase the size and quality of the blossoms. As a rule, however, look for the truest rise up to the buds or the hearts of the plants by the middle of March, but plants that have been wintered in a warm position under glass make but little sign as yet.

—PINKS have wintered badly in the open ground during the winter; the excessive wet has

affected them much more injuriously than frost. Some growers assert that they have lost a great many of their plants; and those who grow the commonest Pinks for the costumongers round London are found stating that the inferior varieties have suffered in common with the good ones. On the other hand common Carnations have grown with something akin to luxuriance all the winter, and are as healthy looking as they can well be. The grower of florists' Pinks invariably grows his plants in the open air during the winter, unless the locality will not admit of their being planted in pots; and always, in such cases, in beds well raised to secure drainage during winter. But this precaution, sufficient in ordinary seasons, appears to have failed during the present winter in preventing the plants from dying through the excessive rainfall.

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD WOODED PLANTS.—Large and medium-sized specimens of hard-wooded plants that need more root-room should now be potted. If the soil was got under cover, as advised some weeks back, and turned over as occasion might require, the recent drying will have brought it into a fit condition for use, but if at all too dark, this to some extent may be corrected by drying the sand well before mixing with it, and as it is desirable to complete the potting of all plants of this description with as little delay as possible before the hot weather commences, the above expedient will be preferable to waiting till the weather gets warmer. The proportion of sand to peat for plants of all descriptions, but especially for those under consideration, is an important matter. The quantity in all cases must be regulated by the character of the peat and the nature of the plants to be potted. With peat of a very liberal addition is necessary than with such as is harder. Where too much sand is used, as might be supposed, it has the effect of making the soil poorer, from the consequent less vigorous growth the plants in it will make, but it is much better to err on the side of using too much sand than too little, and it is in the latter direction that those who have had the most experience in the cultivation of these plants generally go wrong. The sand required may vary from one-sixth to one-tenth. As a safe rule the finer the description of roots a plant possesses, and the slower its growth, the more sand will be necessary to keep the soil in a sweet, healthy condition. If the sand obtainable is of a dusty nature, that is, a great portion of it composed of very fine particles, the labour of washing it will be well repaid by the improvement it will make. The washing process may be effected in a large shallow tub, or in a similar open vessel, set under a tap running, putting in a few bushels of sand at a time, and keeping it stirred up with a spade; as the water will thus necessarily overflow, the fine portion will be washed away, leaving that of a heavier, coarser description in the bottom. In potting, the old barbarous practice of loosening the roots from the ball, so as to spread them out more or less into the new soil, is a thing of the past with those who grow hard-wooded plants, and is a practice which is gradually being put by puncturing with a pointed stick the surface of the ball, where the great mass of active roots are situated, and on which the vital energies of the plants depend, which used to be advised, has caused the destruction of many plants, and it is to some extent the practice might be looked upon as the least of two evils, in the case of plants that were in a stunted condition, the roots of which were spirally curved in the smallest possible space, by being confined to their little pots; but such plants as these are not worth the trouble of potting at all by any one attempting to cultivate them in a creditable manner. It is well to bear in mind that the greater the quantity of roots a plant possesses the more solid and impetuous to water it will be, and the more so the more recently the harder it is necessary to ram the new soil. It is also quite time to pot the small-growing stock that are intended to have a second shift during the summer. See that they are free from scale, especially the white species; any plant, however valuable, that is affected with this, immeasurably the worst pest that infests greenhouse plants, had much better be consigned to the fire than introduced amongst clean stock, as if through inadvertence the infested plant is ever allowed to rise in the house, it will, in course of actual contact with such as are clean, the insect is certain to spread, and it is so tenacious of life that except on vigorous strong-leaved things any insecticide that will destroy it completely generally destroys the plant as well as the insect. See also on this subject neglected *Gumholubium polymorphum* and *C. bar-*

bigerum are not allowed to go too long without their shoots being trained, especially whilst the plants are in a young state, so that they may clearly be distinguished, but allowed to become entangled in that cord-like condition they soon get into, it is difficult afterwards, and always at some sacrifice of the growths already made, to get them to rights. Kennedys, Laperouses, and all other plants of a twining nature which grow as a pot specimen require similar attention in this respect.

CONSERVATORY.—At no season of the year can the conservatory be made more attractive than at the present young state of the plants, especially of the fine-leaved plants, such as Tree Ferns, Rhopalas, Agaves, Yuccas, and subjects like these of handsome, yet dissimilar habit, to mix with and form a background for the numerous flowering plants now coming into the conservatory. The plants, if they are of sufficient quantities, the measure of success as to the effect produced will be commensurate with the artistic arrangement of the whole; the aim should be from time to time to vary the general aspect. Where there is an absence of old-fashioned formal stages, which in most conservatories of any pretensions are now generally done away with, there is every opportunity for relieving the monotony resulting from seeing the same plants, and flowers, in the same places. When there is little that is attractive outside, it is doubly necessary to make plant-houses as pleasing as possible with late flowering Camellias, Azaleas brought on in a little heat, forced shrubs, and several succulent plants. Dieffenbachia, Begonia, S. palustris and S. japonica, late blooming bulbs, Cinerarias, and forced Pelargoniums. There need be no lack of material to produce the best and most varied effect. *T. Paines.*

ORCHIDS.—The many varieties of Cattleya Trianae that are now to be met with, are so varied in their markings and differ so considerably in the depth of colour of the labellum, the form of the sepals and petals, that a number of these should be sought for and obtained; and since great quantities have during the last few years been sent from their native habitat in New Grenada to some of our leading nurserymen, a serious inspection should be made of the stock made of such as exhibit the most distinct characteristics. These will now be mostly in full bloom; probably, indeed, in some cases the flowers may have appeared soon after the advent of the new year, in consequence of the plants having been collected in the now being the house gay and attractive; and whilst the flowers are open and fresh, and as scarcely two of them are exactly alike, advantage should be taken of the opportunity, and either a memorandum should be kept of the forms, or some of the markings should be noted down, so that at any future time, when any doubt may arise as to these individual traits, a reference may be at hand by which any such inquiry may quickly be set at rest. And not only so, but perhaps the contingency might arise, that the collection had to be reduced, or the whole to be parted with, it will be found that such plants of almost any species, Cattleyas or otherwise, that can be recommended distinct and desirable qualities, will always fetch higher prices than those that are bought at haphazard, and with which a certain amount of risk is incurred. Among the forms of C. Trianae there is one which, however, is very rare, the flowers of which are of large size, and of a pure white colour, the only exception being the throat of the labellum, which is of a deep yellow. In many respects this is similar to the Wagneri variety of C. Mossii; only in the case of the Trianae the narrow sepals and broad petals are more obvious than in the case with the Wagneri. Another variety more often seen is one the sepals and petals of which are of a bright rose colour, the lip, which is very broad, is of a deep rosy purple, and the throat of a rich orange-yellow, altogether a first-class article, the colour of the lip being so very distinct and distinct. As soon as there have gone out of flower the young growths will start away, the flowering bulb sometimes producing two breaks; very soon these new growths commence to root, and as the roots, entering the soil, supply aid and help to the young breaks, and thus during the greater part of our summer the bulbs increase and get matured and ripened during the time when we have the greatest amount of sunlight. Amongst Cattleyas of the same type mention must be made of C. Leopoldii, C. amabilis, C. toglossa and C. guttata. These C. amabilis to represent the long bulbous section, and are not quite so easy to manage as many of the others. The reason why they can be so long in the market is to be found on trees, would seem to indicate the nature of a little more heat, and a rather drier atmosphere than is recommended for the most of the others, and, if it can be managed, a little more sunlight during the season will be of great advantage to them. In the ripening and hardening of the bulbs. The flower-spikes coming up between the stout leaves on the top of the bulb are generally very strong, and will often bring from ten to twenty of their stout, fleshy flowers. These are not only very beautiful, but also of an amethystous, and the dark chocolate and crimson

of Cattleya Leopoldii, are such that, when in good condition and freely flowered, the plants are objects of constant interest and admiration. All plants on which a new, either by syringing or careful dipping, be kept moistened, so as to induce the new roots to start away, and assist the first appearance of returning vigour. Make a point to finish up all the potting and syringing as early as possible, so that you will not require to be attended to when the new roots are pushing away, for often then the risk and damage are very great, and a corresponding check and loss are given to the plant which should be avoided by all means if possible. *W. Sisson, Falmouth.*

FRUIT HOUSES.

PEACHES AND NECTARINES.—Where a plentiful and successful supply of ripe fruit has to be provided for the London season, it involves the employment of two or three houses, which at this time will be in different stages of active operation. In the foremost division the fruit will now be of sufficient size to indicate its progress as being almost certain, and the foliage on the trees will be sufficiently dense to admit of any superfluous space being removed without detriment. In regard to the number of fruit to be retained for maturity, much must depend on the variety, the season of ripening, the size and condition of the trees, and the circumstances of the market. It is generally much more valuable than small, and as such in general is held in high esteem, this should also be considered. As a rule, we estimate that a tree which is in a healthy state, which covers an area of 200 feet of ground, is capable of producing a moderate quantity of good-sized fruits. When there is a superabundance of fruit, which is usually the case after making due allowance for any loss which may happen through the attacks of mildew, or gum, or any other injury from insects, the test should be pulled off at once, and in the case of Peaches, such should be reserved for making tarts, as these are much appreciated in some places. In doing this, it is almost needless to add that the most perfect fruit is that of the upper side of the tree which will be retained. In like manner go over the trees now, and where the spurs which have recently been pinched-in are too thickly placed sufficient should be removed by a clean cut with a knife to afford those which are retained every advantage of soil and influences. On mild occasions the temperature should range from 55° to 60° at night, and from 65° to 70° by day, allowing the minimum degree as the standard under other conditions. Fly the windows twice a week over the trees, rather being preferable for this purpose if any sedimentary deposits are present in that which is commonly used. Continue to give the requisite attention to stopping and tying in the main divisions; and in those which are as yet required to furnish the trees will admit of being heeled in at the base, it should be done, particularly if symmetrical training is much studied. The temperatures in the first and second divisions should be identical; in the latter ones, where the fruit is not required before July, more air should be given, and a lower temperature will suffice in all cases. After the fruit is well set dust the surface of the mulching material over with a thin sprinkling of guano once every week; this will impart a stimulating effect to the atmosphere, which is highly beneficial to vegetation. *G. T. Miles, Wycombe Abbey.*

MELONS.—The first batch of plants, which were selected for growing and fruiting in pots, plunged in a bottom heat of 85°, will now be making rapid progress, and will show favourably in the autumn, and be generously treated. By the time fruitful kinds like Gilbert's Victory of Bath and Scarlet Gem have filled two-thirds of the trellis, they will commence showing male blossoms on the main stems, and fruit blossoms at the first joint in the later ones; where very early fruit is wanted, will require a change of treatment to insure a good set. Assuming that the strongest plants were placed at the warmest end of the pit these should be selected for the first crop, and as dry heat is favourable to the production of pollen, syringing may be discontinued for a few days; and if water is withheld from the roots until the plants show signs of flagging every fruit will set with the aid of treatment. When two to four inches in length the plants should be pinched out the leaves, also the laterals at the first leaf beyond the joint; the remainder of the laterals may be stopped to the first joint, to prevent crowding of the foliage; syringing and watering with tepid liquid manure must be resumed, having previously top-dressed with a compost of turf, lime rubbish, and rotten dung. To insure a succession the remaining plants should be stopped once, when every break will produce a female blossom. Make the plants great at the first joint, and stop the joints that vigorous young plants are preferable to those which have become pot-bound; also that they will be ready for turning out in a month from the time the seeds are inserted in the soil. Attend to the earthing, and syringing of plants, and in the case of the latter the soil firm by means of ramming when in a dry

state. Renovate linings and guard against injury from rank steam by leaving a chink of air open at night. *W. Coleman.*

ORCHARD-HOUSE.—In the management of this department it is very important that the soil in which all stone-fruit trees are growing should be brought into a thoroughly moorish state, and that it should begin to swell. It frequently happens that pot trees are kept too dry all through the winter, and when this is the case the buds fall off just as they are beginning to move. Apricots, Peaches, and Nectarines show the effect of drought first, but Apples and Cherries are also affected by it, and all set the best crops of fruit when the roots are wintered in soil the reverse of dust-dry. The principal work in the orchard-house will be attention to the fertilisation of all early kinds as they come into bloom, and protection from frost, which if set in very severe, by the use of blinds, which are best fixed on rollers the same as for shading, or light pieces of tiffany may be thrown over individual trees without injury to the blossoms. If the water is bright by day and frosty at night, the ventilators may be opened about 9 A.M. and closed at 3.30 in the afternoon. In low, damp situations, particularly in dull weather, the atmosphere must be kept as dry as possible, and artificial fertilisation will need very little extra care. Where Figs are grown in unheated houses, trees which have been wintered in dry sheds or cellars should now be potted or top-dressed, and placed in their summer quarters at the warmest end of the house, and the soil should be piced fairly and frequently. One of the best kinds for this purpose is Brown Turkey or Lee's Perpetual. *W. Coleman.*

KITCHEN GARDEN.

Operations in this department grow upon us now so thick and fast, and most of them are so equally imperative, that the value of our previous recommendations to the effect that syringing can be piled fairly ahead with all operations connected with the trenching up and preparation of the soil for the reception of seeds will be best appreciated by those who have been best able to get forward with all such work. The heavy rains of the past winter have, however, rendered manual operations have been generally retarded. As I before advised a little extra manual labour thrown into this department now work is so pressing, will probably assist to prevent the produce being short or inferior to what it might otherwise have been. Lettuce, Cauliflowers, and Cabbages, which have been stored through the winter, should be completed at once, so that the appliances may be at liberty for other important purposes, such as pricking out the earlier sown plants of the Autumn months, such as flowers, Brussels Sprouts, and Lettuce, as before recommended. These prickings out of such early crops are of very great advantage to the kitchen gardener, if he can keep them growing freely, and plant them out in their quarters for succession as soon as they are fit for the purpose, for if allowed to become either too much drawn or stunted they will turn in prematurely, and it will be just a chance whether any of them arrive at the state of perfection, and are very much grown by generous and timely cultivation. The principal sowings of Celery for the main crops should now be pretty well ready for pricking out. This is another of those crops in which to succeed perfectly there should be no check in the growth; thus, in order to make the plants sturdy and robust, do not sow them too thickly in the frame, and as soon as they are well up take every opportunity of hardening them by a free exposure to the open air, and by bending them over, and setting them out on the open border about the end of the month, or a little later, according to the weather, taking care to protect them for a time by bending tools over them and covering with mats. After such a mild and moist winter as the last, it is not surprising that the plants and dressings are absolutely indispensable at this season, because the plants do not grow fast enough to escape these voracious enemies, and must be assisted by such means as the above. Succession sowings of Longpod and Windsor Beans must be followed up in quantity proportioned to the demand. Sowings of Peas for the main crops should be kept up; three good sorts for this sowing would be G. F. Wilson, and the two other sorts, and the variety Calverwell's is a grand Pea, highly to be recommended. Another sowing of Early Dutch Turnips should be got in, and also a bed of Early Horn Carrot, to succeed those advancing in pits or frames, which as the new crop is getting up, and the plants are about to have their being drawn up weakly. The principal beds for the main crops of Onions should be prepared at once, and the seeds sown on the first really dry day, when the soil is sufficiently dry for a heavy stratum to be passed over it without clumping. *John Cox, Redfern.*

THE
Gardeners' Chronicle.

SATURDAY, MARCH 17, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Mar. 19	Sale of Mr. Marshall's Collection of Minerals at Stevens' Room Royal Horticultural Society: Meeting of the Fruit and Floral Committees at A.M., and Scientific Committee at P.M.
WEDNESDAY, Mar. 21	Royal Botanic Society: Egeen's Park Spring Show. Nurserymen's Lysie Horticultural Spring Exhibition (two days). Sale of Camellias, Palms and Roses, at Stevens' Rooms. Sale of Lilies auratum and L. Krameri at Stevens' Rooms.
THURSDAY, Mar. 22	Sale of Mr. Willing's Collection of Stone and Greenhouse Plants, by Stevens, at Leyton.
SATURDAY, Mar. 23	Sale of Shrubs, Fruit Trees, Gladioli, &c., at Stevens' Rooms.

THE letter of Mr. P. BARR, in our last issue, calls attention to a defect in the management of the LINDLEY LIBRARY, which we trust the Council of the Royal Horticultural Society will speedily see their way to remove.

The Library, as well as some of the portraits in the Council-room, are, it may be well to remind our readers, invested in the hands of Trustees for the good of the public. The benefit was never intended to be limited to the Fellows of the Royal Horticultural Society. The Society at the time of the institution of the Library, had none of its own, its former valuable collection having disappeared in one of the many attacks of impetuosity to which the Society has been liable. It was, therefore, considered best that the Library should be placed in the hands of Trustees, to prevent such misfortunes as befell the former collection; and that it should be deposited at South Kensington in the rooms of the Royal Horticultural Society, where it would be most useful for horticultural purposes. This was agreed on, and the Society further undertook to provide and pay a proper librarian. It is not necessary to tell all the history of the Library; how, for a time, it was, so to speak, huddled away in a sort of den (since swept away), where access to the books was all but an impossibility. After a time the books were transferred to the Council-room of the Society, where they were carefully and systematically arranged by Professor DYER. Subsequently the care of the Library devolved upon Mr. HEMSLEY.

With the scanty funds at their disposal, the Trustees can do no more than keep up the periodicals, pay for the binding of the yearly volumes, and occasionally indulge in the luxury of a new book. Some use has been made of the Library; the officers of the Society in particular have found it all-important to them, but the difficulties mentioned by Mr. BARR no doubt prevent a much freer use of it by outsiders. What is wanted is the housing of the Library in an apartment where it would readily be accessible at all reasonable times; while the more constant services of a competent librarian are also to be desired. Some former Councils seem to have treated the Library as a nuisance, and an unwelcome intrusion; others have ignored it; others, again, have been profoundly ignorant of it. The present Council, however, is more horticultural in its aspirations than some of its predecessors, and has shown more sympathy with the horticulturists and a greater appreciation of their wants. We may, therefore, not unreasonably look to them to remedy the matters justly complained of by Mr. BARR. A voluntary subscription from the Fellows of, say, ten shillings a year, or even five, would go a great way towards fitting up a proper room and paying a librarian. We are certain the Trustees would gladly co-operate in any measures calculated to enhance the utility of the Library, and promote the scientific status of the Society; and that there need be no fear

of the Society's interests being neglected in the matter is clear from the circumstance that the Treasurer and Secretary of the Society are *ex-officio* Trustees, the other members of the trust being Mr. WILSON SAUNDERS, Mr. THOMAS MOORE, and Dr. MASTERS.

THE ISSUE of the SCHEDULE of PRIZES of the PELARGONIUM SOCIETY, for the exhibition to be held during the ensuing summer, offers an opportunity of again inviting attention to its operations. One object of the Society is to promote the improvement of the different sections of the Pelargonium—a work which is best done by specialists, since it requires that the operator should take a special interest in the pursuit, and bring to bear upon it the light of special experience. For this cause alone the Society deserves support and encouragement; but it is equally worthy of sympathy for its efforts to facilitate the introduction of novel forms, and to give system and method generally to the practice of hybridisation in this particular class of plants.

That the limit of improvement or of variation in the Pelargonium is not reached is quite evident, since scarcely anything has yet been done with the cut-leaved and scented-leaved kinds; and the recent appearance of what have been called "regal" Pelargoniums—varieties of great promise in a decorative point of view—affords further evidence of this fact.

That there is scope for the operations of this Society, which is by no means antagonistic, but rather supplementary to more general institutions, is evident, because by its instrumentalities a very large collection of the new double Zonal Pelargoniums were got together last summer, and grown under uniform conditions, which enabled both amateur fanciers and members of the trade to form a true estimate of their merits.

The prize-list which has been issued for the show to be held on June 20 next comprises some twenty-four classes, amongst which considerably over £100 are offered as prize-money. The date has been fixed especially to fit the blooming season; and not only the Zonals, but the large-flowered show sorts, the fancies, the hybrid ly-leaved sorts, and the Cape species are provided for, liberal prizes being offered for each. Among the Zonals a distinction has been made between the model flowers of the florists' class and the decorative sorts belonging to the Nosegay and hybrid Nosegay groups; and in the large-flowered or show type the same endeavour has been made to give increased prominence to the showy so-called "regal" and "decorative" varieties.

To accomplish all this, and to carry forward its work with sufficient spirit, the Society needs an accession of members, which ought to be forthcoming from amongst the admirers of the several groups of Pelargoniums, since the Society caters for them all.

The schedule, as stated in our advertising columns, may be had on application to Mr. MOORE, Botanic Garden, Chelsea; and intending subscribers should send in their names and contributions to Dr. DENNY, Stoke Newington. The ordinary annual subscription is one guinea.

—We trust it may be found practicable to amalgamate the FEAST OF ROSES with the entertainments of benevolence on July 4. Should the rosarians desire to have their special symposium all to themselves they might accomplish that at a light luncheon; and then, all grateful for the honor of appearing at the court of the queen of flowers, and for the pleasures of meeting with kindred spirits, they might show their sympathy with horticulture in general, and with distressed or decayed horticulturists in particular, by presenting themselves at the Benevolent feast. Rosarians are not likely to be deaf to the calls upon their sympathy, if only the opportunity be afforded them. Hence we trust it may yet be found practicable to combine the festival of the Roses with the feast of benevolence, to the advantage of all concerned.

—The Council of the Royal Horticultural Society propose instituting at the Chiswick Gardens this season, under the direction of the Fruit and Floral Committees, comparative trials of the following subjects:—Of vegetables, viz., Tomatos, Cabbages, Savoy, Turnips, new Peas, and new Potatos; of flowers:—Euparises, Gloxinias, Begonias, Cannas, new Zonal Pelargoniums, Stocks, Asters, and new annuals. Fellows of the Society, and those desiring to contribute subjects for this purpose, should communicate with Dr. HOGG, Secretary to the Society; or Mr. BARRON, Superintendent at the Royal Horticultural Society's Gardens, Chiswick.

—A very fine specimen of the beautiful white Himalayan RHODODENDRON ARGENTUM is now in flower in Messrs. DOWNIE & LAIRD'S Winter Garden, at West Coast, Edinburgh. A specimen of Rhododendron Falconeri with twenty-two flower-buds upon it will also be in flower in the same house in about ten days' time, together with a large number of well set plants of other varieties which the firm are forcing in pots with the view of holding an exhibition, which we hear is to be open during the last week of this month and the first fortnight in April.

—The North British Advertiser reports that a large meeting of the horticulturists of Edinburgh and neighbourhood was held at No. 5, St. Andrew Square, on March 6, to consider what steps could be taken in order to secure the better recognition of NEW AND RARE PLANTS, whether native or imported, and also of a better mode of ensuring that certificates should be granted in a manner which would carry more weight in the trade than they do at present. After Mr. DENNY, of Dalkeith Gardens, who was in the chair, had explained the object of the meeting, and the matter had been fully discussed, a deputation was appointed to meet the Council of the Royal Caledonian Horticultural Society, in order to get them to appoint a fruit, floral, and scientific committee, somewhat after the manner of the Royal Horticultural Society of London, which would meet at least once a month, and would therefore be in a better position to take cognisance of any novelties than the Caledonian Society, which at present can only take cognisance of what is brought forward at their shows, which are held only three times annually. When this matter was arranged, Mr. D. SYME, of the Lawson Company (Limited), suggested the expediency of forming a Horticultural Club or Mutual Improvement Society, whereat papers relative to all branches of horticulture could be read and discussed. Some conversation having taken place on the subject, the suggestion was highly approved of by all present, and a committee was appointed to draw up rules for the new society. After a vote of thanks to the Chairman, the proceedings terminated.

—It is to be hoped that full trial will this season be made of Mr. WORTHINGTON SMITH'S alleged PREVENTIVE OF THE POTATO DISEASE, called SALUS, and which is in the hands of Messrs. WHEELER, of Gloucester and 59, Mark Lane. The preparation consists of "compounds of sulphur and potassium," and the theory is that this preparation will kill the fungi, infusoria, mites, &c., in the soil before they attack the Potato, Cucumber, or other plant. Prevention, then, rather than cure is the object to be aimed at, seeing that cure is often impossible from the nature of things. Mr. SMITH claims for his compound that it is new, that it benefits the constitution of all plants, and at the same time it destroys the originators of diseases in plants. We trust that experiments will be made as far as possible to test the value of this substance. In the case of the Potato disease it must be ascertained definitely beforehand whether there are any resting-spores in the soil. It is not many people who have sufficient patience and ability to make this preliminary experiment.

—We have lately examined some flowers of DOUBLE CYCLAMEN, which possess some interest from their regularity and from their relation to the structure of other genera of Primulaceae. In the flowers in question there were ten petals in two rows, the stamens being superposed to, or in front of, the outer row of petals. The inner row of petals then corresponds with the little scales that are met with in the throat of the flowers of Androsace, Soldanella, or Samolus, and of which an indication may perhaps be

found in the little bosses which surround the mouth of the tube in the common Primrose. In one of the Cyclamen flowers, moreover, some of the anthers opened outwardly, others inwardly in regular alternation. At present we do not perceive the significance of this latter peculiarity.

— In *IMANTOPHYLLUM MINIATUM* PRINCEPS, Mr. BULL has the finest variety of this useful *Amaryllidaceae* plant that has come under our notice. The flowers are larger, more campanulate in form, and altogether smoother in outline, while the colour is a deep orange faintly shaded with rose. Three of the six segments are much broader than in the ordinary form, and very much rounder at the apex. It is as great an advancement on the variety called *speciosum*

demonstrates the fitness of this treatment, at this season of the year at least. Mr. BAUSÉ's method of propagating this plant may not lay claim to originality, but it is both rapid and effectual. A well-established plant of this *Yucca* will throw out a number of tuberous roots like hard knots, which form themselves round the sides of the pot. In course of time these make an upward growth in the form of suckers, and in this way any particular form has been increased. Mr. BAUSÉ may be said to force the hand of the plants, for at intervals they are turned out of their pots and these tuberous roots removed before they have made only upward growth, and then put into small pots in a light sandy soil in a stove-house. Growth soon sets in, and in this manner a tuber will send up three or four shoots, or more or less, which

Individually the flowers are quite half as large again as those of *E. onosmedora flore-pleno*, and are of snowy whiteness as compared with those of the last-named plant, which are distinctly flesh-tinted. The plant is a stronger grower, and produces longer and denser spikes of flowers.

— An old gardener once remarked that "there were many little ways and means of stealing a march on inclement seasons, and taking advantage of fine ones," and in enumerating these means he instanced that of SOWING PEAS IN POTS early in March, from which to obtain an early crop, rather than sowing them in the open ground in November. His plan was to sow nine seeds each in pots 4 inches in diameter, selecting as many seeds as he wanted for his early

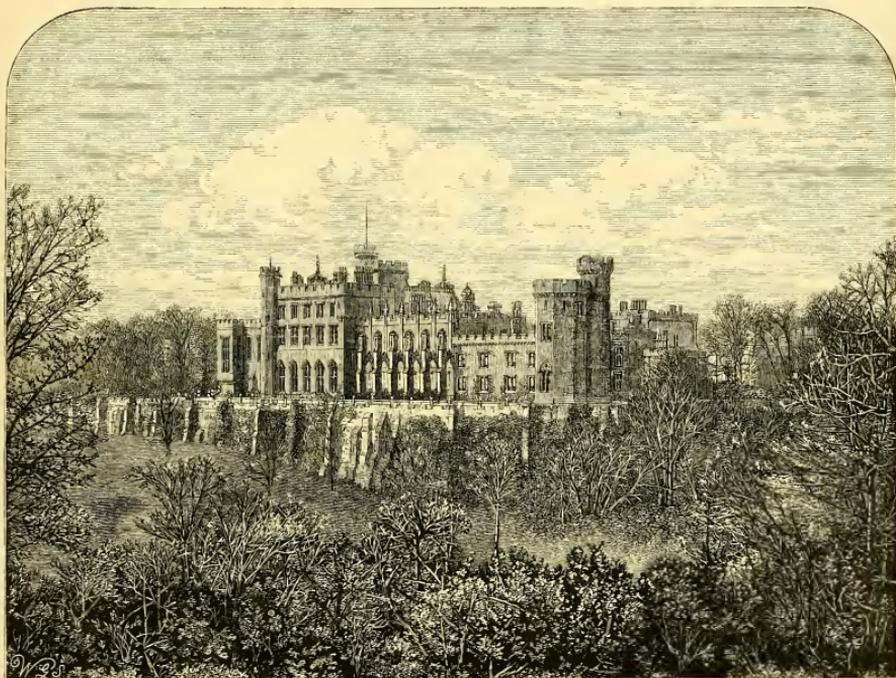


FIG. 55.—LAMTON CASTLE, THE SEAT OF THE EARL OF DURHAM.

as that is on the ordinary *I. miniatum*, and will be a valuable exhibition plant.

— In the open competition for designs for laying out Dartmouth Park, as advertised for by the Improvement Commissioners of West Devon, the premier premium was awarded to Mr. JOHN MACLEAN, of Dorrington Park, Derby, and the second to Mr. R. P. GLENDINNING, Croydon.

— Some superb examples of *YUCCA FILAMENTOSA VARIEGATA* can now be seen at Mr. JOHN WILLS' Melbourne Nursery, Atherley, the plants being of good size, and the peculiar variegation finely developed. Mr. BAUSÉ, Mr. WILLS' manager, is giving these plants a much warmer treatment than is usually accorded to them—they are in an intermediate-house; the generally robust character of the plants, and the radiance of the silvery variegation just now,

can be removed as soon as they are large enough. The success of this system is shown by the fine lot of young plants Mr. BAUSÉ has gathered about him, and which soon grow into acceptable specimens.

— It is not often that we have to chronicle such a motive for establishing a great flower show as that which has influenced the Bremen Horticultural Society, viz., to celebrate the 100th birthday of ISAAC HERMANN ALBERT ALTMAN. The show is to be held in the Bürger Park at Bremen, from August 15 to 19. The schedule comprises 100 classes.

— Mr. BULL has another NEW DOUBLE WHITE EPACRIS in flower, and a grand acquisition it proves to be. This is *E. onosmedora flore-pleno nivalis*, a variety at once distinguishable from the double one shown last year for the first time, by reason of the purer whiteness of its flowers and their larger size.

crop. They were then placed in a gentle warmth in a frame or pit, and, when well up, the growing plants were gradually hardened off by exposure to the air, and when 4 inches in height, advantage was taken of a calm day to plant them out in as warm a situation as could be found for them, and with the balls of earth entire as they were turned out of the pots. The groups of plants were placed 6 inches apart in the rows, they were earthed-up at once, and some twigs placed about them for support as well as for protection. A little leaf-mould placed about the roots was, to use his own words, "warmer than common garden soil, and helped them to start freely into growth." The season has been so wet, and the soil so thoroughly saturated with moisture that it is not surprising it should be stated early sown Peas and Beans are having rather a trying time of it, and many failures can be noted. But gardeners will sow early, although the authority referred to above,

and others, are found asserting that but little is gained by sowing in November in preference to sowing in February or early in March. For early Pea crops a light dry soil, *i.e.*, a soil from which wet is soon drained off, and a warm situation, should be chosen, the drills should be drawn 3 feet apart, and the seed covered to the depth of 2 inches at least. The depth at which Peas should be sown must be regulated by the nature of the soil; if it is of a dry and warm nature the seed may be covered to the depth of 3 inches, or even more; the later the seed is sown as summer is approached the deeper it should be placed in the ground, and not only without injury, but with positive advantage, because a certain amount of moisture is necessary to the well-being of the plants, and they would be more likely to obtain it by deep rather than by shallow sowing. On the other hand, in strong soils which are much more retentive of moisture shallow sowing is to be recommended, even in some instances the sowing of the seeds on the surface, and drawing earth over them, thus forming a ridge. Some have even, in extreme cases, been obliged to raise ridges, and sow thereon. Peas, like other vegetable productions, will not bear stagnant moisture about the roots, and yet will not flourish without a certain supply; and thus deep sowing in one instance, and shallow sowing in the other, seems to be the most rational mode of securing to them the necessary conditions. If these remarks appear to some unnecessary, let it be remembered there are always learners among us, and simple matters are sometimes apt to be overlooked in the attention bestowed on greater ones.

— The annual report of the MELBOURNE BOTANIC GARDEN for 1875 is occupied with details of the work done in the garden during the year, and is necessarily chiefly of local interest. Mr. GUILFOYLE speaks highly of the *Bufo-lago* grass (*Stenotaphrum plabrum*) as a lawn grass mixed with *Doubt-Cynodon Dactylon*. This may be a useful hint to gardeners in the south of Europe and other dry climates. Among the plants recommended for trial as a fibre plant is *Sparmannia africana*.

— The Belgian committee established for the purpose of erecting a monument to the memory of the late LOUIS VAN HOUTTE have decided on erecting a monument at the tomb of the deceased in the cemetery of Gendriegrue, wherein VAN HOUTTE acted as burgo-master for nearly a quarter of a century. The square will be called the Place Van Houtte, and will form part of a new street which will pass in the immediate vicinity of the establishment founded by VAN HOUTTE.

— Agriculturists who believe in the maxim "Work and learn" will be interested in an article reprinted from the *Langham Magazine* and called AN AGRICULTURAL RIP VAN WINKLE (C. Matthews, 265, Strand, London), in which are very amusingly, and, we may add, convincingly set forth, the principal requirements of modern progressive agriculture.

— The fine specimen of *LIVISTONA AUSTRALIS*, upwards of 60 feet high, in the Botanic Garden of Sydney, we learn, now in full bloom.

— The General Secretary of the Central Horticultural Society of France, M. A. LAVALLÉE, after some experience in FORCING THE LILAC, states that he is fully convinced that the cause of the colour not being developed is the high temperature which induces a very rapid growth; that is to say, the plant has not time to form the blue colouring matter of the flowers, and therefore they appear white. Below a temperature of 60 Fahr. the flowers begin to show blue, whereas, if forced in a higher temperature in the full light, they come pure white. One of the members present contended that, although this might hold good for the varieties of *Syringa vulgaris*, it would not be for *S. persica*. It was also mentioned that many vegetable colours, particularly those of flowers, are generated in the dark. Professor DUCHARTE described the granular nature of chlorophyll as opposed to the liquid colouring matter of flowers, especially the blue-violets and purples, and mentioned that as long ago as 1853 he had proved most conclusively by a long series of experiments, that the white flowers, instead of blue, are due to a high temperature. In one case a part of the plant was

inside exposed to a high temperature, and almost close to the glass, and a part outside in the open air. The flowers on the first were perfectly white, whilst those produced on the branches out-of-doors about a fortnight later were of the normal colour. M. LAVALLÉE recommends the variety called Charles X. for forcing because the ladies prefer it; but, as it will not bear forcing till towards the end of December nearly, it should not be selected for the earlier forcing. He also stated that withered flowers of forced *Lilac* will regain their freshness in about ten minutes if the lower ends of the panicles are placed in very hot water; and this operation may be successfully repeated several times.

— Mr. MACKELLAR, gardener, Abney Hall, Chesham, has sent us two flower-heads of FRANCISCA CONFERTIFOLIA, which are very fine, both having upwards of two dozen fully expanded flowers. He also informs us that even larger heads have been produced by a pot plant about 4 feet through that is under his charge. This is a very beautiful early-flowering stove plant.

— A writer in the *Bulletin* of the Belgian Horticultural Societies says that he has hit upon a most effectual means of preventing HARES AND RABBITS from gnawing off the bark of his Apple and Pear trees in severe winters. Last November he besmeared the trunks of the trees on two separate occasions with dog's dung, and the effect has been that the hares and rabbits have gone elsewhere for their food. Having himself experienced considerable loss in previous seasons from the ravages of these rodents, he thinks it a duty to make known the cheap and simple remedy he has discovered.

— A correspondent sends us a cutting from a northern paper, which states that last week, when one of the joiners employed at the Camperdown Linen Works, Loches, was engaged working upon a plank of wood, he observed what at first seemed to be a large knot in the wood. On closer examination, however, he found it to be something of the nature of bone. Having acquainted the head of the department, Mr. SILVESTER SMITH, of the "find," by his orders the corresponding plank was searched for and got, and the piece of each board containing the curiosity cut out and dressed. On this being done, the appearance was presented of a deer's antler horn in a state of perfect preservation. The saw had cut almost through the centre of the horn, showing the vacuum in both pieces of wood, and also part of two antlers shooting off from the horn proper. The two planks in which the horn was were in the very centre of the tree, which measured in diameter about 21 inches. The wood was of *Sycamore* variety. This very interesting and extraordinary curiosity is, we understand, to be sent at once for exhibition to the Dundee Museum.

— From the *Bulletin de la Société Centrale d'Horticulture de France* we learn that certain M. DURAND has devised a new kind of collar for fixing young trees to their stakes. It is of galvanised iron with an interior ring of plaited rushes. The authorities of the city of Paris have adopted it, and the Society awarded the inventor a certificate.

— STAPHYLEA COLCHICA, which appears from an examination of a series of specimens at Kew to be nothing more than a state or form of *S. pinnata*, is likely, according to M. LAVALLÉE, to become a useful plant for winter decoration, as it bears forcing very well and produces its elegant white flowers in great profusion. M. CH. BALET observed that the principal reason why this charming shrub is not so often seen in collections as it deserves is the difficulty experienced in propagating it. However, this has been overcome, and a perfectly easy and successful method of increasing discovered by M. COULOMBIER, of Vitry. It is briefly this—the layering of the young current year's shoots, which in July are sufficiently rooted for separation and planting out. Plants raised in this way are far preferable to those grafted on *S. pinnata*. Layers of the old wood frequently do not throw roots till the second year.

— If any one were asked to name a hardy flower of more than usual merit on the score of attractiveness at this season of the year, they would be likely to

name ANEMONE FULGENS. This gorgeous native of the South of Europe is not only perfectly hardy, but it is also very early, and is now blooming freely in the open air. Within the rich scarlet flowers there is a black disc, which contrasts in a marked manner. Clumps of this grand Anemone, if planted in sheltered spots with a southern exposure, would, no doubt, bloom early in January when the season proved favourable. As if flowers freely, it may be commended to the attention of those who grow early flowers for market, as bunches of this Anemone would be certain to command a ready sale. It is also well deserving the attention of those who are interested in wild gardening, and are accustomed to plant flowers by the side of woodland walks. There is quite a group of early Anemones suited for the purpose, *viz.*, A. fulgens, the blue A. blanda, the mauve A. apennina, the yellow A. ranunculoides, and the wood Anemone, A. nemorosa, and its varieties. In the open ground A. apennina is fast throwing up its flowers in sheltered places, and the others are coming on with rapid successions. Such a rich group of plants claim and merit attention.

— We have received a copy of the schedule of prizes to be competed for at the INTERNATIONAL HORTICULTURAL EXHIBITION to be held at CARLISLE on September 6, 7, and 8 next, under the auspices of the Carlisle and Cumberland Floral and Horticultural Society. There are 218 classes in which money prizes or plate are awarded, and ten in which certificates only are given. The amount of prize money actually offered is nearly £1250. The schedule is divided into fourteen divisions, *viz.*, 7, fruit, open to all; 2, fruit, open to amateurs only; 3, fruits of foreign growth; 4, plants in pots, nurserymen only; 5, plants in pots, for gardeners and amateurs; 6, plants in pots, for amateurs only; 7, cut flowers, for nurserymen only; 8, cut flowers, for gardeners and amateurs only; 9, cut flowers, for amateurs only; 10, dinner-table decorations, open to all; 11, vegetables, for gardeners and amateurs only; 12, vegetables, amateurs only; 13, new plants, open to gentlemen and amateurs; and 14, horticultural requisites. Amongst the principal prizes were those of £20, £10, £10, and £5 for "a collection of sixteen sorts of fruit, not more than four varieties of Grapes, two sorts of Pines, and two of Melons;" £15, £12, £7, £3, for "a collection of twelve sorts of fruit, not more than four sorts of Grapes, Pines excluded;" £10, £7, £5, £3, for "a collection of ten sorts of fruit, Grapes and Pines excluded;" £15, £12, £10, £8, for "eight varieties of Grapes, one bunch of each;" £10, £8, £5, £3, for "four varieties of Grapes, one bunch of each;" £5, £3, £2, for "a collection of hardy fruits, eight varieties, grown in the open air;" £15, and £10, for "the finest collection of Grapes, Lemons, Oranges, and Citrus" grown on the Continent; £15, and £7, for "the finest collection of Apples and Pears," grown on the Continent; £15, and £7, for "the finest collection of Apples, Pears, Peaches, and Nectarines," grown in the United States or British North America; £20, £15, £10, for "twenty stove and greenhouse plants;" £10, £8, £4, for "six Orchids in bloom;" £8, £6, £4, for "ten exotic Ferns;" £20, £15, £10, for "the finest new plants not yet in commerce, Orchids excluded;" £15, £10, £5, for "fifteen specimens of hardy Conifers;" £25, £10, £5, for "the best collection of twenty-five stove and/or greenhouse plants" [Does this mean "stove and greenhouse plants," or "stove or greenhouse plants?"]; shown by Continental nurserymen only; £20, £15, £10, £5, for "twelve stove and/or greenhouse plants, six to be in bloom, and Orchids excluded;" £10, £6, £4, for "nine stove and/or greenhouse plants, in pots not exceeding 12 inches in diameter;" silver cups of the value of £15, £10, £5, £3, £2, £1, for "twelve new plants sent out by Mr. Bull since the commencement of 1874. In addition to these special prizes offered by Mr. Bull, there are others given by Lady Masgrave, Edin Hall, Penrith, for dinner-table decorations; Mr. William Wright, draper, Carlisle, for vegetables; Mr. J. C. Mason, bookseller, Carlisle, for stove and greenhouse plants; J. Jardine, Esq., Arkleton, for hardy fruits; Messrs. Symon, Cooke & Ridal, for Jargonelle and Pear; Messrs. James & Co., Glasgow, Edinburgh and Glasgow; Messrs. James B. & Sons, Paisley, and Mr. David Low, Edinburgh, for grapes. The entries close on August 30, and intending exhibitors should apply for a copy of the schedule to the Acting Secretary, Mr. JOHN MOUNSEY, Victoria Hall, Louth Street, Carlisle.

LAMBTON CASTLE,

THE SEAT OF THE EARL OF DURHAM (see p. 341).

—This place is situated in the county of Durham, at an easy distance from Fence House Station, on the North-Eastern Railway Company's line, betwixt Durham and Newcastle. As those who have visited this part are doubtless aware, the district is more famed for its mineral wealth than anything particularly prepossessing in landscape effect; yet it must by no means be supposed that the surrounding country is so unattractive as are some of the great coalfields in other portions of the kingdom, as the land is of fair quality for agricultural purposes, and moreover is generally well farmed—a circumstance that contributes so much to a favourable impression, seen either by road or rail.

The home portion of the estate is well timbered, although the trees individually do not attain a large size. The Castle stands with its surrounding pleasure-grounds on the sloping ground on the northern bank of the River Wear, which is here considerably under the influence of the tide. The principal entrance is on the Durham and Newcastle Road, about 2 miles distant from the Castle, through the park; a broad drive leads up to the carriage front, which is on the north side of the building, opposite which is a wide gravelled space divided by an open stone balustrade from a considerable expanse of the richest of green lawn interspersed with trees, and enclosed on the north by a shelter-belt of timber, in front of which are dispersed a few large vases filled with flowering plants, not too numerous, but sufficient for the object in view—to give some specks of colour. At the western end of the mansion is a grass terrace traversed by a broad walk, from which slopes another piece of closely-shaven lawn which, at some distance, descends quietly. The garden of the Castle is bounded its entire length, 384 feet, by a gravel terrace 54 feet in width, which is separated from the outer grounds (which here descend precipitately to the river) by an immensely strong buttressed wall, the foundation of which is some 24 feet below the level of the terrace. From this point the noble proportions of the building are seen to advantage, and at once strike the beholder with its substantial character and beauty of outline.

There are also other circumstances connected with Lambton Castle, peculiarly worthy of notice, which increase the interest attached to it in common with all fine buildings. Some twenty-five years ago the walls began to give way, cracking and shrinking in many parts. The cause was not far to seek: in common with a great portion of the surrounding country the ground on which the Castle stands had been mined under, and when the seam of coal was exhausted the workings were at once abandoned, after which the upper strata began to sink. In this serious state of matters only one of two alternatives could be followed: either to take down the building and abandon the site, or attempt to build up the old coal-workings. The Earl determined on the latter course; and this gigantic operation was commenced, and its magnitude of which would have appalled many. The work occupied between seven and eight years, and it was used 14,000,000 of bricks: these figures are easier read than the quantity they represent realised. The remedy has proved thoroughly effectual. Iron tie-bars were inserted through the walls in all directions where required, and the work of repairing the building commenced, and lasted four years; and it was seen with this carried out that nothing is now to be seen of the severe ordeal through which it has gone.

Running immediately in front of it, at a few feet distant, is a low wall, on which are stood at intervals vases containing blooming plants, which lighten up the immense mass of stonework. Coming round to the eastern end there is a walk that winds on a lower level at a short distance from the river in the direction of the flower garden, and the work of repairing the garden ground in the same direction through the upper portion of the pleasure grounds.

Rhododendrons appear to succeed well here. Yews and other trees of a kindred nature do fairly, except Wellingtonias, which thrive up to a certain point, and then assume a somewhat stunted aspect. Cedrus Deodara and atlantica and the Hemlock Spruce grow vigorously. Pursuing the course of the low wall already alluded to we arrive at the flower garden; the design is simple, pleasing, and devoid of ornament—the beds arranged on the sides of the walks that take easy curves in different directions. Echeverias and plants of a similar habit are largely intermixed with flowering subjects. A dwarf

Protopium is extensively used in conjunction with *Blue Lobelia*. The mass of colour is toned down by plenty of grass in the background, which obviates any approach to glare. This portion of the grounds is divided from the fruit garden by a wall which is separated from a broad walk by a wide flower border well arranged. Next the grass verge a row of Golden Pyrethrum, then a row of Little Drift violet, Pelargonium; next a 5 feet centre of *Blue Scilla*, backed next the vase with another row of scarlet Pelargonium. The broad central band of *Viola* is relieved at intervals of about 6 yards by small circular groups of plants, the middle of each consisting of an erect-growing Conifer about 2 feet high, round which are pink Pelargoniums and yellow Pyrethrum. By this means the unbroken line of colour and monotonous surface is avoided.

From this we arrive at the terrace flower garden fronting the front range of vineries. It is some 115 yards in length, by 20 yards in width. It is separated longitudinally from the fruit garden by a wall surmounted by an ornamental iron railing, covered with Clematis Jackmanni, which was nicely in flower on September 5. Two gravel walks run the entire length, one in front of the Vine border, and the other at the opposite side, leaving a narrow border up to the Clematis-covered railing. This was planted in four rows; next to the dwarf Ageratum, the white Alyssum, next *Vesuvius Pelargonium*, backed by *Verbena venosa*.

The middle portion of this garden was arranged as follows:—Centre, 5 feet strip of the orange-red *Violet Hill Pelargonium*, with a row on each side of the white-leaved Flower of Spring; on the outside of this again a wide strip of *Blue Lobelia*, then a corresponding row on each side of Mangles' Variegated Pelargonium, margined next the Box with Golden Pyrethrum; the central band of Pelargoniums had patches of *Iresine* planted 6 yards apart, and the *Blue Lobelia*, single plants of *Centaurea*, at similar intervals, which added much to the general effect. The Vine border on the opposite side of the walk has a winding row of *Echeveria* running the whole length, with small patches of other bedding plants that do not spread much dotted at considerable distances apart—just sufficient to take off the bare appearance, but not so as to interfere to any extent with sun and air getting to the soil. There is another terrace flower-garden betwixt the two principal ranges of houses running the whole length, which will be described as we proceed.

The planting may be described as a combination of such things as are generally used in carpet bedding and flowering plants. This and the other terrace-garden is filled with spring bedding after the summer occupants are removed. *T. Baines*.

(To be continued.)

Home Correspondence.

Forsythia.—This is the time when search should be made for the female flowers of *Forsythia suspensa* and the blossom of *F. viridissima*, which have examined many hundred flowers of both species from many individual plants. In all the plants of *viridissima* the stamens were much shorter than the pistil, which was fully formed, and bore a slender style; in all but one of the plants of *viridissima* the stamens were longer than the pistil, which had a very short style, and I found withered. In one plant alone of *F. suspensa* I found one flower, and one only, with the short stamens and long style; in this the anthers had turned brown, and the ovary had commenced to swell. *J. D. Hooper, Royal Gardens, Kew, March 12.*

The Gardeners' Royal Benevolent Institution.—Having read Mr. Findlay's remarks on canvassing for votes for this Institution, allow me to say that, in a great measure, I share his views. We know that it is natural for any member who is personally known to a candidate, and who feels some interest in the case, to give the latter the benefit of his votes, and to ask other friends to do the same; but when an individual has power and influence taken up, and carries the candidate past those who have been trying for two or three elections, and lands them safe with votes to spare, who can be surprised that gardeners, not knowing where to look for such supporters, could give this as one of their reasons for not joining the Institution? I also see Mr. Grieve, in his good and encouraging letter, has dwelt on this point, and also raises the question which, to my knowledge, has been discussed at the Society's meetings—and, as I have anticipated, it is, that it would be better to reduce the number of pensioners and give larger pen-

sions; but, on the other hand, it has often been urged that, while the applicants for the pension are in excess of the number to whom pensioners are granted, and who would be glad and thankful to receive the pension in its present form, would it be wise to reduce the number, as all the applicants are fit and proper candidates according to the present rules? The question, I apprehend, can only be answered by the result of a general meeting, but I am led more particularly to offer a few remarks from reading the communication in a recent number of the *Gardener's Chronicle*. I have spoken to a great many gardeners with a view to their joining the Institution, and have been asked, in the same answer as that set forth in Mr. Clark's letter, but I cannot think this a sufficient cause to keep gardeners who have the means from subscribing, for, supposing this were altered, I fail to see how we could expect to gentlemen who are subscribers, and who have hitherto added so largely to the funds of the Institution. It might be that a gentleman who had been a supporter would wish to recommend a candidate for the pension who had not been a subscriber, and he himself had been induced to become one from the fact that it was the Gardeners' Royal Benevolent Institution, and I think I am not wrong in saying that the annual dinner, for which the funds have been largely increased, is based on the same principle. There is again a large class of men, such as nurserymen, and especially salesmen in Covent Garden, which latter are excluded by the rules from receiving any support, but who, nevertheless give, not only their own aid, but extend it to others, and are, in fact, towards the support and management of the Institution, and, although I have no authority to speak for them, I have every reason to think it has been done on the understanding that it had something of charity about it, and extended to those who are not deserving. Let me here remark, too, that the voting papers clearly show who has been a subscriber, and for what length of time; and if canvassing were discontinued, each member has the opportunity of voting for the candidate he considers the most deserving, and I cannot but think that under these conditions the longest subscribers, as a rule, would have the preference; but I still think the Society would never have been what it now is but for the aid it gives even beyond this to non-subscribers, and to the worthy Secretary, who has done much to raise the funds, and is ever bringing its claims under the notice of those who are likely to become supporters, would then find that the principal ground on which to fix his appeal, and to which to rest his case, is the opinion of the Institution is quite enough a benefit society to be in any way worthy of its present title. *J. Willard, Holy Lodge Garden, Highbury.*

Royal Horticultural Society.—To the Gardeners' Chronicle I remain.—It is not my intention to ask that the members of the present Council of the Royal Horticultural Society are doing all and everything in their power to induce gardeners to become Fellows of guinea subscribers to the Society. I therefore desire to say to my brother gardeners, "Come, and you will be welcome." Many will no doubt begin railing at the bad management of the financial affairs, and no doubt the managers of the Society have taken leaps in the dark, but which of us has not done the same? Forget the past, and a bright and glorious future is before you. What signification is there in guinea subscribers not being allowed to vote? Which amongst us all have had good places until we made them good ones, by strictly keeping the employer's interest in view, and by using to our own advantage to cultivate the garden under our care to the best advantage? I say, then, no councilship, no generalship can successfully combat against such numbers as we can bring to the Society. Therefore, if you find any one who is not a Fellow, we shall see such orators as our Ingrams, Speeds, and Smiths grace the Council-room. Dr. Hogg is not leaving a stone unturned, and the grand display of the 14th ult. in the huge conservatory speaks volumes in favour of the old Society. In conclusion, let me beg of you all to come at once, and don't delay. God willing, I shall attend the next meeting, and hope to see all my old friends. They will be welcomed with the right hand of fellowship by those in power, and last, but not least, by the smiling smile from the gardener at Buryleigh. *R. Gilbert.*

—May I beg the favour of space for a last letter on guinea Fellowships? The Council have adopted the guineas, but, alas! only to the extent of members without a vote, instead of, as we asked, fellowship with a vote. As our one object has been to infuse good new horticultural blood, and so strengthen the Society, I need hardly say that the restriction renders the concession, in this view, worthless. It is, however, to be considered that if a vote had been given, so many persons living in the neighbourhood of the gardens would have become guinea Fellows, that the votes of those not on the spot might have been counted. It was suggested from a former Council after the last general meeting, I suggested to the President that if the

Council would give guinea Fellowships with votes to those living outside the London letters, I thought many good country horticulturists might be induced to come in. This was only on the principle that if you cannot get best you must try for second best, the Society having still old London Fellowships on its back, but I thought that our Fellows would get horticultural consideration for their guineas, and that they would leave the Society. This proposal was not adopted. Some of your readers who have given the names as would-be guinea Fellows, ask what they ought to do. I think our best course is to go on quietly collecting names, and waiting, trusting to the chapter of accidents: the Council may rechange their policy. It is an unpleasant feeling long for horticulturists to give their guineas without getting a vote would be, I think, merely to that extent to bolster up a state of things which the experience of now very many years has shown to lead only to constantly recurring seasons of discontent and failure. The question is, as I have had to repeat over and over again, one of simple common sense. Every scientific society with headquarters in London has more or less prospered except the Royal Horticultural Society; there is no science with nearly as many names as horticultural science. Every other scientific society (excepting the Zoological Society, with its show every day, and the position of which is essentially peculiar) trusts for its support to those interested in its object. The Royal Horticultural Society, except quite at its commencement, has never done so; surely it is a fair inference that if, in this respect, it followed the course of its sister societies, with the advantages of its wide sweep and more general consistency, it would become the most prosperous of all. It now only remains for me to thank you for the valuable space given to me, and to thank those good horticulturists in the country who have taken so much trouble in this matter; their work will assuredly bring fruit hereafter. Four years ago the guinea Fellowships and my support, their supporters were crumpled by teas, they now are by hundreds, including the best horticulturists of the country. When they come up next (with the gained experience) they should be by thousands. I ought, perhaps, to apologise for losing part myself forward, but having served for many years in almost every office of the Society I know exactly its requirements, and having time and means, knowing its past troubles, and seeing a remedy against future ones, it seemed that I ought (as one else having come forward) to undertake the work at first. Before long I became the mouthpiece of many of the best and most experienced horticulturists of the country of all ranks, who urged me not to let the matter rest till the guinea Fellowship was reconstituted and the Society reconstituted. *George F. Wilson, Hutterback, Walsbridge, P.S.*—Mr. Fish is probably quite right in supposing that owing to his exertions and those of his friends at the time the show at Bury was held, the Council ran no real risk. The risk was at the commencement, when they proposed to hold the show without the sanction of the Expenses Committee, before the very large guarantee fund was raised. *George F. Wilson.*

Lobelia Emperor William.—Permit me to thank Mr. Morgan for the information he has given respecting this Lobelia. All I can say is, that I have not seen it beyond this immediate neighbourhood, and my only object in recommending it to the gardening public was, that a plant possessing so much merit should be better known and more extensively cultivated. I have not written one word to much in favour of Emperor William. *P. Davidson.*

Palm Seeds from Africa.—Last November I received a packet of Palm seeds which were obtained for me through the kindness of Colonel Gordon. In December I distributed them, not knowing whether they had been gathered fresh, and I am happy to say that Mr. Sowerby tells me that three have vegetated in the Royal Botanic Gardens, Regent's Park; and one of two which I planted myself in Scotland is thriving nicely. The risk was at the commencement, that in less than two months the other husk was above ground. The plant is a species of *Hyphene*, described in vol. xxix. *Ann. Travels*, and sent brought from Africa by me in 1783, and supposed to be new, but a more decided opinion may be formed in a few years hence if the plants have the good fortune to live. *J. A. Grant, Colt., March 3.*

The Weather.—We had 14" of frost here on Saturday night, and to-day, March 12, it is piercingly cold and crisp, and as the sun is out, the trees look well and promising, as do all other fruit trees, but sadly too forward. *J. Sheppard, Woolverstone Park, Ipswich.*

Aspects for Plant Houses.—As Mr. Bester has been so introduced, I personally remarks into the discussion of this subject, do not think it necessary any further notice of it, indeed if I had had the least

idea that he would have taken offence at a little friendly criticism, I should never have written anything on the subject at all. With regard to the proper aspect for span-roofed plant-houses, I confidently leave the matter in the hands of the readers of the *Gardeners' Chronicle* to judge for themselves, which view of the subject is the right one. *Aqua Calida.*

The Black Prince Pine-apple.—The fruit of this well-known sort is readily distinguished from most other kinds (particularly when it attains a large size) by the great depth of its pyramidal-shaped fruit. The accompanying illustration (fig. 56) represents one which was cut in the last week of October, 1876, which measured 13 inches from its base to the top, and weighed 10 lb. 2 oz. The chief defect in this variety is the liability of some of the pins to become discoloured before the others are perfectly ripe; this is especially the case oftentimes with large fruits, and is very detri-

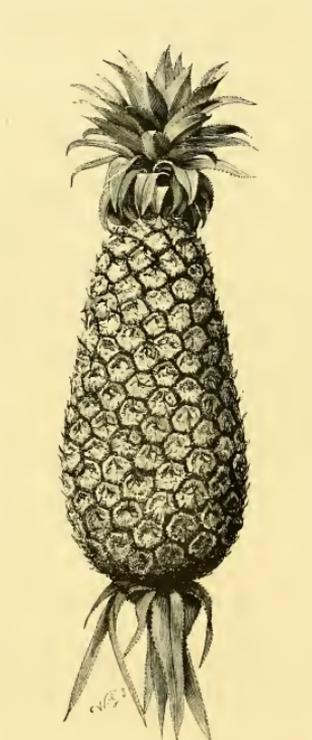


FIG. 56.—BLACK PRINCE PINE-APPLE.

mental to it, otherwise its noble proportions render it very attractive, and it is not altogether a bad autumn or early winter variety, and worth a place in all large collections. To remedy its tendency to spot, which generally happens in large fruits, cease to water the plant as soon as the colouring process begins, and if the conditions under which the plant is growing will admit of its being removed, by all means transfer it to a house where only a moderate temperature is maintained and a plentiful supply of fresh air is admitted, and where shading can be applied when powerful sunshine exists. Under these conditions it will assume a bright colour, and will generally finish off perfectly. In the case of those fruits which cannot be removed, to shade the fruit when it begins colouring, and to give more air will likewise be attended with highly satisfactory results. *G. T. Atiles, Wycombe Abbey.*

Dodder on Azalea.—The accompanying Azalea is from a plant I procured from London some time last year. When I came to notice some very peculiar parasitical-looking roots upon it; and when the

roots came in contact with other plants that were placed near the Azalea bearing these strange-looking plants they very soon established themselves upon them. I have tried various means to destroy them without injury to the plant, but it appears nothing short of destroying the plants will effect the purpose. *C. Coombs, Toller House Gardens.* [The threads are those of a Dodder—*Cuscuta*—such as is common on wild kinds of heath in the country. Probably it was introduced with the peat in which the plant is potted. Should it flower we shall be able to tell you the species. Eds.]

Fortune's Yellow Rose.—I have grown this Rose here for many years, and Messrs. Paul's plants are, I believe, derived from cuttings sent by me to them. It then was planted in the colonnade of the garden in different soils; indeed, it differs in blooms on the same plant, according as they are more or less shaded. I have them sometimes of a bright canary shaded with carmine, sometimes a lively tint of buff, or nearly imitating the tint of a new leucopannary. Occasionally some blooms are splashed rather than striped with a darker shade. Strange to say, I have never seen the Rose except in my own garden. Of the Beauty of Glazenwood I have not before heard. *T. R. R., Pansy Rectory, Wilts, March 12.*

Whole Oil a Cure for "American" Blight on Apple Trees.—Reading my old friend Mr. John Downie's remarks in last week's *Gardeners' Chronicle* on this subject suggested the following:—Many years ago we had a quarter of standard Apples infested with American blight. My father set me to paint the stems with "the crevices," as he called them, with pure whale oil, not a pleasant operation for the olfactory nerves, but it utterly destroyed the blight, and certainly improved the appearance of the trees generally. The only drawback was a personal one. When we had washed away "the crevices" in any order, one's hands were much of the same appearance, if not the odour, of a lamp cleaner at a railway station. I have always since, on the slightest appearance of the pest, adopted the whole oil painting, with the best results, I shall certainly try it on scale, for which I hope I may not have the chance, if any crops up with us. *James Culbush, Highgate.*

Organ Tea.—The words Organ tea originated with me in a local newspaper, and were used in quite different sense to what has been applied to them by your correspondents in previous numbers of the *Gardeners' Chronicle*. Pennyroyal is known as Organ herb in most of the western counties, and is much prized by old women herbalists as a blood purifier. I saw an old recipe that Organ broth was used in witchcraft to make people see everything double. It was in this sense I used the term Organ tea, in reply to a well-known writer in one of the garden periodicals, he having criticised a letter of mine in a local newspaper on the rain for the last ten years. After he had taken great pains and written a volume of figures, we only differed in this wise, he saw my hundreds as those sat, and multiplied them as such; in doing so he created a mare's nest. In my reply I accused him of having had an extra strong dose of Organ tea, and had seen my figures more than double. I hope my friend Mr. Gould's curiosity is now satisfied, as well as those who have asked for an explanation. *William Culbush, Thorne Perrow.*

Poisonous Plant.—According to a recent number of the *British Medical Journal*, some Italian sailors, belonging to a vessel lying in Falmouth harbour, were recently poisoned by eating herbs which grew on a shore near St. Just. One of the men who was most affected was taken to the Sailors' Home Hospital, where he died, after suffering great agony. The poisonous plant resembles Watercress, and is mistaken for it by the common people. A few years since two Italians died immediately after partaking of it. The name of the plant is not mentioned, but it is probably *Sium latifolium*, which grows with Watercresses, and is sufficient like Watercress to deceive unobservant people. The more common *Sium angustifolium* also commonly grows with Watercresses, and is sometimes found in the bundles when exposed for sale in the markets. This plant in infancy has a superficial resemblance to the Watercress, and it is considered dangerous by some authorities. It was a great pest in the late Mr. Smees' Watercress beds. *W. G. S.*

Rhododendron argenteum.—A few days ago, when looking through the gardens at Osberton, the seat of F. J. S. Fojambee, Esq., M.P., my attention was directed to the beautiful specimen of *Rhododendron argenteum*, which was of the following dimensions and in the best of condition:—Height 12 feet by 10 feet through the branches. At the time of my visit there were over fifty trusses of flowers open, averaging from 9 to 12 inches in diameter; the individual flowers open of a pale pink colour marked with chocolate, the older

blom changing to white, which gives the plant a very striking appearance. Mr. Woodfield, Mr. Foljambé's able gardener, informed me he found the plant in a pot when he took charge of the gardens nearly seven years ago, and as those kinds of plants are greatly appreciated by the owner, a suitable place was selected in one of the greenhouses, and the plant planted out—the result being one of the finest floral sights I ever saw on one plant. There were several other Rhododendrons planted out in the same house growing into fine specimens. I have never seen the species growing at any other place, and considering it one of the best as an indoor decorative plant I have thought it might be useful to send these few remarks. There are many other things worthy of noticing at Osberton, and any other having a little leisure, I should be glad to regret a visit, and might feel certain of being courteously received by Mr. Woodfield. *Joseph Jefferson, Worksop.*

Paraguay Tea.—I read with interest Mr. Forsyth's recommendation of the Paraguay tea, and his remarks at once reminded me of the tea preparable from our Holly, a weed in many forests adjacent to Hamburg, and in Holstein-Lauenburg. As early as 1855 our late Grand Master of Botany—Hugo von Mohl—made some remarks on this subject in his *Botanische Zeitung*, p. 39 (January 12).—"Spending last autumn some time in the Schwarzwald, I was informed to my surprise that the leaves of *Ilex Aquifolium*, a common plant in those mountains, were dried and exposed to a strong wind, and the best of Chinese tea. Since I could not obtain such tea at my place, I collected fresh leaves for an experiment. I had not to make an infusion, but a full decoction, though being a tea drinker and detecting everything that the inhabitants of the Schwarzwald had long used that beverage or whether they only did so after having been informed of the use of Mate tea." As to myself, I tried such tea in 1850 at Sharrand, in Saxony, from garden leaves. It was just a drinkable beverage, but neither my friend nor myself were enchanted with it. The leaves had, however, not been roasted long enough. Such things may, too, be regarded as questions of taste. I well remember of the great excitement created on this subject among the devotees to drink tea of Coffee leaves. Enthusiastic gentlemen said that one would in future have to drink one's coffee, coffee tea and Chinese tea each day. When I asked Dr. Lindley if, he told me he had once tested it; and that a peculiar, but not a powerful effect on his living physiognomy, he added, no power of the world would engage him to try it a second time. Yet speaking of *Ilex Aquifolium*, I would recommend it for another purpose. A great difficulty in gardening is to have good plants under older overshadowing trees; *Ilex* being well adapted for hedges and growing in the woods in the deepest shadow, would appear very suitable for the purpose. It even may have been used for this purpose long since, though I do not remember having seen it. *H. G. Kitchin.*

Desfontainia spinosa.—Would your correspondent "H," who wrote the "Notes from a Lancashire Garden" in your issue of February 24, kindly say in what position he grows his *Desfontainia spinosa* and what sort of soil he grows it in? *F. H. C.*

Reports of Societies.

Edinburgh Botanical: *March 8.*—Dr. Cleghorn, Vice-President, in the chair. The following communications were read:

I. Professor E. Morren on Vegetable Digestion. By Isaac Bayley Falfour, Sc.D., F.L.S.

II. On some Fossil Plants from the Calciferous Sandstone near Edinburgh, agreeing with species figured and described by Visconti in his *Di. Palm. Flore* published at Vienna in 1875. By C. W. Pease, A.L.S. (Specimens of the fossils referred to were exhibited.)

III. Notes on the Open-air Vegetation at the Royal Botanic Garden. By Mr. McNab. (See p. 337.)

IV. Miscellaneous Communications.

I. Professor Balfour exhibited specimens, which had been sent to him from the Royal Gardens, Kew, of a new variety of *Mercurialis*, (*Synonocarpus pubescens*), a small tree indigenous to the north of Mexico and Arizona. The Screw Bean, it appeared, was largely used in these countries for feeding cattle and horses, and it also produced a very good cake. The British Consul at Toronto, who had recently called attention to the Bean, had recommended that it should be grown in India, Ceylon, Australia, and the Cape, where—in dry seasons especially—it would doubtless prove a great boon.

2. Professor Balfour read a communication which he had received from the Rev. David Landsborough, noticing the growth of *Pittosporum tenuifolium*, a New Zealand plant, in the open air at Mauchline. The plant, which is evergreen, was grown from seed brought from Canterbury, New Zealand, by T. Deans, Esq., in 1865, and is now to feet 6 inches high.

3. Professor Balfour exhibited grains of Wheat, from Captain Sir George Nares, picked up in Polaris Bay, where it had lain from 1871 to 1876, N. lat. 84° 30' exposed to all the rigours of the climate. The grains had been tested at Kew, and 84 per cent. were found to be capable of germination. Two Peas and a grain of Maize had also sprouted, which were found among the Wheat.

4. Sir W. C. Trevelyan exhibited specimens of *Madragora officinarum* and *M. microcarpa* presented in flower in his garden at Wallington. The last-named species was noticed in the *Gardener's Chronicle*, February 17, p. 212.

Notices of Books.

We have received a copy of the second edition of the *Nurseryman's Directory*, a reference book of the nurserymen, florists, seedsmen, tree dealers, &c., for the United States, and all that is new concerning it is that a more useless work of its kind has seldom or never passed through our hands. Instead of giving an alphabetical list of the nurserymen, &c.—the handiest of all plans for reference—the compiler has alphabetically arranged the States and the post-offices in each State, and then given the Christian names first, so that any one turning to the book to find the address of any particular American nurseryman, whose surname only may be known to them, must wade through it page by page until they find what they want. A useful Directory truly! A list of foreign nurserymen and seedsmen given in an appendix is very amusing. There are only two addresses given under England, and the same number under Scotland. France is credited with twenty-one names, several of which are wrongly spelled; and under Germany are a dozen names, five of which, on a closer examination, we find belong to Holland and two to Belgium.

—The *Villa Gardener* for the present month contains an article which may be commended to Mr. Ruskin. It is entitled "Horticulture as a manly exercise." The editor of course has no difficulty in proving his point, and we see no reason why the wife should not be combined with the *dulci*. The use of force in rowing, cricketing, and the like becomes rather an appalling consideration when one considers how much more profitably it might be employed, and with at least equal pleasure. The article "Stoking" may be commended to all young gardeners as a subject for their special study.

—The *Journal of the Bath and West of England Society for 1876* contains *inter alia* a *resumé* of the controversy as to the mode of reproduction and specific identity of the fungi producing the Potato disease, wherein full justice is meted to Mr. W. G. Smith. It is a pity that the Royal Agricultural Society of England does not follow the example of its provincial counterparts. Dr. Peard, the author of the paper alluded to, has also a note on the cultivation of Peas and Apples in gardens, based in a great measure on the teaching of Dubreuil.

—The last issued number (88) of the *Journal of the Linnean Society* contains, in addition to some additional reports on the botany of the Challenger Expedition, Mr. Bentham's paper on the arrangements of Monocotyledonous plants. An index, much more elaborate than usual—one which is indeed an analysis rather than a mere index—closes the volume, and bears testimony to the assiduity of the editor.

PUBLICATIONS RECEIVED.—Le Bulletin Horticole.—Gardener's Monthly.—Grevillea.—The Entomologist.—Révue Horticole.—Science Gospiv.—Vila Gardener.—Revue de l'Horticulture Belge.—Monsieur Venes sur les Jardins.—Journal des Horticulteurs, in d. K. Preuss. Staaten.—Journal de la Société Centrale d'Horticulture de France.—Bulletin d'Arboriculture.—Bullefino della R. Società Toscana di Orticoltura.—Journal of the Bath and West of

England Society, 1876.—Le Moniteur de l'Horticulture Belge. Cultivated Plants, their Propagation and Improvement; by F. W. Burbridge (Blackwood).—De l'Épuration des Eaux d'égouts; par C. Joly (Paris, Michels). The author recommends well-derivat irrigation as the solution of this vexed problem.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON FOR THE WEEK ENDING WEDNESDAY, MARCH 14, 1877.

MONTH AND DAY.	BAROMETER.	TEMPERATURE OF THE AIR.		HYGROMETRIC QUANTITIES FROM GLADSTONE'S THERMOGRAPHIC Edition.	WIND.	RAINFALL.
		Height.	Level.			
Mar. 10	30.00	37.0	50.0	76	N.W.	0.00
11	30.00	37.0	50.0	76	N.W.	0.00
12	30.00	37.0	50.0	76	N.W.	0.00
13	30.00	37.0	50.0	76	N.W.	0.00
14	30.00	37.0	50.0	76	N.W.	0.00
15	30.00	37.0	50.0	76	N.W.	0.00
16	30.00	37.0	50.0	76	N.W.	0.00
17	30.00	37.0	50.0	76	N.W.	0.00
18	30.00	37.0	50.0	76	N.W.	0.00
19	30.00	37.0	50.0	76	N.W.	0.00
20	30.00	37.0	50.0	76	N.W.	0.00
21	30.00	37.0	50.0	76	N.W.	0.00
22	30.00	37.0	50.0	76	N.W.	0.00
23	30.00	37.0	50.0	76	N.W.	0.00
24	30.00	37.0	50.0	76	N.W.	0.00
25	30.00	37.0	50.0	76	N.W.	0.00
26	30.00	37.0	50.0	76	N.W.	0.00
27	30.00	37.0	50.0	76	N.W.	0.00
28	30.00	37.0	50.0	76	N.W.	0.00
29	30.00	37.0	50.0	76	N.W.	0.00
30	30.00	37.0	50.0	76	N.W.	0.00
Mean	30.00	37.0	50.0	76	N.W.	0.00

March 8.—A fine day, partially cloudy. Cold wind. Rain fell in morning. Frequent snow showers afterwards. — 9.—A fine day, cold and cloudy. Very heavy clouds from 5 to 6 P.M. — 10.—A very fine clear day. Cold. — 11.—A brilliantly fine day. Cloudless, cold. — 12.—A very dull cloudy day. Slight rain 4 P.M., windy. — 13.—A very dry day. Frequent drops of rain. — 14.—A fine day, cloudy at times. Mild.

LONDON: Barometer.—During the week ending Saturday, March 10, in the neighbourhood of London the reading of the barometer at the level of the sea, decreased from 30.06 inches at the beginning of the week to 29.84 inches by noon on the 4th, increased to 29.92 inches by the morning of the 5th, decreased to 29.33 inches by the afternoon of the 7th, increased to 30.13 inches by noon on the 10th, and was 30.13 inches at the end of the week. The mean reading for the week at sea level was 29.89 inches, being 0.07 inch below that of the preceding week, and 0.22 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 46½° on the 5th to 41½° on the 8th and 10th; the mean value for the week was 43½°. The lowest temperatures of the air observed by night varied from 29° on the 9th and 10th to 40° on the 4th; the mean for the week was 32½°. The mean daily range of temperature in the week was 10½°, the greatest range in the day being 13° on the 9th, and the least 5½° on the 4th.

The mean daily temperatures of the air, and the departures from their respective averages, were:—4th, 42° 3', +1° 8'; 5th, 39° 3', -1° 2'; 6th, 37° 2', -3° 3'; 7th, 35° 9' -4° 6'; 8th, 35° 4' -5° 1'; 9th, 34° 6' -5° 9'; 10th, 34° 4' -6° 2'. The mean temperature of the air for the week was 37° 7', being 2° 5' below the average of sixty years. The highest readings of a thermometer with blackened bulb *in vacuo*, placed in sun's rays, were 85° on the 5th, 92° on the 8th, and 108° on the 10th; on the 4th the highest reading was 56½°. The lowest readings of a thermometer with blackened bulb exposed to the sky, were 24½° on the 9th and 10th; and the mean of the seven low readings was 29°.

Wind.—The direction of the wind was variable, and its strength brisk. The weather during the week was dull, and the sky generally very cloudy. Snow fell on the 7th and 8th.

Rain fell on three days during the week; the amount collected was 0.50 inch.

England: Temperature.—The highest temperatures of the air observed by day were 54° at Manchester, and 53° at Turro, Plymouth, and Sunderland; at Liverpool and Hull 45° was the highest temperature. The mean value from all stations was 49½°. The lowest temperatures of the air observed by night were 26° at Birmingham and 25° at Ecdes; at Liverpool 32½° was the lowest temperature. The general mean from all stations was 29½°. The range of temperature in the week was the greatest at Manchester, 26°; at Birmingham and at Ecdes it was 20°. The mean range of temperature from all stations was 20°. The mean of the seven high day temperatures was the highest at Plymouth, 49½°, and the lowest at Liverpool, 41½°; the mean from all stations was 43½°.

SPECIAL NOTICE.

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THE FINEST AND MOST VALUABLE GIFT EVER OFFERED.

EACH READER of this PAPER will be entitled to receive from the NATIONAL FINE-ART UNION, 35, Great James Street, London, W.C., a copy (23 inches by 16 inches) of the beautiful Steel-Plate Engraving, entitled

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This grand work may fairly be considered as one of the finest productions of high art of modern times. It is from the celebrated picture painted by E. DUNCAN, Esq., and is engraved in the finest style on steel by T. A. PRIOR, Esq.

The originality of treatment brings the scene most vividly before the beholder, and makes it difficult for any one to look upon it and realise the fact that they are miles away. Upon an eminence to the right of the picture stands the stately historic pile of WINDSOR CASTLE, with the Royal Standard flying. The scene in which gay courtiers have played their parts, and in which the more sober business of the nation has been consummated, must always be one of great interest to Englishmen; and when, as in this case, the most consummate artistic ability is brought to bear upon it, the picture gains a new value as an artistic production. At the foot of the Castle is the historic town of Windsor, resting secure in the protection the Castle affords, and forming a striking contrast to the remaining gaiety of the scene. To the left runs our noblest of English rivers, with its rippling wavelets dancing in the sunlight, and reflecting the fleecy clouds sailing overhead, while the life upon the water gives an animation to the picture nothing can excel. Here is a crack Etonian crew, that may perchance one day compete in our national Boat-Race, clumsily getting athwart a barge (which, with its swan-like sails filled with wind, is rapidly speeding down the river), while their better-steered rivals are leaving them behind; and there is a party of fishermen embarking in their well-found punt, eager for a day of the sport old Izaak Walton loved so well. The magnificence of the foliage and general treatment of the whole picture is most unique, and leaves nothing to be desired.

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NOTE THESE INSTRUCTIONS.—All Bonds must be sent in on or before March 27, 1877. The Bond must in all cases be sent. Each copy will be sent securely packed. One copy will be sent for each Bond, and NONE CAN BE SENT WITHOUT ONE, EXCEPT UPON THE RECEIPT OF TWO GUINEAS. The Bond will not again be printed in this Paper, hence the advisability of at once cutting it out and sending it for redemption, as each will be attended to in rotation as received.

 *The Picture is well worth handsomely framing, and its artistic merit and intrinsic value will render it a desirable addition to every household.*

Potatoes for Exhibition.

HOOPER & CO., Covent Garden, offer FOUR PRIZES in the next Potato Exhibition, to be held at the Westminster Aquarium early in October, for FOUR DISHES... COVENT GARDEN PERFECTION, an English seedling, white, rough skin, &c. &c.

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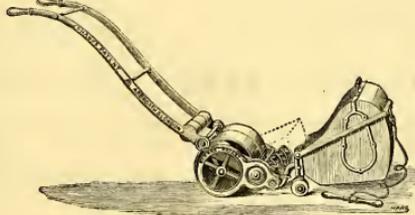
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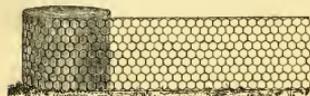
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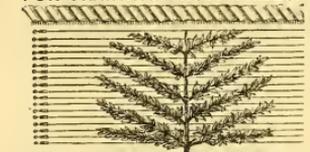
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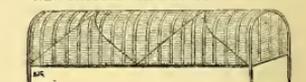
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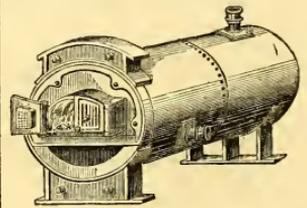
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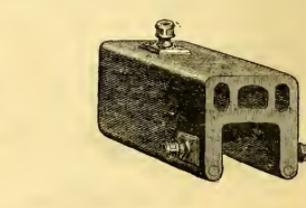
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 "TRENTHAM IMPROVED" BOILER, with Water-way End and Smoke Consumer.

"TUBULAR," and every other Boiler of known merit or excellence.
 Prize Medal Awarded at the National Contest, Birmingham, 1874.



("TRENTHAM IMPROVED" BOILER.)



("GOLD MEDAL" BOILER.)

MILL'S PATENT AUXILIARY FUEL ECONOMISER, which can be attached to any ordinary Boiler. These Tubes are the greatest Economisers of Fuel and Preservatives of Boiler, Fire-bars, and Furnace Fronts ever yet introduced to the public.

STAINTON'S NEW PATENT FROST DEFFYING LIQUID (see "Gardener's Chronicle," Aug. 19, 1876). **HOT-WATER APPARATUS ERRECTED COMPLETE.** PRICE LIST on application; or, Six Stamps for DESCRIPTIVE CATALOGUE, 4th Edition.

NEW BEDDING PLANTS FOR 1877.

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DESIRE TO CALL ATTENTION TO THE FOLLOWING SPLENDID NOVELTIES,
NOW OFFERED FOR THE FIRST TIME:—

NEW BRONZED-LEAVED LOBELIA, ST. MARTIN'S BLUE.

This is a great acquisition in bedding Lobelias, and is acknowledged to be the best blue bedding plant yet sent out. The colour of its foliage and stems is a bluish bronze. Its flowers, which are intensely blue, are produced in great profusion, so that it gives a much more dense mass of deep blue than any green-leaved variety. It was awarded a First-class Certificate by the Royal Horticultural Society of London.

Price 12s. per dozen, £4 per 100.

SPLENDID NEW BEDDING VIOLA, SIR WALTER SCOTT.

This is admitted by all who have seen it to be the finest and most effective Viola for bedding that has yet been raised. It produces flowers of immense size and substance, and is of a bright violet-purple colour. It was awarded a First-class Certificate by the Royal Caledonian Horticultural Society of Edinburgh.

Price 12s. per dozen, £4 per 100.

NEW BRONZE GERANIUM, MARCHIONESS of HUNTLY.

This is a splendid variety, with very distinct and effectively-marked foliage, the groundwork of which is of a very rich golden yellow, with a broad, well defined zone of bright, bronzy crimson. Its habit is very free, and foliage large and of great substance, causing it to stand all weathers remarkably well.

Price 18s. per dozen.

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Are now booking Orders for the above, to be sent out the first week in May. Orders will be executed in rotation. One-third off above prices to the Trade.

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T. H. P. DENNIS & COMPANY.

Motto, "Art with Economy," as applied to Conservatories.

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ERECTED AND FITTED IN ALL PARTS OF THE KINGDOM. ESTIMATES GRATIS.

Show Rooms: MANSION HOUSE BUILDINGS, LONDON, E.C.,

where full-sized Specimens of Greenhouses, &c., and Hot-water Apparatus at work can be inspected.

Works: CHELMSFORD.

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A CENTURY.

NOW READY,

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NEW AND GENUINE

Flower Seeds, Vegetable Seeds, Farm Seeds,

CAREFULLY SELECTED FROM

THE BEST ENGLISH AND FOREIGN STOCKS.

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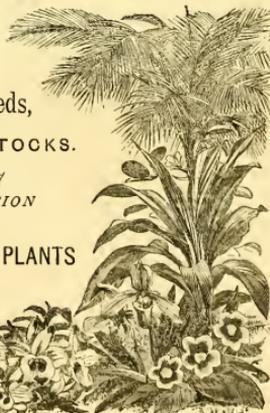
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WELL GROWN STOVE, GREENHOUSE and HARDY PLANTS

OF EVERY DESCRIPTION ARE ALWAYS TO BE SEEN AT

THE NURSERIES, TOOTING,

LONDON, S.W.



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

By Her Majesty's **WRIGHT'S** Letters Patent

ENDLESS FLAME-IMPACT HOT-WATER BOILERS.

GUARANTEED

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

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

From the **'Gardener,'** March, 1877.

WRITING PATENT.
ENDLESS FLAME-IMPACT BOILER.
This boiler is attracting a good deal of attention in the horticultural world at the present time; and as I have just had one of their largest-sized ones fitted up here, and have now got it well tested, perhaps a few lines from me upon its capabilities may not be without some advantage to some of your numerous readers. I have had some experience as to its performance and extra labour caused by badly-constructed boilers, and any improvement effected in them will save labour and fuel demands the attention of all interested parties.

To give your readers a better idea of the work this boiler has to do, I may begin by stating that our apparatus is of a range having a total length of 190 feet, a ridge-and-furrow-roofed greenhouse being in the centre, two two-to-Vineries on each side, with Lamellia-houses and general plant-houses, &c. on opposite side of wall we have a Fern-house, partly heated and partly spanned in length, varying in width from 10 to 30 feet. Attached to end of boiler-house is our laundry, with a drying chamber fitted up with about 250 feet of 4-inch piping.

The whole of the above houses are heated with hot water, & have a total of about 3200 feet of 4-inch piping. We had formerly two oval fire boilers, one being 4 1/2 inches long, the other 4 feet long. With these two boilers kept hard fire we always found great difficulty in heating the temperature during frosty weather, and had frequently to lose a night's sleep attending to the fires. On the last day of last year the larger boiler came to grief—the water from it dropped out the fire, and in taking down some of the brickwork it was found to have cracked beyond repairs. To be thus left in the middle of winter with only the one boiler was no joke. I had to look out for another without delay. I have given a good deal of attention to the construction of hot-water boilers, & I may say I had never seen one that came up to my idea of what a boiler should be until some time ago my attention was called to a drawing of Wright & Co.'s Boiler, which appeared in the **Gardener.**

After talking the matter over with my employer, W. S. Munnings, Esq., and the gentleman in charge of the works, the boiler I had formed such an opinion of, I at once put the order into the hands of Messrs. Melick & Philp, hot-house builders & boiler-makers, Tottenham Street, who have fitted it up and attached the piping in the most complete manner. I also got some additional trial attached, so that if anything should at any time go wrong it can be attended to without disturbing the piping.

And now as to the capabilities of the boiler for the work. As formerly stated, I had considerably difficulty in keeping up the heat with the two oval fire boilers kept hard at work. I now find that with the remaining oval fire boiler, I can heat up the whole of the houses and the laundry to a degree they never were before, and do so with much less coal than I was doing with one of the oval fire boilers.

Our chimney consists of a flue 29 feet long, led horizontally through centre of back wall with 18 feet of a perpendicular stack. Some doubt was expressed of this, as we required a chimney pipe attached to a boiler about 6 feet long, there would be deficiency of draught; but we have found the opposite to be the case. I attached a 6-feet length of 8-inch stove pipe, with flow at boiler, and cleaning door at the neck, and the draught very strong. I got a three-valve damper fitted into the bend of the stove pipe, and am able to regulate the fire to a nicety, and by looking the fire at a reasonable hour, closing the damper fully half round, I can leave it to its work with the greatest confidence in the usual time of closing it the following morning; and instead of, as formerly, having to sit up firing the half of the night at times, and sometimes whole ones, we can retire to rest at a reasonable hour confident of sleeping undisturbed by unpleasant dreams of plants and fruits going to ruin. In concluding my remarks, I may say that the best of the good qualities of this boiler is its portability. We had not the slightest difficulty in putting it down in our country stables, through a trap-door 4 feet long by 2 feet broad, and fitting it up in a recess 4 feet square, and I am confident that with the assistance of two men I could take the whole to pieces and have it again in full working order in two hours. I have no hesitation in saying that for rapidity of circulation, small consumption of fuel, cleanliness, &c., it has no rival, and I have no doubt this boiler will win its way; and where coals are high in price it will effect a considerable saving, and as there is good fire space, it is equally suitable as a capital boiler for burning wood and other fuel."—**J. CLARKE, The Gardener, Trenchard Vineyards.**

[We have a very high opinion of this boiler, and predict that it will take a foremost place in heating hot-houses and all other buildings, and shall have some further to make about the principles of its next issue.—**E. D. Gardner.**]

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

For details and particulars as to the various sizes made, and prices, please see advertisement on opposite page under the heading **"HEATING,"** which will be handed to all applicants, post-free.

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

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

JAMES LYNE HANCOCK'S Improved India-rubber Socket-rings FOR THE JOINTS of HOT-WATER PIPES.

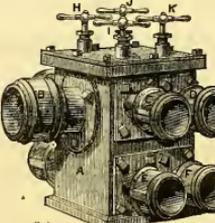


Description of Socket.—
A. The Rubber Ring as rolled into the Socket.
B. The Ring before inserted in the Pipe.
These Rings are made any size to order. All ordinary sizes are kept in stock.

Illustrated Price List on application.

J. L. HANCOCK,
VULCANISED INDIA-RUBBER WORKS,
266, GOSWELL ROAD, LONDON E.C.

CRITCHLEY'S PATENT HEAT REGULATOR, AN APPARATUS FOR REGULATING THE HEAT IN HORTICULTURAL BUILDINGS.



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

The advantages of these Regulators are that houses may be kept at different degrees of heat, or the circulation of water and heat entirely stopped in one part and not in others. They may be fitted with as many valves as required, and are particularly adapted for forcing houses where top and bottom heat is used. They may be fixed in any part of the apparatus most suitable for working, without regard to the position of the Boiler.

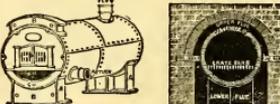
The following Testimonial has been received:—

"Gentlemen,—I am happy to inform you, now that the late severe winter is past, that the Hot-Water Apparatus erected by you does its work to my entire satisfaction. As to the two Heat Regulators, which represent thirty valves, I have had ample opportunities of practically proving them, and unhesitatingly admit they are far superior to any other valve; in fact, I think it the greatest improvement that has come out for horticultural purposes."

"R. H. CROWE,
Gardener to the Right Hon. Lord Fitzharding."
Estimates and Plans furnished for Warming Gentlemen's Mansions and Public Buildings. Orders attended to in any part of the kingdom, and guaranteed to answer their intended purposes. Prospectus and Price Lists post-free.

Messrs. CRITCHLEY & CO.,
Horticultural Engineers and Builders,
GROSVENOR WORKS, CHELTENHAM.

STEVENS' TRENTHAM GREENHOUSE BOILER,



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

F. & J. SILVSTER.

HOT-WATER ENGINEERS, &c., &c.,
Cuscle Hill Works, Newcastle, Staffordshire.
Our Boilers are the only ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

COWAN'S PATENT COMPENSATING SYSTEM OF HEATING, FOR HORTICULTURAL, PUBLIC, AND OTHER BUILDINGS.

The most important discovery for saving the cost of fuel, for steadiness in heating power, and dispensing with night stoking. One Apparatus will do the work of several Boilers, and in some cases produce a profit.

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Hot-houses, Mansions, Churches, and other Buildings efficiently heated by other approved methods, where the Patent Apparatus cannot be adopted.

A large Stock of the most improved forms of Boilers to select from.

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COWAN'S PATENT COMBINED GAS-MAKING and HEATING APPARATUS,
By which Country Mansions and Public Institutions may be heated and lighted, in most cases free of cost.

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All structures specially adapted to the purposes for which they are required, but of the best materials and workmanship, at moderate prices.

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All work done by the Company is guaranteed.

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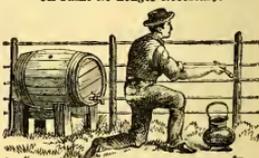
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Good substantial-made GREENHOUSE, glazed ready for fixing, 42 feet long, 13 feet wide, 6 feet by 13 feet, 26 ft. 12 1/2 feet, to feet, 15 ft. GARDEN FRAMES in stock.

HORTICULTURAL WINDOW GLASS.
—A large variety of sizes, 15 in., 12 1/2 in., 21 in., 16 in., 6 ft. per 100 feet. Prices, sizes, in Cases, for Cutting up, 15 in. 4ths, 26 in. 4ths, per 200 feet, 21 in. 4ths, 35 in., 46 in. per 100 feet. Prices forwarded for large and special quantities.

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Sold in casks of about 20 gallons each, at 12. 6d. per gallon, at the Manufactory, or 11. 6d. per gallon carriage paid to any Station in the Kingdom.

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"Mr. Lloyd Lloyd encloses cheque for £3 5s. amount due to Messrs. HILL & SMITH, and he comments on the Black Varnish one of the most useful things he ever possessed."
Apply to HILL and SMITH, Briery Hill Ironworks, near Dudley, and 118, Queen Victoria Street, London, E.C., from whom only it can be obtained.
CAUTION.—It having lately come to the knowledge of HILL & SMITH that spurious imitations of this Varnish are being offered by unprincipled dealers at a slight reduction in price, we beg to draw attention to the fact that their own copy of their Varnish is legibly marked with their name and address, without which none is genuine.

"ARCHIMEDEAN" AMERICAN LAWN MOWERS,

Will Cut Long and Wet Grass (as well as Dry and Short) without Clogging.

They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

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And many of the Nobility and Gentry of Great Britain.



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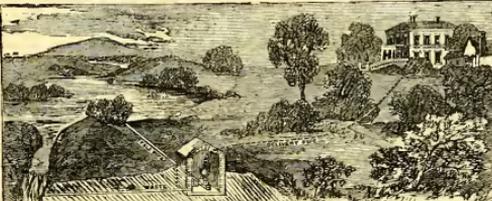
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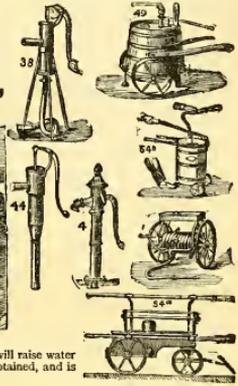
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This useful Self-acting Apparatus, which works day and night without needing attention, will raise water to any height or distance, without cost for labour or motive power, where a few feet fall can be obtained, and is suited for supplying Public or Private Establishments, Farm Buildings, Railway Stations, &c.



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Particulars taken in any part of the Country. Plans and Estimates furnished.

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GARDENER (HEAD), in a good Establishment—As above. Has three fine acres of land, and a thorough practical Man is wanted. Age 41, married; understands the Management of a Small Home Farm; required. Over nineteen years' good character. No small place treated with.—D. HAZELL, Messrs. Gurnish & Son, Highgate, N.

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GARDENER (HEAD), to any Nobleman or Gentleman wanting a thoroughly experienced and trustworthy Man.—A Gentleman giving up his Establishment, owing to the death of his father, is desirous of finding a successor as above. Ten years in present situation; has had the Management of fourteen Glasshouses, and a large number of good crops. —W. HEMING, Sandways, Tatslow, Liverpool.

To Nobleman and Gentleman.

GARDENER (HEAD), age 40, married.—WILLIAM MEREDITH, Gardener for the last eight years to the Vicarage House, Hilsberry Park Gardens, Thirsk, Yorkshire, wishes for a re-engagement as above. Is well acquainted with the Management of a Small Home Farm, and other Fruits, Flowers, and Forcing of Early Vegetables, required in a large establishment. Excellent character from present employer. —WILLIAM MEREDITH, Lakeside Park Gardens, Thirsk, Yorkshire.

GARDENER (HEAD), to any Nobleman or Gentleman requiring the services of a competent Man: Age 40, married, one boy aged 39.—MUSSELL, Head Gardener to the Hon. Sir W. Wyke, Bart., at Wyke, Yorkshire, is now at liberty to engage as above; well acquainted with all kinds of Fruits, Flowers and Kitchen Gardening. Has twenty-three years' experience in some of the best places in England and Scotland; eleven years' previous as Gardener here. Can be highly recommended by late and present employer, and the leading Gentry of this neighbourhood.

GARDENER (HEAD, WORKING), where one or two are kept—Age 30, married.—S. Mr. Laue, The Nurseries, Berkehamstead, Herts.

GARDENER (HEAD, WORKING)—Age 26; well experienced in all kinds of Flowers, Fruits, and Vegetables, and all kinds of Forcing, Flower and Kitchen Gardening. Good character. —W. G. WILLIAMS Street, London.

GARDENER (HEAD, WORKING), where two or more are kept—Married, no family; understands Stove and Greenhouse Plants, Fruits, Flowers, and Kitchen Gardening. Well recommended.—T. O. GRESHAM Place, Tottenham, Middlesex.

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GARDENER (HEAD, WORKING)—Age 28, single; ten years' practical experience in the Culture of Orchids, Stove and Greenhouse Plants, Fruits, Flowers, and Vegetables. Well recommended.—T. O. GRESHAM Place, Tottenham, London, W.

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GARDENER (HEAD, WORKING), to any Lady or Gentleman requiring the services of a singularly active, intelligent, and trustworthy Man.—A. B. C., The Lodge, Woodside Court, Croydon, Surrey.

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GARDENER (HEAD, or SINGLE-HANDED)—Married; understands Vines, Cucumbers, Flower and Kitchen Gardening. &c. Good character from last place. Near London preferred.—G. C., 3, Margaret's Cottages, Epsom Common.

GARDENER—JOHN COWAN, The Vineyard, Garston, near Liverpool, would be glad to recommend to any No. 10 or Gentleman requiring a first-class Gardener a man in the prime of life, who thoroughly understands the profession in all its branches, having had many years' experience in some of the best places in England and Scotland.

GARDENER, to any Lady, Nobleman, or Gentleman requiring the services of a thoroughly practical Man in the Management of a Small Home Farm, Salisbury, would be very pleased to recommend a thoroughly practical man in every department of Horticulture (at one time an expert of himself), as above. Thirteen years' good character.

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GARDENER (SINGLE-HANDED), or where two are kept—Age 38, married; ten years' experience in two places; understands Cucumbers, Vines, Peaches, Greenhouse and Kitchen Gardening. Good character.—Address, with full particulars, E. W., 15, Foster Street, Hendon, N.W.

GARDENER (SECOND, or SINGLE-HANDED)—Age 24, single; has a fair knowledge of the profession. Can be well recommended from previous and present employers.—A. B. Corstibley, near Romford, Essex.

GARDENER (SECOND, or SINGLE-HANDED)—Age 23; has a good practical knowledge of Fruit and Plant Growing in general. "Nine years' good character."—P. A. Y., Post-office, West Dean, near Chichester.

GARDENER (SECOND, or SINGLE-HANDED)—Age 27, married, no family. Good references from present and previous situations.—Address, with full particulars, to the Editor of THE CHRONICLE, No. 15, Abchurch Lane, London, E.C.

GARDENER (SECOND), in the Houses, under a Former Age 22—Both preferred. Good references.—F. C., Hill Hall, Epping, Essex.

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To Nurserymen.

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THE WINNERS OF EVERY PRIZE IN ALL CASES OF COMPETITION.

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Upwards of 80,000 of the above Machines have been Sold since they were first introduced in the year 1856,

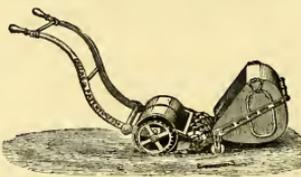
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Can be worked by a Lady.			
8 inches	2	10	0
10 inches	3	10	0
12 inches	4	15	0
Can be worked by one Person.			
14 inches	5	15	0
16 inches	6	15	0
Can be worked by one Person on an even Lawn.			



To cut	£	s.	d.
18 inches	8	0	0
Can be worked by a Man and Boy.			
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22 inches	9	0	0
24 inches	9	10	0

* If made stronger, suitable for Donkey, 30s. extra.

Prices of Horse, Pony, and Donkey Machines, including Patent Self or Slide Delivery Box; Cross-stay complete; suitable for attaching to Ordinary Chaise Traces or Gig Harness:—

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To cut 26 inches	£	15	0
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Leather Boots for Donkey	1	0	0
Do. " Pony	1	4	0

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To cut 30 inches	£	22	0
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The 26 and 28 inches can easily be worked by a Donkey, the 30 inches by a Pony, and the larger sizes by a Horse; and as the Machines make little noise in working, the most spirited animal can be employed without fear of its running away, or in any way damaging the Machines.

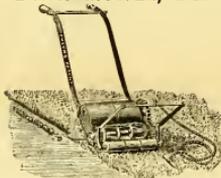
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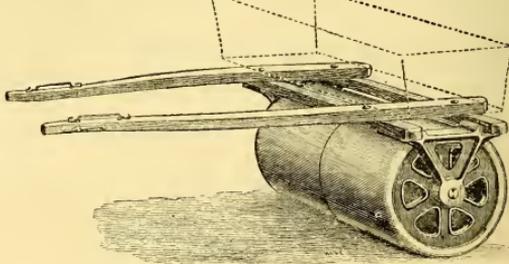
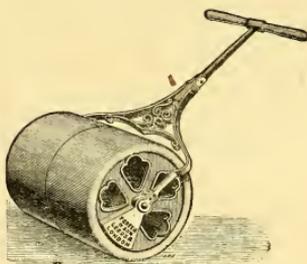
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24 "	26 "	5 0 0	24 "	26 "	5 12 0
			30 "	32 "	9 10 0

PRICES OF ROLLERS, IN TWO PARTS, FITTED WITH SHAFTS.

Diam.	Length.	£ s. d.	Diam.	Length.	£ s. d.
30 inches	by 32 inches	13 10 0	30 inches	by 32 inches	17 0 0
30 "	36 "	14 0 0	30 "	60 "	19 10 0
30 "	42 "	15 10 0	30 "	72 "	22 20 0

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Editorial Communications should be addressed to "The Editor," Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADSHAW, AGNEW, & CO., Lombard Street, Precinct of Whitehall, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, March 17, 1877. Agents for Manchester—JOHN HAYWOOD. Agents for Scotland—Messrs. J. MAZARS & CO., Edinburgh and Glasgow.

THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 169.—VOL. VII. [SERIES.] SATURDAY, MARCH 24, 1877. Registered at the General Post Office as a Newspaper. Price 6d. Post Free, 5d.

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(Two of the Gems of the Season)
"PRINCE OF WALES" and "PRINCESS OF WALES."
Price 1 guinea each.

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NOTICE TO ADVERTISERS.
Friday next, March 30, being Good Friday, the "GARDENERS' CHRONICLE" will be published on THURSDAY, at 2 p.m.

ADVERTISEMENTS FOR NEXT WEEK must therefore reach the Office not LATER than WEDNESDAY MORNING, the 28th inst.

CRYSTAL PALACE.—AURICULA SHOW, April 24; **GREAT FLOWER SHOW**, May 12; **ROSE SHOW**, May 23. Schedules for each can be had on application to **GENERAL MANAGER**, Crystal Palace.

READING HORTICULTURAL SOCIETY'S SHOWS WILL BE HELD ON MAY 24 and AUGUST 23, when PRIZES to the value of TWO HUNDRED and EIGHTY GUINEAS will be given away. Schedules to be obtained of **JO. FORBARY**, Reading. **F. PETTY**, Hon. Sec.

BRISTOL, CLIFTON, and WEST OF ENGLAND ROSE and STRAWBERRY SHOW, Zoological Gardens, Clifton, THURSDAY, July 12. Schedules of Prizes, with Rules and Regulations, may be obtained of the Gate-keepers at the Gardens; or by letter addressed to the Zoological Gardens, Clifton. **SECRETARY.**

KENDAL and DISTRICT HORTICULTURAL SOCIETY, July 26. The following SPECIAL PRIZES: For Twelve Stone or Greenhouse Plants, 5s. each; for best in flower, first, 4s.; second, 3s.; third, 2s.; besides 300 other prizes. Schedules free. Entries before July 20. **J. WILKINSON**, Sec., Kendal. **J. H. BUTLER**, J. Storr, Kendal.

CLAY CROSS HORTICULTURAL SOCIETY.—TWENTIETH ANNUAL EXHIBITION, August 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st. Schedules ready by March 11. **J. STOLLARD**, Secretary. Clay Cross, near Chesterfield.

GREAT INTERNATIONAL HORTICULTURAL EXHIBITION to be held on THURSDAY, FRIDAY, and SATURDAY, September 1st, 2nd, and 3rd. SCHEDULES OF PRIZES, OFFERING TWELVE HUNDRED and FIFTY POUNDS for Competition, and also Special Prizes, are now ready, and will be forwarded on application to **MR. JOHN NOUNSEY**, Acting Secretary, Victoria Buildings, Clifton.

Errata.—New American Potato. **MESSRS. B. K. BLYSS AND SONS**, SEED MERCHANTS, 24, Barclay Street, New York. For "Improved Pearl Blue" read "Improved Peach Blow."

NURSERYMEN COMING to HOLLAND during the International Horticultural Show at Amsterdam, in April, 1877, are kindly requested to send their names to **M. C. JONGKIND CONINCK**, Tottenham Nursery, DeLamvaart, near Zwolle, Netherlands.

PROTHEROE and MORRIS, HORTICULTURAL MARKET, GREEN and EAST END, LONDON, and VALDEY, 69, Gracechurch Street, City, E.C., and at Leybourne, E. Monthly Horticultural Register had on application.

Genuine Garden Seeds.

Wm. CUTHBUSH and SON have for sale... Yarns held some of the finest Stocks of SEEDS in the Trade...

Good Verbena, Chernet.

S. BIDE has now a splendid stock of good, strong, healthy VERBENAS, free from any disease...

THE NEW PLANT and BULB COMPANY beg to call special attention to their NEW LIST (No. 3), just published...

WEBB'S NEW GIANT POLYANTHUS, Florida Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties...

WEBB'S PRIZE COB FILBERTS, and other PRIZES of SEEDS OF FILBERTS. LISTS of these varieties from Mr. WEBB, Calcut, Reading.

Delphinium cardinalis. THOMPSON, SEEDSMAN, Tavern Street, Ipswich, begs to offer SEEDS of the above-named handsome hardy perennial...

SPECIAL CULTURE of Fruit Trees and Roses. THE DESCRIPTIVE and ILLUSTRATED CATALOGUE of Choice Fruit Trees and Roses is now ready...

WILLIAM BADMAN offers strong autumn-rooted VESUVIUS, from single pots, 10s. per 100; or from store pots, 2s. per 100...

SEEDS—SEEDS—ALL KINDS.—Edwards, seedling root seeds, for an Illustrated CATALOGUE, which contains full Directions...

STANDARD and DWARF ROSES of the kind being offered are the best in the Trade, well-ripened wood—about 15,000 Standards and 5,000 Dwarfs, guaranteed true to name...

H. AND F. SHARPE are prepared to make home TURKISH SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application...

IVY, Irish (Hedera canariensis).—Good plants, 3s. per dozen, 10s. per 100, 8s. per 100. Eighteen other kinds. See CATALOGUE.

VERBENAS, VERBENAS, VERBENAS.—Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet, and Pink, 6s. per 100...

HARDY HEATHS, 100,000.—12 plants in 24 varieties, 12s. 24 plants in 34 varieties, 12s. 30 plants in 35 varieties, 12s. 100 plants in 100 varieties, 12s.

GIADIOLI FOR EXHIBITION, carriage varieties, 12s. 50s. in 25 superb varieties, 20s.; 25s. in 25 superb varieties, 12s. 6d.; 2s. in 25 choice varieties, 15s. 1s. in 25 extra fine sets, 20s.

GIADIOLI FOR GENERAL DECORATION.—10s. in 50 choice sorts, 20s.; 15s. in 50 fine varieties, 15s.; 20s. in 50 fine sorts, 20s.; 25s. in 50 fine varieties, 25s.; 30s. in 50 fine varieties, 30s.; 35s. in 50 fine varieties, 35s.; 40s. in 50 fine varieties, 40s.; 45s. in 50 fine varieties, 45s.; 50s. in 50 fine varieties, 50s.

GIADIOLI IN MIXTURE.—White ground varieties, splendid, 4d. per dozen; yellow ground varieties, 5d. per dozen; mixed colors, all colors, 2s. per dozen.

GIADIOLIUS BRENCHLENSIS.—Extra fine flowering roots of this splendid variety, 1s. per dozen, 10s. per 100.

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ROYAL BOTANIC SOCIETY OF LONDON.

FIRST SPRING EXHIBITION, March 21, 1877.

AWARDS OF PRIZES.

12 STOVE and GREENHOUSE PLANTS, in 16-inch pots. 1st, Mr. G. Wheeler, Gr. to Sir F. H. Goldsmith, Bart.

6 FORCED HARDY SHRUBS, in flower. 1st, Mr. J. W. Moorcroft, Gr. to the Misses Christy, Kingston.

6 GREENHOUSE AZALEAS, in 10-inch pots. (Amateurs.) 1st, Mr. A. Ratty, Gr. to R. Thornton, Esq., The Hoe, Syleham.

6 CHINESE PRIMULAS. (Open.) 1st, Mr. James, Gr. to W. F. Watson, Esq., Idelworth, 3d, Mr. G. Wheeler.

6 HARDY PRIMULAS. (Open.) 1st, Mr. R. Dean, Bedford, Howland.

6 FORCED ROSES. (Nurserymen.) 1st, Mr. Charles Turner.

6 DEUTZIAS. (Open.) 1st, Mr. James, Gr. to F. Whitbourne, Esq., Loxford Hall.

12 CYCLAMENS. (Open.) 1st, Mr. Jas. Edwards, Hayes, Middlesex. 3d, Mr. H. B. Smith, Kaling Dean Nursery.

6 CYCLAMENS. (Amateurs.) 1st, Mr. H. L. Hillingdon Place, Uxbridge. 2d, Mr. J. James.

6 POTS LYLY OF THE VALLEY. (Open.) 1st, Mr. Douglas. 2d, Mr. J. Weir, Gr. to Mrs. Hodgson, Hampstead.

12 HYACINTHS, single spikes. (Amateurs.) 1st, Mr. James Douglas. 3d, Mr. J. W. Moorcroft.

12 HYACINTHS, single spikes. (Nurserymen.) 1st, Messrs. Barr & Sugden. 3d, Messrs. Osborn & Son.

12 HYACINTHS, any number of spikes. (Open.) 1st, Mr. Douglas. 2d, Messrs. Barr & Sugden. 3d, Mr. J. W. Moorcroft.

12 PETS TULIPS, 4 kinds. (Amateurs.) 1st, Mr. James Douglas. 2d, Mr. J. Weir. 3d, Mr. J. W. Moorcroft.

12 PETS TULIPS, 4 kinds. (Nurserymen.) 1st, Messrs. Barr & Sugden. 3d, Messrs. Cuthbush & Son.

12 PETS NARCISSEI. (Open.) 1st, Messrs. Barr & Sugden. 2d, Mr. J. Douglas.

12 BULBOS PLANTS, distinct from any of the above. (Open.) 1st, Mr. F. Roberts, Gr. to W. J. Terry, Esq., Peterborough House, Falmouth.

MISCELLANEOUS—EXTRA PRIZES.

Messrs. James Veitch & Son, for a Collection of Hyacinths and Tulips.

Messrs. Barr & Sugden, for a Collection of Hyacinths and Tulips.

Messrs. Wm. Paul & Son, for a Collection of Cut Camellias (ten boxes).

Mr. B. S. Williams, for a Collection of Plants.

Messrs. Wm. Cuthbush & Son, for a Collection of Hyacinths.

Messrs. Carter & Co., for a Collection of Hyacinths and Tulips.

Mr. H. B. Smith, Faling Dean Nursery, for a Collection of Hyacinths.

Mr. Charles Edmonds, Hayes Nursery, for a Collection of Cyclamens.

Messrs. Edmonds & Son, for a Collection of Hyacinths.

LYVE'S FAVORITE.—The handsomest and best Pottery ever offered. Indispensable for Exhibition. This Pottery will be the greatest Prize Winner of the season...

NEW GERANIUMS—LEMOINES.

DANIE BLANCHET. Good double whites. MADAME ARCELIA BALLET. 3s. 6d. each. DEPUTY VIOX, 2s. 6d. each.

ROBERT and GEORGE NEAL, of Wandsworth Common, Upper Tooting, and Garrett Lane Nurseries.

Downie and Laird have much pleasure in offering for Spring delivery the above Trapaucium, which has been raised by Mr. Andrew Hunter, gardener to Lord Shafto, New Edinburgh.

CABBAGE PLANTS, SEEDS, ROOTS, &c., of all kinds, for the Farm or Garden. GEE'S superior Bedfordshire-grown Plants and Seeds have attained much celebrity.

W. F. BOFF offers easy growing, free-blooming ORCHIDS, 21s. 30s., and 42s. per dozen. LILY OF THE VALLEY, 2s. per dozen, 12s. per 100.

VERBENAS, &c., large selection of 200 varieties. GEORGE SMITH, Florist, &c., 61, Penrose Street, Waltham, begs to intimate that he has a large stock of VERBENAS...

DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild; with ordinary treatment bulbs have been grown to 10 and even 12 inches in circumference...

OBELIA ERINUS ERECTA, fl. albopurpurea, 12 plants in 24 varieties, 12s. 24 plants in 34 varieties, 12s. 30 plants in 35 varieties, 12s.

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"St. Petersburg.

"Dear Sir,—Many thanks for your 'Floral Guide.' I will strongly recommend it to the Fellows of our Society and to the readers of our periodicals as the best and plainest index of the choicest and most valuable new varieties of flowers and florists' plants and their seeds.—Believe me, Sir, yours most truly,

"P. WOLKENSTEIN, Secretary of the Imperial Russian Horticultural Society."

GLENNY says thus:—"H. Cannell's 'Floral Guide' is, as usual, full of practical information and liberally illustrated. It partakes more of a standard work than a catalogue, and should be in the possession of every lover of a garden."

"The *Viragee*, Thornton Steward, *Bedale*, March 2, 1877.
 "The Rev. H. FITCH says:—"Accept my best thanks for your most excellent and beautiful catalogue, or rather Floral Guide, received by this morning's post."

H. C.'s Seed List is also by far the most valuable ever issued; sent post-free to all applicants.

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JEFFERIES' LITTLE QUEEN COS LETTUCE,

Per Packet, 1s. 6d.,

Is the Earliest, Best Flavoured and Best Coloured Lettuce in cultivation.

MR. FARLEY, *The Gardens, Valentines*, says:—"Your Little Queen Lettuce proved a good selection, although the weather was very adverse to the trial."
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MR. FARR, *Gr. to Sir R. Knightley, Bart., Fawley Park*, says:—"Your Little Lettuce has proved a very useful one, although the season has been very trying for that class of stuff; its early hearting and crisp sweet flavour are sufficient to recommend it to all who are desirous of a small but good Lettuce."

A Packet of this excellent Lettuce will be included in all our Collections of Vegetable Seeds.

JEFFERIES' HALF GUINEA COLLECTION OF VEGETABLE SEEDS,
 JEFFERIES' GUINEA COLLECTION OF VEGETABLE SEEDS,
 JEFFERIES' TWO GUINEA COLLECTION OF VEGETABLE SEEDS,
 JEFFERIES' THREE GUINEA COLLECTION OF VEGETABLE SEEDS,

Are the best obtainable. For particulars, obtain our "Illustrated Garden Guide."

JNO. JEFFERIES & SONS,
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THE NEW ROSE,
 QUEEN OF BEDDERS (NOBLE).

Perhaps the Finest Rose for Bidding ever sent out.

COLOUR OF "CHARLES LEFEBVRE."

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that flowers were cut daily from June to November 20, 1876.

Good Plants will be sent out, in strict rotation, at 10s. 6d. each,

COMMENCING FIRST WEEK IN MAY.

CHARLES NOBLE, BAGSHOT.

NEW PLANTS, 1877.

CHARLES LEE & SON,

SUCCESSORS TO
 MESSRS. JOHN AND CHARLES LEE,

OF THE
 Royal Vineyard Nursery,
 HAMMERSMITH, near LONDON,

Have the pleasure to offer the following very beautiful and interesting

NOVELTIES,

now offered by them for the first time:—

BEGONIA COLTONI.

¶ This distinct and beautiful Begonia was raised at the Royal Vineyard Nursery. The colour of the flowers is quite new in Begonia, being of an orange-crimson. It is a magnificent bloomer, and the flowers are of the largest size. It received a First-class Certificate from the Floral Committee of the Royal Horticultural Society in 1875. Good plants, price 10s. 6d. each.

BEGONIA RODWELLI.

This lovely Begonia was also raised at the Royal Vineyard Nursery. The flowers are of a bright vermilion-crimson of the largest size; and the plant is a very abundant bloomer. It received a First-class Certificate from the Committee of the Royal Horticultural Society. Good plants, price 10s. 6d. each.

CORNUS MASCULA AUREA ELEGANTISSIMA (J. & C. Lee).

This elegant and lovely hardy shrub was raised from seed in our Isleworth Nursery, and has been proved to be perfectly constant in its beautiful variegation. A broad margin of pure gold surrounding a bright green centre is of itself a sufficient attraction, but when in July the tips of the leaves become suffused with the brightest crimson it is impossible to give an idea of the beauty and elegance of the plant, which will bear a favourable comparison with the best variegated stove or greenhouse exotics. Suffice it to say, that it has been seen and admired by many amateurs and nurserymen, and has been awarded a First-class Certificate at South Kensington. The habit of the plant is semi-procumbent, and very graceful. Price of maiden plants, 12s. each; larger specimens, 21s. each. A Coloured Plate may be had on application for 1s.

JUNIPERUS VIRGINIANA ELEGANS (J. & C. Lee).

This very elegant variety of the Red Cedar was raised from seed in our own grounds, and is scarcely necessary to remark upon the hardness of this plant, but it is due to its character in that the elegant cream-coloured variegation which is the whole plant is perfectly constant, and has never been injured by frost or burned in the least degree by the hottest sun. It is a very free grower, and has received the honour of a First-class Certificate from the Floral Committee at South Kensington, in July, 1875. Price 12s. each; larger specimens, 21s. each. A Photograph of the plant may be had on application for 1s.

POPULUS CANADENSIS AUREA VAN GEERTT (1876).

The golden variety of this noble Poplar sent out in its February list by Mr. Charles Van Geertt, of Antwerp, has fully borne out in our Nurseries the description he gave of it, and has retained its golden colour much better than either the Golden Catalpa or the Golden Oak during the late tropical summer.

EXTRACT FROM MR. VAN GEERTT'S DESCRIPTION.
 "We have the pleasure of offering an extremely remarkable variety of the Common Poplar, with a foliage which presents during the whole summer the finest hue of golden-yellow. It is in our opinion a most valuable acquisition, and has been pronounced to by every connoisseur who has admired it in our nursery; for the coloured foliage now so frequently met with among low shrubs falls almost entirely among the larger trees. The Catalpa aurea and the Quercus Robur concordia are the only trees known as possessing the same golden foliage; but the former is only a second-rate tree, and the latter has not the vigour of the common Oak. Our golden Poplar, on the contrary, is a first-rate tree, of rapid and vigorous growth. Its leaves are quite as large as those of the common Canadian Poplar, and the yellow hue, instead of looking sickly, has a warm and vigorous tint. The better acquainted the tree is, and the more it is exposed to the sun, the more vivid is the golden hue."

Having received in February last a large consignment of this magnificent novelty from Mr. Van Geertt, we are enabled to offer nice plants at 7s. 6d. each.

ABIES EXCELSA AUREA (J. & C. Lee, 1875).

This is decidedly the finest golden Conifer of large growth yet introduced. It is of free growth, and requires to be planted in the full sun. In such a position the whole tree is suffused with the richest gold. A First-class Certificate has been awarded to this noble tree at South Kensington. Price of nice plants, 12s. each; larger specimens, 21s. each.

LAURUS CAMELLEIFOLIA (Wood, 1875).

We can still supply a few hundreds of this extraordinary and elegant Laurel. Price 2s. 6d. each; per dozen, 12s.

CHARLES LEE & SON,
 HAMMERSMITH, W.

NEW AMERICAN POTATOS.

New Continental Roses for 1877.

H. BENNETT'S own selection, in the best possible Plants, ready in March. Descriptive LISTS may now be had post-free on application.

MANOR FARM NURSERY, STAPLEFORD SALISBURY.

Vines. E. G. HENDERSON AND SON offer splendid Fruiting Canes of all leading kinds. Flamingo Canes, 25 6d., 25 6d., and 25 6d. each; Golden Queen, Ven's Black Muscat, and Waltham Cross, 42s. and 60s. per dozen. Trade supplied. Pic-a-apple Nursery, Maida Vale, W.

GROS GUILLAUME GRAPE (Roberts' Variety).

The largest Black Grape in Cultivation. Eyes or Scions from fine, strong, well-ripened wood, 12s. 6d. each. Ditto ditto ditto second size 7s. 6d. For particulars of this remarkable New Grape see Gardeners' Chronicle of January 27, pages 20 and 117, or apply to Messrs. W. TAIT & CO., SEED AND NURSERY ESTABLISHMENT, 45, CABLE STREET, DUBLIN.

RICHARD SMITH'S GUINEA COLLECTION OF VEGETABLE SEEDS

Contains the following excellent sorts (Carriage Free): PEAS, King's-leader ... 1 quart; Improved Sangster's ... 1 " ; Vetch ... 1 " ; Perfection ... 1 " ; Field ... 1 " ; Priestsker ... 1 " ; Scintillar ... 1 " ; BEANS, Johnson's Wonderful ... 1 " ; Broad Windsor ... 1 pint ; Dwarf French ... 1/2 " ; Scarlet Runner ... 1 " ; DEET, Nutting's Red ... 1 " ; KALE, Asparagus ... 1 " ; green curled ... 1 " ; BRUSSEL SPROUTS ... 1 " ; BROCCOLI, Adams' Early ... 1 " ; Snow's Winter White ... 1 " ; Purple Sprouting ... 1 " ; Walcheren ... 1 " ; CABBAGE, Early Nonpariel ... 1 " ; Enfield Market ... 1 " ; Worcester Incomparable ... 1 " ; Red Pickling ... 1 " ; CARROT, Early Horn ... 1 oz. ; James' Intermediate ... 1 " ; Improved Atringham ... 1 " ; CUCUMBER ... 1 pkt. ; CULLIFLOWER ... 1 " ; CELERY, fine Red ... 1 " ; fine White ... 1 " ; CRESS, Broad-leaved ... 2 oz. ; Curled ... 1 " ; Australian ... 1 pkt. ; CUCUMBER ... 1 " ; ENDIVE, Moss Curled ... 1 pkt. ; LEEK, Musselburgh ... 1 " ; LETTUCE, Paris White Cos ... 1 " ; Drumhead ... 1 " ; Worcester Cabbage ... 1 oz. ; MUSTARD ... 4 oz. ; MELON ... 1 pkt. ; ONION, Wm. Spanish ... 2 oz. ; James' Keeping ... 1 " ; PARSLEY, Extra dried ... 1 pkt. ; Parsnip, Hoop-crowned ... 1 oz. ; RADISH, Wood's Early France ... 1 " ; Red Turnip ... 1 " ; White Turnip ... 1 " ; SAVOY, Green Curled ... 1 " ; SPINACH, Romand ... 2 " ; TURNIP, Early Snowball ... 1 " ; Early Red-top ... 1 " ; TOMATO, Large Red ... 1 " ; VEGETABLE MARROW ... 1 " ; SWEET BASIL ... 1 " ; SWEET MARJORAM ... 1 "



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Offer the following in Seed, of quality the best that can be had, at per packet:—

- CAICEOLARIA—the variety of colours, size, and shape of the flowers is the result of many years' continual improvement; 1s. 6d. and 2s.
CINERARIA—the shape and brilliancy of colour in these flowers is of great importance; 2s. 6d. and 3s.
Jas. double-flowered, 2s. 6d. and 3s.
PRIMULA SINENSIS, crimson, scarlet, and white (better called "no separate petals or perforated") 2s. 6d. and 3s.
double-flowered, true from seed, 2s. 6d. and 3s.
CYCLAMEN PERSICUM GRANDIFLOREM—brilliant colour, with large-size petals and perforated flowers, is the quality here offered; 1s. and 2s. 6d.
BEGONIA, tuberosus-rooted (four collections is unequalled), 1s. and 2s.
tuberosus-rooted, double-flowered, mixed colours, 2s. 6d.
BALSAM—we trust to none but our own sowing—mixed, 1s. 2s. 6d.
from named collection, 1s. and 2s. 6d.
PINK, named collection, 1s. and 2s. 6d.
CARNATION, mixed, 2s. 6d. See Catalogue for separate sections.
MINUETS, superb strain, same as exhibited every year at the Royal Horticultural Society, 1s. 6d.
LOBELIA, Brilliant Improved, White Brilliant, Mazario Gem, speciosa—from pot plants, panicula grandiflora, Lunite Improved, Defiance—the best red, Bluestone, and Magnificence, 2s. each.
PANSY, English, show flowers, 1s. 2s. 6d.
Freshly sown, 1s. 2s. 6d.
PETUNIAS, very beautiful, sown in pots, in separate sections at their Wellington Road Nursery, 1s.
double-flowered, 1s. and 2s. 6d.
SWEET WILLIAM, extra fine, 1s.
from named flowers, 1s. and 2s. 6d.
Stock, East Lothian, scarlet, white, and purple, 6d. and 1s.
Intermediate, Brilliantissima, and others. See Catalogue.
ALIRICULA, extra choice single varieties, 2s. 6d.
SOLIMUS, Improved Hybrid, as grown for the London Market, 1s.
HENDERSON'S, conical-shaped berries, 1s.
GLOXINIA, drooping and erect, 1s. 6d. each; mixed, 2s. 6d.
HOLLYHOCK, from named collection, 1s. and 2s. 6d.
FRIMROSE, POLYANTHUS, and OXIP, first quality, mixed colours of each, 1s.
WALLFLOWER, Double German, mixed colours, 6d. and 1s.

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- ALONSOA ALBIFLORA.—New distinct species from Mexico, introduced by Mr. Roehl, the distinguished collector, flowering freely from 12 inches up to a foot in height, producing long terminal spikes of pure white flowers with yellow eye. It is recommended for pot-culture, as in the conservatory it will produce a succession of its flowers throughout the autumn and winter when most acceptable for bouquets and table decorations. It will be found a desirable and useful substitute for Lily of the Valley, as when arranged so as to overtop the other flowers it will stand up to 24 inches.
BOMBAXA ROZEA 12. COBEA HIRSUTA 2s. 6d.
HUMEA ELEGANS ALBA. 2s. AERANTHUM SNOW-FLAKE, 1s.
MIMULUS BRILLIANTISSIMA, scarlet self, 1s.
MENTZIA OKNATA, fine plant (see description in Catalogue) 1s.
TORRENTA FOURNIERI, new annual form of this beautiful combination of colouring, 1s.
ERYNGIUM LEAVENWORTHII, ornamental plant, 1s.
PYRETHRUM AUREUM LACINIATUM, fringed-leaved Golden Feather, 1s.
ASTER, Freighting, most beautiful and brilliant new quilled variety, 1s.
SAXIFRAGA NEPALENSIS, fine ornamental species for pot culture, 1s.
PAPAVER UMBROSA, showy flowers, 1s.
LAIUS PYNCOCHRYA, 1s.
CANTERBURY BELLS, double filled flowers, beautiful variety of colours, 1s.
CUPHEA ROZEA 1s. BAMBUSA GRACILIS, 1s.
PINE-APPLE NURSERY, MAIDA VALE, LONDON, W.

GOETIA, LADY ALBEMARLE.

First-class Certificate Royal Horticultural Society, August 4, 1876. A magnificent new variety, growing 1 foot high. Flowers 2 1/2 to 3 inches across and of the most intense glowing carmine-crimson colour, which being produced in wonderful profusion give the plants the most charming appearance. This is the first annual ever sent out, and being extremely hardy and easy of cultivation, should be in every garden. Seed, with full cultural directions, per packet, 1s. 6d., post-free. "We have scarcely any plant of such a lovely shade of colour."—The Villa Gardener, September, 1876. "An extremely beautiful variety bearing flowers quite 4 inches in diameter, of a glowing crimson colour."—Gardener's Magazine, June, 1876. "A remarkable and splendid variety, far superior to any other of the family."—Journal of Horticulture, Aug. 3, 1876. May be had of all Wholesale and Retail of DANIELS BROS., THE ROYAL NORFOLK SEED ESTABLISHMENT, Norwich.



No. 1. CENTENAL.—A seedling of the well-known Howell's Beauty crossed with the White Pearl Blue; haulm stout, vigorous, of medium height; tubers medium and of uniform size; shape round, somewhat flattened, symmetrical and handsome; colour deep red; flesh fine grain, white and mealy; very productive, and of fine quality.

No. 2. BROWNELL'S SUPERIOR.—Of the same parentage as the preceding. Its tubers are medium to large, kidney-shaped, of a peculiar dark copper colour, very uniform and handsome in appearance; skin fine and smooth; eyes few and small; the haulm is strong and healthy; the tubers are thickly clustered around the stalks. It is a second early variety, keeps well, and is commonly productive, 67s. lb. having been grown from 1 lb. of seed with ordinary farm culture. A Certificate of Merit was awarded this variety at the International Potato Show.

No. 3. IMPROVED PEACH BLOW.—A cross between the well-known Jersey Pearl Blue and the Excelsior. It partakes of some of the characteristics of each of its parents, having the haulm of the Excelsior, while its tubers resemble the Pearl Blue, though better formed; white in quality it equals that old standard sort, it is far more productive and matures earlier.

One pound of either of the above varieties will be mailed post-paid in any address in Europe upon receipt of 4s., or its equivalent in English currency. Remittances can be made in Post-office Stamps or Postal Money Order on New York or London, payable to B. K. Bliss and Son. The above varieties can also be obtained of Messrs. HOOPER AND CO., Covent Garden, W.C.; of CARTER, DUNNETT, AND BEALE, London, W.C.; CHRISTMAS QUINCY, Peterborough. Our Illustrated and Descriptive POTATO CATALOGUE, 40 pages, will be mailed free and post-paid to all applicants. Address, E. G. HENDERSON AND SON, Seed Merchants, 24, Barclay Street, New York, U.S.A.

Advertisement for 'The Gardeners' Catalogue' featuring a circular logo with text 'PRINTED AND DESCRIPTIVE CATALOGUE' and 'HARDY SHRUBS AND TREES'. Below the logo is a signature 'Jas. Sackman & Son Working Nursery Surrey' and the text 'FREE BY POST'.

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MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, March 27, at half-past 12 o'clock precisely, a Collection of ESTABLISHED ORCHIDS, including many very choice and rare species, and the following—

- ODONTOGLOSSUM SPECIOSUM
- ONCIDIUM PHYMATOCILUM
- LÆLIA ANCEPS BARKERIANA
- DENDROCHILUM GLUMACEUM
- CATTLEYA WAGNERI
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- ODONTOGLOSSUM SUPERBIENS
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- DENDROBIUM MACARIZÆ

And several good established Plants of ODONTOGLOSSUM VEXILLARIUM, O. ROEZHII, a fine lot of the beautiful O. CORONARIUM; also an importation of the handsome CÆLYGNE GLANDULOSA, DENDROBIUM BARBATULUM, D. AUREUM, and the true D. ALBUM—Wight, in describing this beautiful Dendrobium, in *Iones Plantarum India Orientalis*, says: "This is one of the handsomest of the genus I have yet met with; large pure white flowers."

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

HIGHLY IMPORTANT SALE OF EAST INDIAN ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 29, at half-past 12 o'clock precisely, a very large quantity of Choice EAST INDIAN ORCHIDS, consisting of DENDROBIUM WARDIANUM, D. CRASSINODE, D. DEVONIANUM, D. FALCONERI, D. SAUVISSIMUM, D. HETEROCARPUM, D. THYRSIFLORUM, D. CHRYSOTOMUM, and others; VANDA CÆRULESCENS; the new CYPRIEDIUM BOXALLI, offered for the first time; AERIDES, SACCOLABIUMS, &c. At the same time will be offered a quantity of Plants of CATTLEYA MAXIMA, from the Province of Manabi, just received by R.M.S. Nile; and twenty-five fine established Plants of PHALÆNOPSIS SCHILLERIANA, in flower. All are in the finest possible condition, and amongst the East Indian Orchids are many specimens of a size rarely seen.

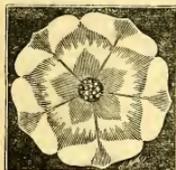
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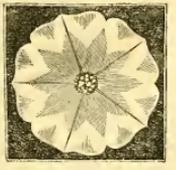
HOME-GROWN FLOWER SEEDS.

H. CANNELL, F.R.H.S.

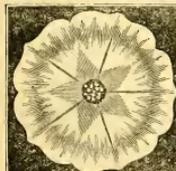
Heggs to remind the Public generally that his Business is exclusively devoted to FLORIST FLOWERS and their SEEDS only, and as a proof of his superior strain he simply presents the following Opinions of the Press of his PETUNIAS, which are unquestionably the finest in the world—



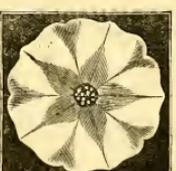
"From 'Gardener's Magazine,' August 30.
"Mr. H. Cannell continues at Swanley the careful cultivation of florist's flowers, and desires to prove to us that he is in earnest. His mode of procedure is agreeable and convincing for we have just received from him a boxful of Seedling Petunias and Fuchsias of the most sumptuous character. He describes them in simply impressive, and perhaps the best we can do is to recommend those who are interested in such things to run down to Swanley to see and judge for themselves. At all events, we place it on record that we have never seen a finer lot of Petunias and Fuchsias than we have now before us."



"Extract from the 'Gardener,' August 30, 1876.
"BEAUTIFUL PETUNIAS.—Mr. Cannell of Swanley, has sent us a whole flower garden of Petunias of the most beautiful and varied colours. We fancied we had some knowledge of the variety in which Petunias varied, but had no conception that the variation was so great until we received this batch. Words, however, fail to convey any adequate idea of their variety and beauty."



"Year's of Horticulture,' August 30, 1876.
"Just on the eve of going to press we have received a box of blooms of Single Petunias from Mr. Cannell, Swanley, Kent, which for size, richness of colour, and purity of markings, surpass all that have previously come under our notice."



"Extract from the 'Gardener's Chronicle,' August 19, 1876.
"We have received from Mr. H. Cannell of Swanley, Kent, samples of Petunia flowers of a remarkably fine strain, selected from a bank of flowers occupying a house 100 feet long, which we have since seen. The flowers are generally very large, some beautifully striped, and a great number of others, some of the richest velvety crimson. One variety was especially noticeable, and to us entirely novel and particularly fine."

Seed, 1s. and 2s. per Packet.

Your address on a halfpenny card will bring you the most instructive and best Illustrated FLOWER SEED CATALOGUE ever published.

H. CANNELL, Swanley, Kent.

The Greatest Novelty of the Season.

MIMULUS MOSCHATUS HARRISONI.

Awarded a First-class Certificate by the

Royal Horticultural Society and Royal Botanic Society of London, 1876.

This exquisite plant is a Hybrid between the Large Spotted Mimulus and the Giant Musk. The flowers are as large as the former, with the rich golden-yellow colour of the latter, exquisitely spotted on the lower segments with rich brown. Its habit is recumbent and neat, blooming at every joint, thus producing an abundance of elegant flowers which are brilliant and interesting. A few plants will effectually brighten and scent a Conservatory or Greenhouse. It will succeed admirably in all situations where it can be freely supplied with moisture, although a cool shady place is the best. Being an excellent Bedding Plant, and especially adapted for Rockwork, it will be rapidly brought into requisition, and its universal cultivation will quickly be accomplished. Its easy culture and other qualities will secure for it a popularity and extensive sale. It continues to bloom from March until December, and retains its scent throughout the year. As a free-growing odorous plant it is admirably adapted for Asylums, Hospitals, and other Public Institutions.



NATURAL SIZE.

Harrison's New Musk.

OPINIONS:—

"From THOMAS MOORE, Esq., Chelsea Botanic Garden, Nov. 17, 1876.

"I was much pleased with your Hybrid Musk as exhibited at South Kensington. I thought it likely to make a useful decorative 'everybody's' plant, fit for the conservatory or the cottage."

"From SHIRLEY HERRICK, Esq., F.R.H.S., Stoke Newington.

"Harrison's Musk is one of the most interesting of the novelties of the season, for the Musk in its old form is a universal favourite, and in this new variety we see it improved in all its attractive characters, so that it may rank with the florists' flowers, while continuing to charm us with its refreshing odour."

Nov. 12, 1876.

From Mr. A. F. BARRON, Chiswick Gardens, W.

"I like Mimulus Moschatus Harrisoni very much. It is as strongly perfumed as the ordinary Musk plants, with the addition of large yellow flowers, like the common Mimulus. It is sure to be largely grown as a window plant."

Nov. 12, 1876.

From Mr. R. DEAN, Nurseries, Esq., Basing.

"MIMULUS MOSCHATUS HARRISONI.—This is a bold-growing perfumed Musk, with large yellow red-spotted flowers. In addition to the spotting, it may give us a race of scented-floored Mimulus with flowers at large and beautifully spotted as any now to be found on the improved varieties. This interesting hybrid was exhibited by Messrs. Harrison & Sons, Nurseries, Leicester, and awarded a First-class Certificate of Merit—the highest award a new plant can receive."

From Mr. J. W. HILLS, Nurseries, Oakville Crescent, South Kensington, Nov. 23, 1876.

"I was much pleased with your new Mimulus Moschatus Harrisoni when I saw it exhibited some time since, and consider it a great acquisition, and shall be glad to have some plants of it as soon as it is in commerce."

This beautiful plant will be distributed on or before May 1.

Plants 5s. each; Six for 25s.; Twelve for 48s.

Orders booked and executed in rotation, as received.

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Can also supply the Trade.

INTERNATIONAL
HORTICULTURAL EXHIBITION & CONGRESS
 In 1877, at AMSTERDAM.

The Direction and Managers for the International Horticultural Exhibition and Congress, which will be held in this city in the month of April, have authorised us to publish an Illustrated Daily JOURNAL exclusively devoted to this Exhibition, which will be of great importance.

This JOURNAL, being the official medium of the Direction, will contain all that can be of interest to the Exhibitors, Directors, Jurymen, Members of the Congress, and visitors in general.

As for the further contents of this Journal we shall take every care that they may answer the requirements which may be expected from such a publication, in order that every number, in every respect, will be a general Guide as well for strangers as for inhabitants.

To realise these plans no efforts nor expenses will be spared.

This Daily JOURNAL will be, without doubt, a very desirable and effective medium for the insertion of Advertisements, especially of all articles appertaining to Horticulture, but also of those intended for the public in general. It will certainly have a very extensive sale, not only in the Exhibition grounds, but also in the country and abroad, to every one who takes an interest in this Exhibition.

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Amsterdam, March, 1877.

VAN ES BROTHERS.



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IMPERISHABLE TERRA COTTA.

JOHN MATTHEWS

ROYAL POTTERY,

WESTON-SUPER-MARE.

GARDEN POTS,
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SEAKALE POTS,
 SEED PANS,

AND ALL KINDS OF GARDEN POTTERY OF THE BEST QUALITY.

AWARDED SILVER MEDAL AT THE BIRMINGHAM SHOW, 1874.

Price List free. Book of Patterns, 1s. Sheet of Patterns, 6d.





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FLOWER AND VEGETABLE SEEDS FOR 1877.

BALSAM, Williams' Superb Strain	Per packet—s. d.
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Packets of Flower Seeds, excepting heavy kinds, Free by Post.

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Sutton's Improved Miniature Aster.

A profuse flowering variety, of dwarf compact habit, remaining in bloom for a considerable period, hence it is invaluable for growing in pots for conservatory or drawing room decoration. We have this season succeeded in saving six distinct colours, which greatly increases the value of this beautiful Aster for bedding purposes.

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Full particulars may be had, gratis and post-free, on application.

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Best Garden Lawns and Croquet Grounds

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SUTTON'S LAWN GRASS MIXTURE,

Which forms a close velvety turf in a very short time.

For making New Lawns or Croquet Grounds 3 bushels, or 60 lbs., is required per acre, or 1 gallon to every six rods (or perches) of ground.

For improving those already in turf, 20 lb. should be sown per acre.

March, April, and May are the best months for sowing.

Price, 1s. 3d. per lb., 22s. 6d. per bushel, carriage free.

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds

Gratis and post-free.

Sutton's Sons

THE QUEEN'S SEEDSMEN, READING, BERKS.



SATURDAY, MARCH 24, 1877.

HOW TO GROW LILIES.

THERE are few who have not seen and admired the gorgeous beauties of one or other of the many varieties of Lilies now in cultivation, or who have not been charmed by the stately purity of *L. candidum* and its sweet odour. It was, however, reserved to *Lilium auratum* to take us by storm, and bring the merits of this beautiful genus of plants prominently before the public. Never before, probably, has there been anything like the demand for a particular flower that has now existed for years for bulbs of this Lily. Hundreds of thousands have been sent over from Japan, and it is to be hoped as many more will follow, that every one who has a garden may feast his eyes on one of the most magnificent flowers it is possible to see. Some of the varieties of Lilies, such as the Martagon, tigrinum, candidum, chalcedonicum, and a few others, will do in almost any kind of soil, and succeed admirably in such as is of a stiff loamy nature. The choice kinds, however, are more particular, and require either peat or plenty of sharp grit, but in the latter case it must be where they can drive their roots down in a cool, moist bottom. The margins of Rhododendron beds, where gaps occur among the plants, is just the place to grow them to perfection, and in no position do they show up so effectively as when backed by the rich glossy deep green leaves of this favourite shrub. Failing a situation of this kind, the next best place is the shrubby border, as it is essential they should have partial shade and shelter of some kind.

The heads of flowers require it on account of their enormous size and consequent liability to be blown about and damaged by the wind, while the roots will only succeed really well where they are so situated as to be screened from the sun, which causes the ground to become too much heated and robs it of its moisture. This dryness of the soil is one of the most frequent causes of failure in Lily culture, as it generally occurs at or about the time the plants are developing their flowers, when they require more assistance than they do at any other time owing to the demand that is made on the roots, and if these cannot respond in a proper manner the bulbs as a natural consequence become so weak and exhausted that they dwindle away and eventually die altogether. To grow them in the style they may be had, one of the principal and most important things is to keep the foliage fresh and healthy up to the latest period possible, so as to prevent any premature ripening, which must of necessity take place at the expense of the bulb; and this can only be done by affording them an abundant supply of water and mulching the soil immediately surrounding them. Although the price of most of the best kinds of Lilies is somewhat against them, they are of such a permanent character compared with most other plants, that their first cost ought not to be so much a matter of consideration, as they are really cheap in the end, and there is nothing that can at all compare with them in the grand display they make and the small amount of labour entailed in their cultivation.

Unfortunately of late the best and most valu-



VEGETABLE SEEDS.

BEANS, Williams' Early Prolific Dwarf French—per qt.	3 0
BRUSSELS SPROUTS, Welch's Giant, one of the finest in cultivation	.. per packet 1 0
CUCUMBER, Walker's Hero (New) 2 6
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ONION, Williams' Magnum Bonum 1 6
PEA, Williams' Emperor of the Marrows	per quart 2 6
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* All seeds amounting to one, will be delivered free of carriage to any Railway Station in England.

27 ILLUSTRATED SEED CATALOGUE gratis and post-free to all applicants.



able of our hardy plants have been sadly neglected, and almost elbowed out of existence to make room for others, the merits of many of which consist merely in the bigness of their leaves, or whose beauty at the best is only of such short duration, that it in no way compensates for the room they take up under glass, and the constant recurring expense there is in raising them and getting them fit to plant out. In the cultivation of the Lily there is nothing of this, for if a proper position be chosen, and suitable preparation made, they become more vigorous each succeeding year, and increase at such a rate as to form grand masses if left undisturbed. For shrubby borders, where they can be kept clear of the roots of trees or other surface-feeding plants, there is nothing more suitable to grow than Lilies, and there are few gardens attached to any place but what have an appendage of this kind, all of which would be greatly improved by the introduction of a few clumps of the different varieties of these stately plants.

HOW TO PLANT THEM.

As the season is now getting advanced, those who contemplate planting them should lose no time in setting about making the necessary preparations. If it is intended to grow them in borders at the front of shrubs, the proper course will be to dig large holes from 2 to 3 feet across, and as much deep, and to fill these in with properly prepared soil, such as a mixture of leaf-mould and the turfy trimmings from the roadside, or any old pasture that has a sharp gritty soil. This should be chopped up small, and the whole well mixed up together, but on no account ought manure to be added in any form, or it will be likely to cause the bulbs to rot away before they are in a sufficiently forward state to make use of it. If applied at all, it should be towards the bottom of the hole where it can only be reached when the plant is in an advanced stage of growth; at which time the roots are actively at work, and can turn it to proper account.

Having filled in the holes with the parings from the sides of paths or roads, or any good turfy loam and peat, which should be rendered tolerably firm by gentle treading, the next thing is to plant the bulbs, either singly, or in groups of three where bold masses are required. Excepting for such as *giganteum*, with its massive leaves and gigantic stem towering aloft, most of the others look best placed in clumps triangularly at from 6 to 9 inches apart, and the front plant so arranged as to face the border or walk, in which way they are seen to great advantage. In placing the bulbs in position it is of the greatest importance that they should have a good handful of sharp, clean sand under their base, and a shovelful of the same scattered over and around them, which will keep them in a clean, healthy state, and prevent them from rotting—a thing they are very liable to if the soil is allowed to come in immediate contact with them. The proper depth to plant is about 6 inches, and when all is covered in securely with the same kind of mixture as the holes have been previously filled in with, the surface should be mulched over with some half-rotten leaves, cocoanut fibres, or any material of that kind, to keep out frost; for, although Lily bulbs are perfectly hardy, when they become established, they are readily injured after being fresh-planted, especially if at the time they are forming young growth, or emitting their large fleshy roots.

The principal attention required through their growing season is to keep them securely staked and tied as they advance, the best and nearest supports for which purpose are Bamboo rods of suitable length, which for colour and structure so closely resembles the Lily stems that they are scarcely observed, while they are far stronger than any other stick of double their size. It is the practice with many cultivators of Lilies to take up their bulbs after they have done

blooming, and to winter them out of the ground; but this tends to weaken them very considerably, as the large fleshy roots that would live in the ground if left undisturbed are completely destroyed; and not only is this the case, but the bulbs shrivel a good deal, thereby losing much of their weight and vital force, which prevents them starting away so strong or flourishing with anything like the vigour and freedom they do when not interfered with. This being so, the stems should be simply cut away close to the ground when thoroughly ripe, which they generally are by the end of October; and in order to keep them snug for the winter it is as well to remove the mud. Treatments in this way they soon become strong and throw out fine stems, which carry from ten to twenty or more of their magnificent flowers, many of which are so strongly perfumed as to scent a moderate-sized garden.

POT CULTURE.

For pot culture *Lilium auratum* is most valuable, as are also the several kinds of specimen that come in later in the autumn. These give a richness and character in the greenhouse or conservatory at that season quite unattainable by any other plant, and a few pots of each should therefore be grown wherever there is a structure of the above kind to furnish. Single bulbs of *L. auratum* may be grown in deep 6 or 8-inch pots to great perfection, and are even more suitable to stand among other plants than when named and grown together. The best soil for them is a mixture of good fat fibry loam in any old pit, of the proportion of two-thirds of the former to one of the latter, with just sufficient sand to keep it open and porous, that water, of which they can scarce have too much when growing freely and flowering, may pass readily through. In potting the bulbs should be placed low down in the pot, and simply covered, so as to leave sufficient room to pack round pieces of turfy loam around the young stems as growth proceeds, in which they will root freely and stand the most strongly than they otherwise would. In the case of all dormant bulbs, and especially of the Lily, any soil used for potting should be in a nice healthy state to moisture, which will obviate the necessity of having to water till they have started well into growth and are able to take it up before any injury results from its lodging about their base and among the scales of the bulbs, which is a frequent cause of so many coming up weak and afterwards dwindling away altogether. The best place to stand them in will appear above the soil is under the greenhouse stage away from drip, in any cold pit having a damp firm bottom impervious to worms, as there the soil can be kept in much the same state with regard to moisture as at the time of potting, and the longer it remains in that condition without having to water, the stronger and better will the growth be.

After the pots have become well filled with roots and the plants are moving on freely, weak liquid manure applied occasionally will be of the greatest assistance to them till just after the flowers are fully expanded, when its use should be discontinued and less water given as the ripening off proceeds—a process that in no case should be hurried on, as is frequently done by laying them down on their sides. It is quite time enough for this when they begin to show the sear and yellow leaf, and to die off, a time when heavy rains or any excess of wet would prove injurious. At no season, however, will Lilies bear the amount of drying-off that most other bulbs can endure, and the pots containing them should, therefore, be placed to winter where they will not be subjected to currents of air, or in such a position as that the soil would lose too much of its moisture. The great mistake many make who grow Lilies in pots is in not attending to them sufficiently early as regards shifting and dividing, for if this operation is too long deferred it is impossible to perform it without injuring or destroying a large portion of the thick fleshy roots at Lily bulbs have in such abundance when they are in a state of good health, and, therefore, the necessary repotting, &c., should be done as soon after the top die away as they can be taken in hand. This ought in all cases to be carried out with as little disturbance as possible to the old ball where there are any live roots in possession, and by picking out the soil carefully from amongst them it may be requisite to remove with a sharp-pointed stick.

RAISING NEW VARIETIES.

In the raising of new Lilies from seed there is a fine field open for the hybridist, and there

is no lack of choice varieties to work from. *Lilium auratum*, when grown out in the open, seeds freely in favourable seasons, and so also does *giganteum*, both of which are on that account, and from their general superiority over most others, capital seeds to be had from, although there is no reason why efforts to obtain new varieties of great worth and distinctness should be confined to any particular kind. As the flowers do not require any delicate manipulation, such as is needed by most others, any amateur can work at it with equal chances of success as those more skilled in the art. The principal thing is when the blooms expand to remove the anthers from all those to be fertilised, which may be done by clipping them off with a pair of sharp-pointed scissors. This must be accomplished before any of the pollen becomes ripe, otherwise some of it is sure to fall and adhere to the pistil, which Nature has so abundantly provided with viscid matter to insure that at least some portion of the pollen grains may fall on it and adhere, and thus carry out their allotted functions. Plants, as a rule, will always become fecundated with their own pollen much more readily than they will with that from other species, hence the necessity for removing their anthers while they are in an unripe state. Both these and the pistil are so conspicuous in the Lily, and the importance of the pollen so far as generally understood that any attempt here at an explanation would be superfluous. To those unacquainted with either a mere cursory glance will show their several positions and the purposes they are intended to serve, and how readily they may be turned to account in increasing our floral treasures and adding to our pleasures and happiness. It should be borne in mind that bees may frustrate the work, even after the removal of the anthers; and in order to guard against this the operation should be operated on should be protected by placing very fine gauze or hexagon net over them, keeping the net or chafin against them by using a few twiggie sticks stuck in the ground on which to support it.

When the stigmas are in a ripe state they may be seen by the coating of glutinous matter they will have on them, the ripe pollen from any other Lily may be readily introduced, either by using a camel's-hair brush or by tipping off the anthers and holding them between a pair of tweezers, in which way they can be carried, and the stigma slightly touched till thoroughly coated with the snuff-like pollen. One plant will bear sufficient of this, if judiciously and carefully used, to fertilise a great many, and each separate stigma may be so successively treated as well with as many varieties, and if each is numbered to correspond with a memorandum kept of the kinds employed, the result can be seen afterwards, and the work will thus be rendered more interesting. Having operated, the flowers as above, they should again be protected with the gauze or net, which should be allowed to remain on till the seeds are fit to gather, as birds are fond of them, for I unfortunately lost the whole of mine of last year from their depredations while I considered them safe.

Any one who commences such an interesting branch of gardening as this is sure not to rest satisfied with trying his hand on Lilies, but will seek fresh honours with other flowers equally deserving of attention; and if those who grow a list of such plants grow who never before grew, deserve well of their country, how much more must the originator of any new and beautiful flower do so, the slight and possession of which is destined to be a source of delight to so many? It is only those who have some once tried the occupation of raising plants from seed, the result of artificial fertilisation, that can realise what pleasure there is to be derived from the work, and how absorbingly interesting it is to watch the successive stages of the young, trying each change in leaf or bud, and hanging with fond hope on the ultimate result to be revealed only when the bloom—so slow for one's impatience in unfolding—shall open that we may see what it is like, and perhaps find it disappointing as a whole, yet the success is sufficient to give fresh zest, and spur one on to renewed effort. J. Sheppard.

New Garden Plants.

BOLLEA CELESTIS, *Rhb.*, J. *Gardener's Chronicle*, 1876, vol. v, p. 756; *Linnæa*, xl, p. 5 (*Orchideæ Ruziziænsis*).

What a pleasure it is to make the acquaintance of one's species in a fresh state!—and what vexation they are submitted to under extreme changes by pressing in the case of Bollea and *Tricostema*. One would not believe in the possibility of such changes, which cause the botanist great embarrassment. After all it is one of the greatest satisfactions of my Orchidic life, to see this wonderful flower, most probably the first ever developed in Europe. It is as large

as a well-formed flower of Mr. Day's *Pescatorea*. My wild-grown flowers, however, and most of those given by Messrs. Lamb, & Co. are nearly one half larger. The warm purple blue tint is darkest and most dazzling as a zone over the middle of the sepals and petals; the other parts are lighter, the white. The lip has a very large area of blue of fifteen nearly contiguous lamellae, all yellowish white. The anterior part is blue too. The boat-shaped (or, if you like it better, rope-like) column is of a beautiful blue outside, and blue, too, inside, excepting, however, the base, which is of a bright yellowish colour with numerous small spots. It is partially covered with numerous strong hairs, which are of no effect in the living plant, because they are quite pellicid. It is a great satisfaction to know the discoverer. I believe the plant is due not to M. Koed himself, yet to his gallant nephews, who put their hands on *Ondolagium cirrhosum*. I have to thank for the great pleasure of seeing the flower Messrs. Backhouse, York. They imported it fresh last autumn. They had a plant of the superior sort, from one of ours, 15 to 18 inches high. It must be regarded as a very grand plant. *H. G. Rehb., j.*

CYRIPEDIUM BOXALLII, n. sp.*

I did not expect when the other day, I had the splendour of *C. Haydonianum* at hand, that I should have a fresh novelty to describe so soon. There is no doubt of *C. Boxallii* standing near the well-known *C. villosum*, Lindl., but it has many points of difference. The bract is much larger, covering the basal part of the superior sepal, and it besides much broader. The peduncle is covered with dark blotches, which I never saw in *C. villosum*, and the hairs have alternating pellicid and rather blackish cellules. Both sepals are much broader at their bases, and quite white, while the inferior sepal of *C. villosum* is very acute. The petals, too, are much less concave. The lip has not the long lateral horns of *C. villosum*, and the staminoide is narrower at its base. In a pencil-like stem, the upper sepal and petals (which are of greenish white) are very nicely marked with numerous blackish spots. The plant is a discovery of the keen and successful explorer, Mr. Boxall. It comes from Tropical Asia—I suspect from Indo-British Sumatra, it is one of the numerous presents I have to thank Mr. H. Low for. *H. G. Rehb., j.*

NOVELTIES.

AMONG the plants to be sent out this spring, are the following:—

DENNSTEDTIA DAVALLIOIDES YOUNGII.—This fine new garden Fern comes to us from Australia. It is no doubt very nearly related to the old *Dicksonia davallioides* Sibtholm, *Stavillea* Young, now referred to the genus *Dennstedtia*, but it is much larger in its growth than we have ever seen that plant, which for practical purposes it may therefore be regarded as a giant form. In its native state it is said to produce fronds 17 feet in length; and as seen in this country, under pot culture, it has caudices as thick as one's finger, and fronds of 7 or 8 feet in length. To this stout and vigorous constitution it adds the elegance and gracefulness of minute subdivision, so that its fronds, though large, are utterly devoid of coarseness, and, in their set, a remarkably ornamental plant, well adapted for occupying any bold and prominent position in a stove rockery, or even as a pot plant in a collection of stove or greenhouse Ferns it will always hold its position. The caudex, as already described, is as stout as one's finger, and of creeping habit, progressing forward somewhat freely, and throwing up its ample spreading fronds at intervals. The spikes stout, nearly half an inch in diameter, and of a dark brown colour below, golden-brown above, and quite smooth. The fronds are nearly ovate in outline, and decomposed, the pinnæ $1\frac{1}{2}$ foot long, the pinnules 5 to 6 inches long, lanceolate-acuminate, and the ultimate pinnules, those of the third order, $\frac{1}{2}$ — $\frac{3}{4}$ inch long; these ultimate pinnules are obliquely-oblong, deeply cut into blunt oblong-toothed lobes, of which those at the base of the anterior side are the largest. The sori small, placed near the base of these ultimate lobes in the sinus of one of the anterior marginal teeth. The fronds are herbaceous in texture. It will thus be seen that this Fern, while growing to a large size, is one of the most finely cut of all the large-growing sorts, of herbaceous texture, and when

throwing out its boldly arching fronds, from an elevated position on rockwork, or from a large pot up on a pedestal, it will have a very fine effect. It, however, requires to be grown on freely to secure it in this condition, as if starved down to the size of an ordinary trade plant it will appear to be but little different from *D. davallioides* itself. The plant is in the hands of Messrs. Venable & Sons, of Chelsea, and of Mr. B. S. Williams, of Holloway, by whom we believe it will be sent out during the ensuing spring. It was unanimously awarded a First-class Certificate by the Floral Committee when exhibited at South Kensington on the 7th inst., and gained a similar award on the spring show of the Royal Botanic Society on a Wednesday last. *T. Moore.*

ARALIA FILICIFOLIA (Hl. Hort., t. 240).—This has been shown by MM. Linden, Ball, Veitch, and Williams, and perhaps by others. The plants are too young for their exact position to be determined, hence the name given is to be regarded as merely provisional. It is a very elegant foliage plant, suitable when small for table decoration. The stems are of a deep olive colour, speckled with white spots; the leaves are dark green, glabrous, twice pinnately divided, with a single lobe at the end; the pinnæ are about eight in number on each side of the midrib, each one being divided nearly to the base into linear, minutely saw-toothed and spine-pointed segments. The younger leaves are more finely cut than those first formed. The plant is a native of New Guinea.

CROTON (CODAURA) PARADOXUS.—A narrow-leaved form, with short footstalks, purplish in the middle, paler at either end. The blade of the leaves measures to 12 inches in length by $\frac{1}{2}$ inch in width, the leaves are in form linear-oblong with a spiny point. They are at first green, but subsequently become variegated with yellow or cream-coloured stripes and spots, especially in the centre on either side of the pink midrib. The under surface is paler, and the central portion of a pale pinkish tint. Some of the leaves are twisted in the centre, others are "interrupted," the blade not being continuous throughout. (Williams.)

CROTON FASCIATUS.—A bold, broad leaved form. Leaves 9—10 by 4—5 inches. Leafstalk about an inch long, brownish in the centre, paler at either end. The blade of the leaf is inversely egg-shaped, tailed, rounded at the base, of a lively green colour, traversed by bright yellow veins, and marked with a few irregular spots and blotches. It is a fine variegated kind, of bold habit. (Williams.)

CROTON CAMPTOPHYLLUS.—A very narrow leaved form. Leafstalk $\frac{1}{2}$ — $\frac{3}{4}$ inch, green in the centre, paler at the ends. The leaves 6—9 inch long, and $\frac{1}{4}$ inch wide, in form linear-oblong, dilated at the base, and with a central yellow stripe. The apex of the leaf is obtuse or shortly pointed. The leaves are variously twisted and curved. (Williams.)

CROTON PALCATUS.—A form of loose habit. Leaves 18—24 inches by 2—3 inches. Leafstalk 1 inch long, pink in the centre, paler at each end. The leaves are strap-shaped, dilated and rounded at the base, sword-shaped or sickle-shaped, with a dark purple midrib and margins, and with irregular blotches of yellow. The under surface is pale purple with green veins. (Williams.)

ABNEY HALL, CHEADLE.

AT any season of the year a visit to the extensive grounds and glass erections at the above gardens, the seat of Sir James Watts, Knt., will be found to be one of peculiar interest and pleasure, for the number of the houses and the general high-class character of the plants under cultivation ensures a fine display of choice subjects at almost any time. It was my good fortune a few days ago to have the opportunity of going through the houses with the gardener, Mr. R. Mackellar, and from a few observations made at the time, perhaps, a little notice may be acceptable to your readers, and of sufficient interest to find a place in your pages. The grounds and mansion stand just on the borders of Cheshire, about 6 miles in a southward direction from Manchester. The grounds, which are kept in fine order, and are very diversified in appearance, contain a number of very fine specimens of Conifers and other shrubs of an ornamental character, among which special mention must be made of

an avenue of *Cypress Lawsoniana*, and though these in general pass for very much of a similar habit and appearance, yet on a closer inspection and comparison it will be found that great variety exists among them, the habit of some being exceedingly beautiful, whilst others differ so much that it seems scarcely credible that such different forms should spring up from the seeds of probably the same cones.

The conservatory is a large and ornamental structure adjoining the mansion, and in it are planted out some of the finest specimens of *Camellias* that are to be seen anywhere in the neighbourhood of Manchester or in the miles around. Another large house is devoted to these fine plants, and at the present time the blooms may be counted by the hundred. Two grand plants of *Imbricata*, about 20 feet, are literally covered with blooms. The old double white is also very strong, and flowers fine and numerous. Here also are large plants of *Storly*, with flowers of fine form, of a deep rose colour; *Countess of Orkney*, a magnificent form—pure white mottled with pink; the half-expanded flowers of this variety have a very chaste and distinct; *Countess of Derby*, pure white striped with rose; *Cap of Beauty*, La Reine, Jubilee, *ambriata*, and also represented by fine well-blotted plants; whilst amongst those of a large scarlet type mention may be made of *Monarch*, the stamens of which are very prominent, and also of one named *Triumph*, the flowers of which are of an immense size.

From the conservatory, through a small portion of the pleasure grounds and across the kitchen garden, we come to a fine range of vineries, and just adjoining these is also the Peach-house. The Vines in this peach house have broken very strong with foliage good and plentiful. Here the Vines were just flowering, some already being set. The number of bunches, and the size of the greater part of them, would seem to indicate that here again Mr. Mackellar will be amply repaid for the constant care and attention he bestows upon this part of his labours. In the stove were many plants of an ornamental character, whilst for blooming purposes a quantity of *Eucharis amazonica* is grown, the variety there has been an abundance of bloom—twenty spikes on one or two of the plants will give some idea of their size and vigour. Here also were two fine plants of *Franseria confertiflora*, measuring about 4 feet by 4. The heads of bloom were thickly set all over the plants, some of the trusses having developed from twenty to thirty flowers. These are two plants that it would be difficult to match. *Calanthes* are grown in great quantity for cut flowers; about ten or twelve bulbs are planted in a 10-inch pot, and in their season are certainly a sight worth looking upon. A number of plants of *C. Veitchii* among those of *C. vestita* adds interest and charm to the display. In this house and another adjoining are several specimen *Orchids*, notably *Dendrobium monilliforme*, a grand mass, and well flowered; *densiflorum*, 4 feet through, showing well for bloom; *Farreri*, almost as large; while a quantity of noble are also grown, and when in flower are used for the decoration of the conservatory. Some grand specimens of *Vacc. filamentum* that are to be seen in great quantity of smaller plants of the same species, are to be met with here, and are all in very fine health.

A house of large size is specially devoted to *Azaleas*, and in a half-trained, half-natural form are a splendid lot of plants of very large size and in robust health. In the course of a couple of months these will be a picture. A fine lot of hard-wooded plants is also done well here, the principal varieties of *Heaths* being in many cases plants 3 or 4 feet high, and as much through, whilst a number of half specimens are coming on very freely. A prize plant of *Boronia pinnata* is in fine health and a splendid colour. I also noticed several fine pans of *Nertera depressa* in the Peach-house, and feel sure that in their season they will be covered with their pretty orange-coloured berries. I also noticed large quantities of bedding plants in almost every conceivable position, this being a part that is done rather extensively and with great taste. This by no means exhausts the many objects of interest that are to be met with here, however, give some idea of the number and variety of the duties devolving upon the gardener; at the same time I feel I cannot close this notice without bearing testimony to the satisfactory state of everything under his charge, as well also as to the kindness and courtesy that I have, not on this occasion only, but at other times, received at the hands of Mr. Mackellar. *W. Swan, Fallowfield, March 13.*

* *Cyrtopodium Boxallii*, n. sp.—Javica, *C. villosum*, Lindl. *Caulis obscurus muricatus; pilis pellicidosis infirmis; stricis amplexibus latis; sepalis summaris integerrimis tegente; sepalis utriusque obtusis; basi latioribus; lobis ovatis, subobovatis, mucronatis; comis labeis lateralibus abbreviatis; staminoide basi angustato.*—*Abney Hall, H. G. Rehb., j.*

THE GENUS AGAVE.

(Continued from p. 303.)

SERIES I.—CORIACEO-CARNOSÆ.—Texture of the leaf rigid, not at all fleshy or yielding to the touch when mature. End spine large, hard and pungent.

Group II. Marginatæ.—Edge of the leaf furnished all the way down from the top to the bottom with a distinct horny border, of the same texture as the teeth.

This group is too large to treat in a single paper, so I will take this time the species that belong to it which have sword-shaped leaves not appreciably narrowed

brown, the lower ones half a foot long. Flowers arranged in a dense spike 4–5 feet long. Capsule $1\frac{1}{2}$ inch long.

Var. *corulescens*, Jacobi, Cat. 2, p. 3; *A. corulescens*, Salmidyck; Jacobi, Monogr., p. 38.—Differs from the type by its leaves having a decided glaucous bloom.

A native of Mexico, now widely spread in our collections. Marked by its large, stiff, typically ensiform, dull grey-green leaves, narrowed gradually from the middle to a long point, and by their narrow grey border and small prickles. Although the plant is so well-known there is no figure of it in the flowering stage. Jacobi gives a description of a plant that flowered at Hamburg, but no note was kept with re-

pp. 47 and 205; Ref. Bot., tab. 215; fig. 58. Acaulescent. Leaves 50–80 to a rosette, rigid, ensiform, 2–2 $\frac{1}{2}$ feet long, 2–3 inches broad at the middle, narrowed slightly downwards, and very gradually upwards to a brown pungent point $\frac{1}{2}$ inch long, $\frac{1}{4}$ inch thick in the centre, dull green, with a broad pale band down the face, faintly lineate on the back, the margin bordered by a narrow, continuous, grey horny line, furnished with hooked, lanceolate prickles, $\frac{1}{4}$ – $\frac{1}{2}$ inch long, placed $\frac{1}{2}$ –1 inch from one another. Scape 4 feet long, exclusive of the spike, its bracts dense and squarrose. Spike 10–12 feet long, 6–7 inches thick; pedicels $\frac{1}{2}$ inch long; bracteoles lanceolate and deltoid. Perianth green, 16–18 lines long; ovary oblong-cylindrical, $\frac{1}{2}$ inch long, narrowed gradually into the very short tube; seg-

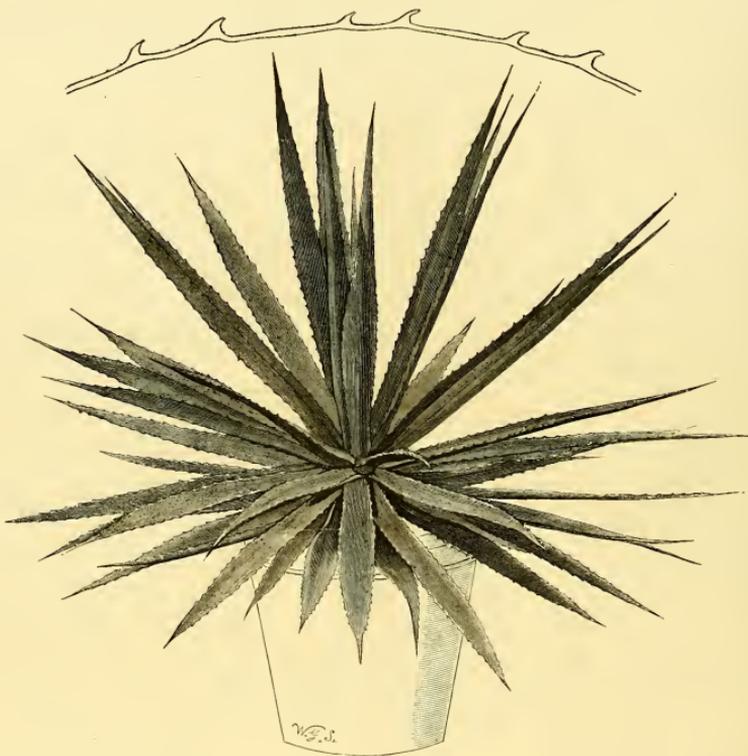


FIG. 58.—AGAVE UNIVITTATA.

from the middle to the base, leaving for the next time the Marginatæ with broader oblanceolate or oblong decidedly spatulate leaves, and will divide these Ensiformes into two sets, Grandifolice and Parvifolice.

* GRANDIFOLICE.

5. *A. (Littora) lophanta*, Schiede; Jacobi, Monogr., pp. 39 and 202.—Acaulescent. Leaves 30–40 to a rosette, rigid, ensiform, 2–3 feet long, $1\frac{1}{2}$ inch broad at the middle, equal in width from the middle to the top of the deltoid base, $\frac{1}{2}$ inch thick in the centre, rather concave down the face, rounded on the back, not marked with any lines, dull green in the typical form, narrowed gradually to a pungent brown spine $\frac{1}{2}$ inch long, the margin bordered by a very narrow continuous grey horny line, furnished with distant linear grey falcate teeth about a line long. Scape 7–8 feet long, its leaves

guard to its perianth and stamens, so that I hope the next time one of the numerous plants in this country flowers, some botanist will be communicated with, and a drawing made. There are many varieties in the size and colour of the leaves. Longifolia, of Jacobi, is an unusually large variety; in a specimen seen in the Saundersian collection with 40–50 leaves, forming a rosette 6 feet in breadth. *A. corulescens*, Salmidyck, of which there is a fine plant now at Kew, is clearly a mere variety of lophanta, running into the type through vars. subcaulescens and grisea. Judging from the description alone, I strongly suspect *A. Funkiana*, K. Koch and Bonché (Jacobi, Monogr., p. 38), to be a form of lophanta with vittate leaves.

6. *A. (Littora) univittata*, Haworth; Jacobi, Monogr.,

ments thick, ligulate, obtuse, suberect, $\frac{1}{2}$ inch long. Filaments inserted at the throat of the tube, twice as long as the segments; anthers above $\frac{1}{2}$ inch long. Style reaching to the top of the segments.

A native of Mexico, long known in Europe, and of which all the large collections of the present day contain specimens. An adequate coloured figure will be found in the *Refugium* as just cited, and the plant has also flowered lately both with Mr. Peacock and at Kew. It has the same stiff habit as lophanta, but is always, so far as I have seen, handed down the face, the leaves being more numerous, broader, and not so strictly ensiform, with a faintly lineate back, and a broader border, with rather stronger teeth. I cannot make out from the description that *A. ensifera*,

Jacobi, Nachtrage, 14, differs from univittata to any appreciable extent.

7. *A. (Littles) heteracantha*, Zucc. ?; Jacobi, Monogr., pp. 41 and 206, and Nachtrage, p. 14?; Regel, Gartenfl., 1870, p. 4. t. 639?; fig. 59.—Acaulescent. Leaves 50–80 to a rosette, rigid, ensiform, $1\frac{1}{2}$ –2 feet long, 2–2½ inches broad in the middle, narrowed gradually to a brown pungent point 7 inch long, $\frac{1}{4}$ inch thick in the centre, dull green, not vittate, marked conspicuously with numerous darker green lines on the back, furnished with a distinct grey horny border, and numerous strongly hooked lanceolate spines $\frac{1}{4}$ – $\frac{1}{2}$ inch long. Scape 3 to 4 feet long. Spike dense, 3 feet long. Perianth greenish, $1\frac{1}{2}$ inch long; ovary oblong, $1\frac{1}{2}$ – $2\frac{1}{2}$ inch long; tube short, funnel-shaped, segments equalling the tube. Filaments $1\frac{1}{2}$ inch long, inserted near the throat of the tube; anthers ligulate, $\frac{1}{2}$ inch long.

and crowded very strong lanceolate prickles, from a deltoid base, reaching a length of half an inch. Inflorescence unknown.

Described by Jacobi, from the collection of Baron de Jonge van Ellemet and Muilman, of Utrecht. The native country is not known; I have not seen the plant in England. Its alliance is evidently close to *A. heteracantha*. *J. G. Baber.*

THE ROYAL HORTICULTURAL SOCIETY.

HAVING reason to know, from conversation with numerous amateurs and others, that the lengthened correspondence which has recently appeared in the

of great scientific and practical value have for years been carried on and are still continued at Chiswick, with excellent results, whilst the reports in the horticultural papers are sufficient testimony to the thoroughly successful working of the Scientific, Fruit, and Floral Committees connected with the Society. The fortnightly shows are also a great success, even beyond the most sanguine expectations.

31. What is now required is to obtain an increase of Fellows and members, and I think it cannot be too well known that those who wish to join the Society can do so on the following terms:—

A. By payment of one guinea per annum, which payment entitles the member to see the gardens at all times, including all shows, *fêtes*, *conversations*, and promenades, both at Chiswick and South Kensington,

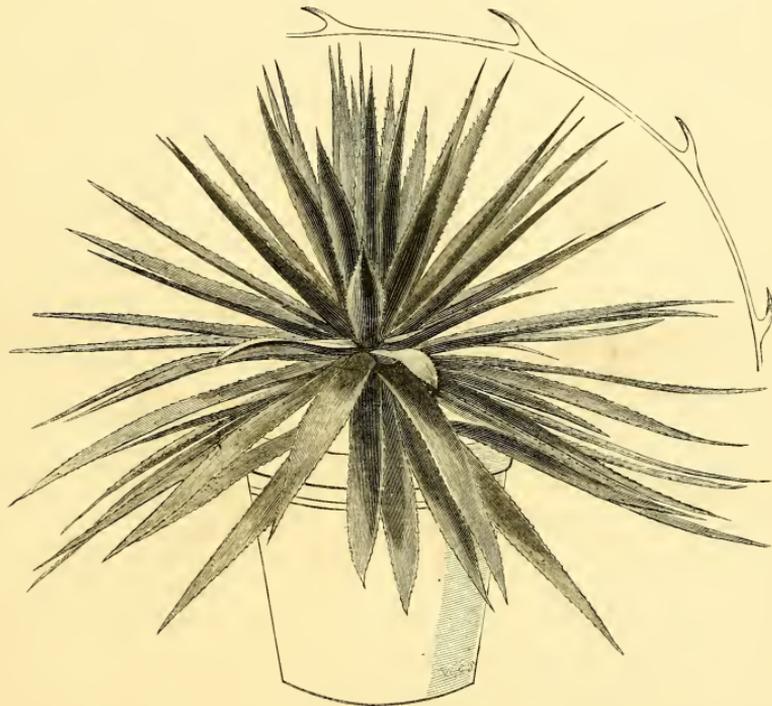


FIG. 59.—AGAVE HETERACANTIA.

Our figure represents the plant grown in English gardens at the present time as *A. heteracantha*, but I doubt its being what was intended by Zaccarini, of which the prickles are said to be very large, very close, and deltoid. Our plant is a close ally of *A. univittata*, but is smaller, not vittate, with larger prickles, and very distinct stripes on the back of the leaf. There is a fine specimen at Kew at the present time. My description of the inflorescence is taken from Regel's figure. It is said to be an inhabitant of Mexico.

8. *A. splendens*, Jacobi, Nachtrage, 2, p. 63.—Shortly caulescent. Leaves 50–60 in a rosette, about 12 feet long, very rigid, slightly narrowed from the middle downwards and upwards to a brown terminal spine 1 inch long, olive-green, not vittate, slightly hollowed down the face, furnished with a continuous broad margin,

newspapers has tended only still further to mystify the public, and consequently to injure the Society even more than was previously the case, I venture to ask the favour of space in your paper that I may briefly draw attention to the following facts, hoping thereby to remove the doubts of many who would be willing to come forward and aid by their subscriptions a Society which has done in the past and is still doing much valuable work.

1st. The Society is now financially in a better position than it has been for several years past, but its income is still most inadequate, but with additional aid it would be able to carry on its experiments and maintain the efficient working of those committees whose labours have been, and are still, so beneficial to the public.

2d. Besides other valuable work, competitive trials

but without giving a vote at the meeting of the Society; or

B. By payment of two guineas a-year, which entitles the Fellow to one yearly transferable ticket, admitting the bearer every day, and to all shows, *fêtes*, *conversations*, and promenades, both at Chiswick and South Kensington, and enabling him to visit the shows at an earlier hour than the general public; also admitting the bearer with two friends on all ordinary days, to receive forty orders giving free admission to promenades on all days excepting show and special days, to have the right of voting at all meetings, besides other minor privileges; or

C. By payment of four guineas a-year, which entitles the Fellow to two yearly tickets, both of which are transferable, and which gives the bearer admission every day, and to all shows, *fêtes*, *conver-*

ositions, and promanets, both at Chiswick and South Kensington; to visit the shows at an earlier hour than the general public, to receive forty orders giving free admission to the promanets and on the days excepting show and special days, the right of voting at all meetings, free admission to the reading-room, besides many other minor privileges.

D. Bond *head* gardeners, on payment of 10s. 6d. yearly, are admitted as members, with the same privileges as those amateurs who pay one guinea per annum.

E. There is now no entrance fee, and any one subscribing is in no way liable for any amount beyond the subscription for the year.

I am surely not too sanguine in expressing the hope that throughout Great Britain, where the love of flowers is so universal, there are many who will be willing to come forward, and at so small a cost to themselves help to support a society which has done so much good in the past, and which, I feel confident, must, with efficient aid, have a very brilliant future. I venture to appeal on its behalf for such support, and shall gladly receive the names of any who are willing to become members, and I shall be happy to obtain the necessary signatures to the nomination papers so as to save as much trouble as possible as regards election, &c. *Harry T. Vitch, Royal Exotic Nursery, Chelsea, S.W.*

— Having on the 10th written a "last" letter on guinea Fellowships in the Royal Horticultural Society, I hardly venture to trouble you with another. I believed that the matter would have to rest for a considerable time, but circumstances have changed. The day after my letter was sent came an answer from the President. His Lordship's accident had prevented his getting up to the Council. His views as to the policy of the Society in the future are to my mind entirely satisfactory. There came a very well-known amateur horticulturist from Clifton, who has great knowledge of business and of the world. He considers that it is so great a gain having the guineas admitted in any shape, that we ought to be satisfied for the present, and make the most of it. I have not the time to give a representative of another section of horticulturists, Mr. Gilbert, gardener to the Marquis of Exeter at Buryleigh, wrote exactly to the same effect in last week's *Gardener's Chronicle*. Both these opinions carry weight. Some of our correspondents will not join the present Society; others will not join it while it has the maintenance of the London branch at South Kensington, but I believe that by far the largest number will trust to us on the spot, knowing that our only object is the promotion of horticultural science, and will act as advised. I think if fellowship with a vote for those living outside the London limits had been proposed at the general meeting it would have been adopted, and take great blame to myself for not having thought of this. It is now too late for this year, but I think, and have reason for thinking, that if a large number of country horticulturists will join the Society on the terms now offered—that is, membership without a vote, for a guinea subscription—that we have good hope of getting the vote hereafter. Happily, the tickets attached to the two guinea subscription, having now been made transferable, that the sufficient difference in value between this and the non-transferable ticket given to the guinea subscribers.

On the whole then I would advise those who have given their names as would-be guinea subscribers to accept the same members, and thus the influx of a large body of country horticulturists will better strengthen and improve the Society, and besides that, their guineas will be applied to horticultural objects. Those who come up to London will have full consideration for their money, as, judging by the shows on the days of the committee meetings which have been held this year, both the leading nurserymen and amateur cultivators have determined on exhibiting so many Orchids and other beautiful flowers and plants that the shows now held the first and third Wednesday of the month are well worth the subscription. I have only to add that it is to be hoped that those who come in will bear in mind that the greater the number of guinea members the greater chance they will receive, and that they will try and influence their friends to follow their example. In this neighbourhood, where our canvass was completely successful, the principal argument used was, "You take delight in your garden, we would ask a substitute to promote it, and we will not give this (or find a substitute) to promote the science which improves gardens." *George F. Wilson.*

[We have received several communications on the subject of Mr. Gilbert's proposal in our last issue. Our advice to the gardeners is—join in numbers; help the Society, and in time they will work. We believe it would not be refused if anything like a general wish

for it were manifest; meanwhile strengthen the gardening element, in this way only on the Society to be made truly horticultural and free when the time comes—and it will come—when its fetters can be knocked off. When that time comes, if the horticulturists are not to be the South Kensington bondage will be perpetuated. Eds.]



HAVING considerably, judiciously, and carefully performed the work of planting either a single tree, a group, or forest, the next and most essential thing to do is to guard and protect the trees from injuries of every kind to which they are liable and exposed. It matters little as to ultimate results whether planting is well or ill performed, if the plants are not properly attended to and cared for afterwards.

Sheep, cattle, hares, deer, and ground game of all kinds are the most dangerous enemies to trees, and the amount of damage inflicted by them is only a matter of extent influenced by circumstances too vast to enumerate. If only the delicate structure of plants was better known and considered, they would doubtless be better cared for, more tenderly nursed and assiduously guarded and protected than they are. Every part of the plant is liable to injury, and no part can be injured without prejudice to the whole structure. If the root is injured the top suffers, and if the buds or leaves are injured the roots correspondingly suffer, although this is not so obvious to the general observer.

Some species of trees are more susceptible of injuries than others. Brises are more fatal to resinous than to non-resinous species; and others, as the common Beech and Holly, are impatient of any injury or interference with their leading shoots and top buds. The epidermis or inner bark of the Alder may be, as I have frequently seen it, completely stripped off with a knife and replaced without the tree sustaining any apparent injury, while the common Ash and holly, if generally and not judiciously treated, suffer similar treatment. The roots also, and especially the neck, or point of connection between the root and the stem, vary greatly in their sensitiveness and liability to injury in various ways.

In operations of levelling ground it is often found necessary to bare the roots of some trees severely, and to bury others too deep with the excavations. Now, with few exceptions the barring of the roots never proves injurious, while, on the other hand, comparatively few operations will endure cutting up. Hence, in cases where it is absolutely necessary to raise the earth upon trees, means should be taken to prevent it from coming into close contact with the bark, for which purpose a rubble wall should be built round the tree, leaving a clear space between it and the wall.

The species of trees that suffer least from placing earth against their stems are the English Elm, and the tree varieties of Willow, Lime, and Poplar; and those most impatient of earth laid against them or confinement are of various kinds, as the Beech, Wych Elm, Ash, and the whole family of Pines and Firs. Apart from the actual burying of stems too deep, another and not unimportant evil is produced by applications of rich manures to the general surface of the ground, such as the folding of sheep amongst them, laying down manurial composts, sewerage from farm steadings, &c. Some species of trees die from such treatment more readily than others, of which the Beech, Birch, and Wych Elm are especially liable; but, indeed, no forest tree is safe under the influence of rich manures, and every precaution should be taken in laying down dung-heap, not only that it be kept a great distance from trees and hedges of every kind, but that provision should be made for conducting all liquid from such heaps into proper receptacles or open ditches, so that none of it may find its way to their roots. Attention should also be paid to all flat, and especially basin-shaped, grounds, after floods and winter rains have ceased, to see that the surface of the ground is not unduly silted up with mud, so that the water may be prevented from seeping from finding a passage into the soil and subsoil, for it is found that whatever means prevents the air from entering the soil is injurious to trees. It is this more than anything else that causes stiring the surface of the ground, a necessary condition for the welfare of forest trees. The free and frequent use of the forester's footpick cannot in many instances be too

strongly recommended, for no implement is better adapted for rendering the soil loose and admitting air to the roots of the plants; and all soils, whether in young plantations, shrubberies, or hedges, where inclined to clay, should be periodically stirred up by means of the forester's footpick.

In all operations this is not required, as the trees perform the work for themselves by heaving and shaking the soil in which they grow during windy weather; but in all cases where the trees are of an age and size below which the wind can act upon them, free and frequent use should be made of this implement. In many cases, too, it is also of immense advantage, entirely to remove the surface turf, as by doing so the roots are encouraged to spread upon the surface; for, strange as it may, the trees never grow better than in a pliantly unobstructed soil. I have seen trees freely exposed—indeed, I have seen in footpaths through plantations the network of roots so complete as to constitute a solid pavement of woody fibre. In connection with this fact, it may be further stated that all very aged and notable trees known in this country have a large proportion of their roots running up on the surface, and in every case the swell of the stem is well exposed. The healthy state of the roots is manifestly unobstructed, and the surface of trees sufficiently accounts for old trees remaining in comparatively good health, notwithstanding that the central part of the tree has long since crumbled and decayed, and were the necessary conditions of root life maintained, such a state of perfection, maturity, and age, hitherto unknown. *C. Y. Meale, Cullen House, Cullen, March 13.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—There are several handsome varieties of the tuberous-rooted Gesners that are not so well known and generally cultivated as they deserve; their compact habit and moderate growth render them suitable for dispersing amongst larger subjects in a roomy stove, where on the side stages they mix well with other things. They are especially adapted for small structures. Amongst the best are *G. glouxiensis*, *G. macrantha*, *G. tubiflora* (longiflora), *G. carnea*, *G. Leopoldi* lilacina, *G. magnifica*, and *G. Mercki*. The varied colours of these, from white to crimson, and their free habit of flowering, make them very attractive. Gesners of this class will not require answers well for them. The forms of *Achimenes* known as *Tydeas* are also deserving of a place in any collection; their disposition to flower later in the autumn than the ordinary *Achimenes* being a feature not to be lost sight of. Tubers should be started now in shallow pans in sandy soil, and a little leaf-mould added, which will enable their removal for alimate potting with their roots intact. They will be found most useful for ordinary purposes grown in 8-inch pots, and in 8-inch pots. It is a great mistake to crowd too much of such things as these in the pots, as by this means the soil becomes exhausted, which tends to shorten the duration of their flowering. By stopping one-half the number grown when 3 or 4 inches high a succession will be secured. Winter-blooming Gesners of the zebra section that have done flowering should not be thrust sideways under stages, or in out-of-the-way corners, where they receive little light and water, but they ought to be placed in the centre of the stove, in a position to die down, or their roots do not get fully matured, and are liable to perish through an excess of rest, or to start weakly when growth again commences. *Achimenes*, *Philodendrons*, and *Nidaliads*.—Sucker plants of these offshoots should be cut off and placed singly in small pots towards the close of last summer or autumn, will by this time have got well rooted, and should be moved on into from 5 to 7 or 8 inch pots, according to the size of the respective kind. They are most useful warm conservatory stove decorative subjects, especially when confined to single corners in small pots. One of the advantages they possess is, they can be stood as required whilst in flower, overhung the plants, or placed in anything of the same nature that continues to bear leaf-growth would be injured by such usage. To keep up an effective display in both stove and conservatory, it is necessary to cultivate a sufficient number of plants, which in this treatment will be more than a difficulty in finding flowering things that can be placed in the lowest positions on the stages and floors. The Mexican rush-like *Ruellia juncea* is a striking plant either in or out of flower, particularly so when dotted with white flowers. It is a very hardy plant, keeping well to the light, with little or no shade, otherwise it does not flower with its wonted freeness. It makes an excellent plant for the side stages in the stove, where, elevated on an inverted pot, it is seen to advantage. It is a very hardy plant, and may be conservatory during its time of blooming, which is in the summer months. Ordinary loam, with not too much

room-temperature, will suit it. Moderate sized plants in 9 or 10-inch pots are the most useful. Plants of *Mediterranean magnifica* which have been kept comparatively dry and at rest, should not be started. They will bear syringing overhead until the flowers show, after which they do not wet them in this way or the panicles are liable to damp; it succeeds best with more exposure to sun and a drier atmosphere than the generality of stove plants, by which treatment it will be found to flourish in a small state. The erect flowering *M. anabilis* is a distinct and handsome kind, a perfect contrast by its upright habit to *M. magnifica*. *Francisca* confertiflora and *F. calycina* are plants that will last for many years if well treated, and they are not so tender as they need it; they more than many stove plants are liable to get bare and naked of foliage at the bottom, but old stools headed down are preferable to young plants from the stronger shoots they afterwards make, the quantity flowers they produce, and the duration of their blooming being dependent on the strength of the previous season's shoots. Now is a good time to cut such back as require it, which will give them a long season of growth and will even get well furnished. After they are fairly broken they should be turned out, and if the pots they have occupied are large, half the soil may be shaken away, replacing them in others a size or two smaller. Plants that are growing well will not begin to take more water; in all cases see that it is sufficiently warm before being applied; water used too cold to tender stove plants is much more injurious at this time than at any other time of year. It is a good plan to have several large tubs of water, and to let the plants require at one application stood near or over the pipes, where the water they contain will be as warm when wanted for use as the temperature of the water in the hottest part of the day, in which will be the most successful means of securing the health and progress of the plants than if used cold. Be very careful not to admit too much air when cold winds exist, as even if it does not come in direct contact with the young tender foliage, it dries the inside of a too much. *T. Baines.*

FLOWER GARDEN, ETC.

While the walks are tolerably dry the wheeling of dung, loam, &c., for the flower beds and borders had better be pushed forward, and all spare ground dug and prepared for the winter. Hardy annuals may be sown in pots or boxes, and got ready for pricking out, but some of the more tender kinds, which require to be grown on without receiving a check, will succeed better if sown in the pots or toward the end of next month in soil plants, *Maize*, &c., do best when thus treated. *Cannas* (Indian Shot) which have been wintered under a greenhouse stage, or any similar place, may now be divided and replanted, and if planted in a warm moist atmosphere will make fine plants for the winter after which they may be gradually hardened for cooler quarters. *Mignonette* and other hardy annuals may be sown in borders, or wherever required for blooming during summer. Roses that have not yet been pruned can now be done at any time, and the ground looked between the plants, to leave all clean and tidy. Teas and other tender kinds will be better left until all danger from frost is past, when they can be pruned, and any banks that have occurred during winter filled up. *Bulfinches*, which are very destructive to fruit-buds, are also very partial to the flower-buds of *Lilacs*, *Laborer's*, and *Scarlet Thorns*, and they will require attention this sharp weather, for they do a vast amount of mischief to the young buds of these and other moderate-sized plants, when damp, may be dusted over with soot or lime; this keeps the birds from doing much harm. As bedding plants now begin to require more room than they are having, it is often necessary at this time to get the plants well prepared, where they may safely remain until planting out time. Turf pits can be got ready, and covered with lymf, mats, or anything hard, and in out-of-the-way places branches may be used, which will protect plants from several degrees of frost. But all best plants in cool places must only get just enough water to keep them from flagging, for the drier they are kept the more cold they will resist. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

VINES.—Complaints of late kinds of Grapes keeping badly after removal from the Vines would be less frequent if a longer period of growth could be secured. To suppose that Grapes, particularly *Lady Downes*, which are not to be used until after Christmas, can be brought up to keeping condition by the aid of sun-heat alone is a mistake, and as one month in the spring will do more than two in the autumn all houses in which late kinds of Grapes are raised should be warmed by means of fire-heat and frequent syringings to break early. If the system which I recommend has been followed, the buds will now be breaking; if unevenly, and sometimes the buds will be broken, and the sap may be equalized by a board being started in a horizontal position until all the buds have started, when

they may be tied up to the wires. Maintain a temperature of 55° at night, with a rise of 10° to 15° by day. Ventilate at 65°, run up to 75° with sun-heat, and close early, with plenty of moisture. Attend to the syringing, and if syringing in succession-houses, and keep the thinning of the bunches and berries well in hand. In the performance of the latter operation the cultivator must be guided by the bunch and caper-vines. When a bunch is properly thinned every berry should have room to expand, and when ripe it should be sufficiently firm to retain its form when cut and laid upon the dish. A steady circulation of warm air should be kept up where the grapes are raised, and in succession-houses of the late vintage. Hanburghs and other first-setters may range from 65° to 70° by night, and Muscats may have 5° to 10° more. If, as is often the case with badly ripened wood, the bunches incline to run into tendrils, increase the heat by day, and reduce the supply of atmospheric moisture until the danger is past. As days increase in length, Grapes that are swelling must have liberal supplies of moisture charged with ammonia, and when they have passed the stoning process the inside tendrils will be greatly benefited by a liberal supply of tepid liquid manure. The close stopping of laterals should be discontinued until every part of the trellis is covered with healthy foliage, and to avoid sudden changes of temperature, they will be better kept in a temperature not to be admitted by small quantities at a time. Close early on sunny afternoons, at 80°, and allow the heat to decline to 65° at night. Put Vines swelling off crops of fruit will require liberal supplies of liquid manure, and when the fruit has nearly reached maturity, and encourage the roots over the sides of the pots, into the plunging material. *W. Coleman.*

CUCUMBERS.—Although it is possible by constant renewal of the soil to keep Cucumbers in bearing for an indefinite length of time, an occasional clearance of one of the compartments, where the pit is divided into sections, will enable the cultivator to keep up a steady succession of tender fruit from sight, young plants than can be obtained from those which have been forced and heavily cropped all through the winter; and as Cucumbers plants after this date will make rapid growth, a good batch should now be ready for sowing, and the soil may be newly formed, and kept as far as may be convenient, from the hot-water pipes. Having cleared away every particle of old soil, plunging and fermenting material, if found too much decomposed, dust the sides and bottom of the compartments with fine sand, or a mixture of glass, pitch, and walls before the new material, which will consist of well-worked stable-dung and Oak-leaves, is introduced. The soil used for the hills may be somewhat heavier than that recommended for the same purpose, and should be well watered through before the plants are turned out. If a compartment cannot be spared, the gradual removal of old bearing vines and leaves, combined with the most attention to earthing and the removal of old wood with care, will greatly improve the quality and increase the quantity of fruit, provided the plants have not become infested with red-spider, in which case the enemy must be made to succumb to persistent syringing, and the application of dry sulphur, before satisfactory progress can be expected. Examine all beds which have been some time undisturbed, and if worms are present let them be removed without loss of time. Where short dung is used for manching the hills a great number of these troublesome pests may be captured by carefully turning and hand-picking a few hours after the plants have been watered with tepid liquid manure or lime-water. The bright sunshine which now follows sharp frosts, and the too strong heat which causes the fruits swelling off, if not well protected with leaves. The young fruit of Telegraph are very soon scalded and show a brown excoriated surface, which much disfigures them when cut. To prevent this some very strong manure should be drawn on the ground a short time as soon as the sun falls on the house. No material difference need be made in the temperature. To have good Cucumbers in quantity we must have fall command of heat and moisture, and it is better to have a drier weather than to be rated by any fixed rule of figures. *W. Coleman.*

FIGS.—Under the influence of heat and humidity which is afforded in forcing operations these trees make rapid and rampant growth, the character of which will naturally depend on the nature of the treatment applied at this season. As no after-treatment is fully adequate for a defective growth made at this period, it is prudent to give the matter every consideration, lest by promoting it too rapidly now, it may lack that important desideratum which is at all times inseparably connected with future success. The trees may be kept in a moderate heat, and as to those trees which are placed in confined structures than is necessary in the case where the houses are large and of loftier dimensions, which, taking all points into consideration, are undoubtedly preferable for the purpose, the standard of heat may be raised by a fire by artificial means still be 60° at night and 65°

in the daytime; slightly open the top ventilators at 75°, and shut them up if the temperature in the house recedes below this point. At 85° permit a warm current of air to circulate through the house; keep all the shoots, except the tendrils, pinched in at about the fifth eye, and remove as they appear all those which are not required to form spurs. Continue to ply the syringe freely every day about those houses which are not of a close nature, and, on the contrary, exercise discretion in its use in such a particular character. In later houses give constant attention to stopping-in shoots; this matter should be done before they become too much elongated. *G. T. Miles, Wycombe Abbey.*

HARDY FRUIT GARDEN.

There are few gardens of either large or small extent but have some of the hardier fruit trees, such as the Pear and Apple, in a more or less unsatisfactory state, or, where this is not the case, it often occurs that varieties have been planted which are quite unsuited to the locality. This happens more frequently with the Pear, a fruit that is exceedingly variable in its qualities, than with any other fruit. *Clou Moreau*, *Ester Beauré*, *Bergamot Espere*, *Josephine de Malines*, and other sterling varieties that are all that can be desired in some soils and situations are comparatively worthless in others. Aspect has much to do with the success of any planting, although soil exerts a considerable influence, especially in the case of those in the Quince, the roots of which do not penetrate near so deep or ramble in search of food to anything like the distance the Pear stock is capable of doing. In such a case, a check to the roots, a check through lack of nutriment, so as to affect their regular growth and swelling, they must inevitably become gritty and be of inferior quality. Much, therefore, depends on choice of stock; and where the soil is of a chalky nature, the most suitable should be given to the Pear, as in every way the most suitable, especially where the trees can be trained to walls and have plenty of room to develop themselves. It sometimes happens that the branches of these through bare or other causes, become gnarled or the bark so rough and excoriated, as to preclude the possibility of a vigorous healthy flow of sap, such as is required to obtain fine fruit of good quality; and where this is the case, the remedy is to head them in entirely back, leaving only a few inches of the main branches to break again to re-form the wall. Old trees so treated often become rejuvenated, and from the strong hold they have of the ground are able to shake themselves free of the soil, and fear outstripping in this respect any young one may be planted. In cases where it is desired to substitute other kinds on those benighted, that may now be done without regard to the age or size of those planted, and which may be cut in long sloping cut on one side, extending about 12 inches, so as to fit part of the wood under the bark, the latter of which should be slit through with a sharp knife, and then gently raised by inserting under it a piece of hard wood, such as a stick, and the bark may then be pushed in after, in the same manner, as carefully as possible, so as not to bruise or injure the same. They should then be tightly bound in their places, by using either very soft string or moss matting, and have the usual preparation of grafting clay worked well around them, so as to exclude every particle of air; and the more effectually to do this a covering of moss tied over to ward off the sun from the clay will be found of great assistance in keeping it from drying, and the trees may be cut in the same manner, but there should be no delay in carrying out the operations, as vegetation is in a more than usually forward state this season, and the sooner it is done the greater will be the chance of success. It is worth the notice of the cultivator, that really good kinds that are known to do well in any particular district than to be barren with a number of varieties of doubtful value, that only entail disappointment, and the grafting should be done on particular favour. Among Pears I can strongly recommend *Bergamot Espere* as one of the very best late kinds, provided it has a suitable situation accorded it, such as that of a chalky soil, and where the trees in aspect all late-keeping Pears require, except in the warmest and driest parts of England, where they succeed as pyramids or espaliers. Fortunately for the safety of the Apricot crop, but few of the blooms were injured by the frost on the night of the 10th, we had 14° of frost, but now prospects of a good set appear to be favourable, except on Peaches and Nectarines, which from some cause or other have cast a good many of their buds. The pruning and nailing of these trees may be commenced, and the buds may be cut in as close as quickly as possible, and a sharp watch kept for frosty nights, with the necessary protecting materials always ready to hand and available for use when wanted, as may yet be case, so exceedingly uncertain is the standard of the winter climate of ours. *T. Sheppard, Wellesford Park.*

THE
Gardeners' Chronicle.

SATURDAY, MARCH 24, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Mar. 26	— Sale of Orchids at Stevens' Rooms.
TUESDAY, Mar. 27	— Sale of Larkia elegans, &c. at Stevens' Rooms.
WEDNESDAY, Mar. 28	— Royal Calceolonia Horticultural Society's Show, Glasgow and West of Scotland Horticultural Society's Spring Show.
THURSDAY, Mar. 29	— Sale of Camellias, Azaleas, Roses, Fruit Trees, Bulbs, &c. at Stevens' Rooms.
	— Sale of Best Indian Orchids at Stevens' Rooms.

IT is pleasant to note from time to time the steps Horticulture, or, rather, some of its devotees, take to raise their art from a mere empirical rule-of-thumb procedure, guided by routine and checked carefully by the leading-rings of prejudice, to the higher level of a rational progressive science. It is true a considerable measure of excellence has been obtained by mere individual experience, handed down from father to son, from predecessor to successor. Still it is clear that for anything like a general advance along the whole line, for anything like a successful incursion into new territory or unbroken ground, traditional experience is of little value as compared with the accumulation of carefully observed facts by many competent observers, and the guiding principles which are gradually but surely evolved from the study and comparison of those facts. It is with much satisfaction then that we have to bring under the notice of our readers a recently published volume by Mr. BURBIDGE,* in which the author has classified and brought together in a manner to render them easy of access to gardeners and to physiologists a large accumulation of facts concerning the propagation of plants and their improvement by cultivation.

Starting with the very practical details involved in the consideration of propagating-houses, seed sowing, the means of transmitting to long distances seeds or plants, the modes of grafting and the like—all subjects more or less familiar to every practical gardener—the author passes on to what we consider the most valuable parts of his book. This consists first in the discussion of the process of fertilisation in plants, whether by natural or artificial means. The whole subject of hybridism and cross-breeding hence is passed under review. Under this head Mr. BURBIDGE with much labour and industry has collected from the scattered records in our columns and in those of other gardening journals an immense mass of information. It should be a matter of satisfaction to journalists to find so good a use made of the facts which they have been the means of making public, and it should be an inducement to gardeners and others who have the opportunity to record their observations, in the confident expectation that every fact, provided it be carefully observed and accurately recorded, must sooner or later be of value. The present work also will, we hope, do much towards inducing our raisers of new plants and florists' flowers to systematise their experiments, to start with a well-defined object, to pursue it steadily and carefully, and to record every step in the process, every failure, as well as every success, with strict accuracy. Much profitless labour may be saved by the careful study of Mr. DAWKIN'S works and of the present volume. In many cases there will no longer be any excuse for blind groping, but a sure basis or a trustworthy indication may be found in the treatises to which we have alluded.

From the discussion of generalities Mr. BURBIDGE proceeds secondly to give a re-

view of a large number of the most popular or useful genera of plants arranged under their natural orders, and these disposed alphabetically. But little is done in the way of description, nor is this necessary, as there are plenty of works which supply that kind of information. The most usually adopted modes of propagation are, however, described, and, what is especially useful, the history of the principal garden forms is given. For this latter information we cordially thank Mr. BURBIDGE. Only those who know the labour and difficulty of searching—often in vain—through the now voluminous records of horticulture for the history and introduction of a particular form raised in gardens, can sufficiently estimate the value of this portion of Mr. BURBIDGE'S labours. It is comparatively easy to trace the history of a wild plant, from whatever country, in the records of science, but the records of horticulture are in many respects, and often unavoidably so, chaotic.

To illustrate the value of Mr. BURBIDGE'S labours in this department it will suffice to mention that under the head Begonia a pretty complete list of all the more desirable hybrid Begonias is given, together with their parentage and other details. No doubt some will look for this in some particular favourite, but in this case it may be assumed that he who raised or sent out the plant was too careless to publish at the same time any authentic or trustworthy information on the history of the plant in question. If this be the case it is no wonder that a compiler of a book like Mr. BURBIDGE'S should pass over all such plants as waifs and strays whose papers are not in order, and which therefore he is not bound to take notice of. A well drawn-up calendar of directions for each month in the year is given, and so full of information is the book that it wells over into the index, where we find intermixed with the usual formal array of words little descriptive paragraphs, which we suppose have arrived too late for insertion in the ordinary course. Mr. BURBIDGE may fairly congratulate himself on having produced one of the most interesting and useful books with which gardening literature has of late been enriched.

The committee appointed to inquire into the probable causes of the outbreak of SCURVY in the recent ARCTIC EXPEDITION was composed of naval officers, former arctic explorers, and medical men. The result at which they arrived was exactly what might have been expected, and is in full accord with the teachings of science and the dictates of experience. The matter is very simple. The Commander of the Expedition, disregarding the warnings of his medical subordinates, allowed the sledge parties to start on their exhausting and perilous duties without a proper supply of lime-juce. Of course great allowances must be made for a commander under such difficult circumstances, and where an additional ounce weight is a matter for consideration. Sir GEORGE NARES, too, had won the cordial esteem of his officers and men when in the command of the *Challenger*, and was no less popular and efficient when transferred to the command of the Arctic Expedition. The lamentable want of judgment on this special occasion can therefore hardly be severely visited upon so distinguished an officer, unless by those who never make mistakes either of omission or of commission.

Unless the cause of a disease be known, prevention, in the true sense of the word, is an impossibility, and the cure impracticable. In too many cases the actual cause of disease is either unknown, or, if known, it is beyond the reach either of prevention or of cure. Palliation then is the only resource left. These conditions do not apply in the case of scurvy. According to the generally received opinion of medical men, the cause of scurvy is thoroughly well known; its prevention is as much, or more,

a matter of certainty as that of small-pox by vaccination, very much more than that of fever by quinine; its cure far more within the power of the doctors. Whatever regrets then we may feel at this unfortunate matter, they are tempered by the renewed assurance that in this matter we have prevention and cure both within our grasp, if we would but use them. Lime-juce, however, is by no means the only antiscorbutic, though it may be the most generally convenient. Where neither it nor fresh vegetables nor fruits can be obtained, it might be well to try the seeds of crucifers, such as those of Mustard, Cress, Turnip, &c., and, as we have pointed out, it would even be possible, on a small scale, to ensure something approaching a salad even in the Arctic regions by the use of heated cases such as those constructed for trying seeds, raising cuttings, and the like. Of course the quantity would be very limited, and, therefore, selection would have to be exercised as to those to whom such luxuries should be permitted. Potatoes, preserved vegetables, dried Apples, and other fruits form part of the equipment of all expeditions, but they are bulky and not so efficacious as lime-juce, still less so than fresh vegetables.

—IMPORTANT as are the Palms generally for their varied economic uses, the produce of a few only find their way into European commerce, the most valued being the Cocoa-nut, the Date Palm, and the Oil Palm. The habits of the two former are familiar to most persons having any interest in plants, from figures in scientific and popular works. The form of the Oil Palm (*Elaeis guineensis*, L.) is, on the other hand, but very little known, the tree never having been accurately reproduced in any popular book. It is usually described as growing to a height of from 30 to 40 feet, the trunk being thickly covered with the remains of the old leaf-stalks. Two species of *Elaeis* only are described—the one under notice, which is a native of West Tropical Africa, and *Elaeis melanococca*, Gaertn., a South American species; this latter, however, is of no economic or commercial value, while the oil obtained from the former is one of the most valuable products imported into this country from the great African continent. This Palm is very abundant in various districts of Western Tropical Africa; Dr. BAUCHE describes it as being most abundant in Ibo, Benin, Yoruba, and Bonu, also very abundant in Kororua, and in countries behind Adamawa; plentiful in Bauta, Zarya, Gbari, and Nupe, and along the road to Gonja, and along the Niger to near Yaori. He further says: "At West Day in Prince's Island we saw either a variety of the Oil Palm, or else another species of *Elaeis*. The nuts were larger, the foliage brighter green, and the trunk more robust, but we saw neither flowers nor ripe fruit." The principal ports in the right hemisphere are the Bights of Benue and Biafra, Badagry, Porto Novo, Whydah, Aliquah, Lagos, and Palmaria; from Liberia also large quantities are exported to Great Britain and the United States. The River Bonny supplies the largest quantity of palm oil that is brought from any river in Western Africa. The trade with the natives is carried on by barter, the oil being paid for mostly in Birmingham and Manchester manufactures, glass and agate beads of various forms, sizes, and finish, being some of the recognised articles of exchange. The fruits from which the oil is obtained are borne in dense heads or spadices, sometimes measuring 2 feet long and 2 or more feet in circumference, the fruits themselves being each about an inch or an inch and a half long, and an inch in diameter. The seeds are enclosed in a very hard bony shell, which is again covered with a softish pulpy substance, outwardly, when ripe, of a bright orange or yellow colour. It is from this outer, fleshy portion of the fruit that the best oil is obtained. On the west African coast one of the most important branches of manufacture is that of palm oil. When sufficiently ripe the fruits are gathered chiefly by men. They are boiled by women in large earthenware pots, after which they are crushed in mortars. They are then placed in large clay vats filled with water, and women are employed to tread out the oil, which immediately comes to the surface, when it is collected and again boiled to throw off the water, after which it is placed in barrels or casks for

* *Cultivated Plants: their Propagation and Improvement*, By F. W. Burbidge. (Blackwood.)

exportation. Good palm oil is of a bright orange or deep yellow colour, about the consistence of butter, and when fresh it has an agreeable smell, somewhat resembling Violets. It is now most extensively used in the manufacture of soap and candles, and also for greasing the axles of railway carriage wheels. The two first uses, however, are what the plants are mostly prized for. In Africa the solid oil is used for culinary purposes, often in place of butter, and the hard seeds are made into various ornamental articles. The engraving (fig. 60) is from a photograph

continued almost without cessation all through the mild winter, and, therefore, the mass of bloom is almost exhausted. That Violets will be found to grace the festival with their perfume there can be little doubt, but hardly in such quantities as humble speculators may think desirable, especially with the dark blue highest in public esteem. Cambridge could hardly have found in all our hardy flora a more lovely or fitting light blue than the *Myosotis dissitiflora*. Sprays of this charming Forget-me-Not are in great request either for bouquets or button-holes, but the date is

— Some two years ago, Mr. WILLS, of South Kensington, conceived the idea of covering the late Prince CONSORT'S National Memorial in Kensington Gardens with glass, and in connection with it the formation of a series of gardens in which to represent the vegetation of each quarter of the globe. Mr. WILLS has been fortunate in securing the advice and assistance of Mr. ALFRED BEDBOROUGH, the eminent architect, of Westminster, who has successfully produced a set of plans and drawings, quite unique in design, and totally different from those of any building

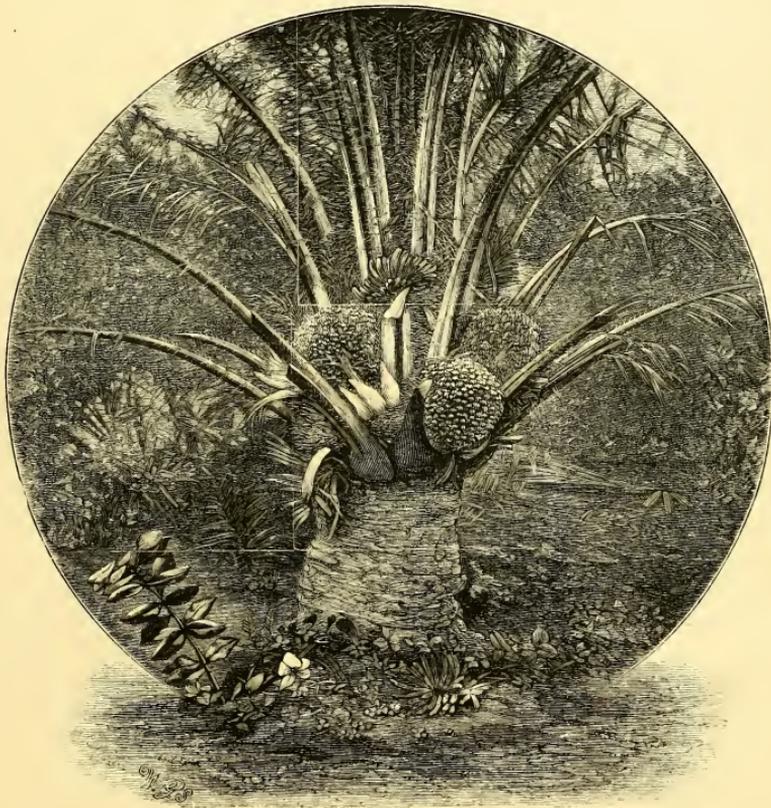


FIG. 60.—THE OIL PALM TREE, ELAIS GUINEENSIS.

recently presented to the Kew Museum, and represents a young plant growing in a dry, and not a swampy situation.

— The great AQUATIC CONTEST of the Universities which takes place this morning will, for various reasons, be somewhat shorn of the FLORAL ACCOMPANIMENTS with which popular taste has associated it. Usually falling at a time when the dark blue Violet is in great abundance, Oxford has seldom wanted for floral favours of its favourite hue to dispense to its myriads of followers. Curiously enough this year, although the race falls earlier than usual, the Violet harvest is nearly over, as the gathering has con-

too early to get these in beauty from the open air, and it is possibly portentous of the result of the coming struggle that even under glass the flowers persist in remaining pale red rather than turning to the desired tint of corulean blue. Some useful material for both sides may be found in the pretty Grape Hyacinths where growing in sheltered nooks, but early hardy blue flowers are not abundant. The Cineraria will probably furnish no small share of the popular colours, but flowers grown under glass are not for the millions. Nevertheless it is pleasant to find that even under the popular excitement consequent upon such a contest, flowers and their sweet influences are not forgotten.

hitherto executed in glass and iron. Mr. WILLS and Mr. BEDBOROUGH have had the honour of submitting to HER MAJESTY and His Royal Highness the Prince of WALES the plans and drawings above alluded to, and His Royal Highness was graciously expressed to signify his approval of the scheme, and expressed a wish that the undertaking might be carried out. We purpose shortly giving an engraving from this magnificent design, and shall then give further details as to its construction, &c.

— Under the name of PERSIAN "MANNA" some samples of an olive-green, solid, waxy-looking substance were exhibited by Mr. A. Y. STEWART, of the

Apothecaries' Hall, at the last meeting of the Linnean Society. Although the information forwarded was to the effect that it had been gathered on the rocks after dense mist hung about, there is some reason to believe it may be the product of the Tamarisk. Whether it has any value as a medicinal agent, or may be valuable as an article of commerce, remains to be proved. At present its chemical constitution and properties are under examination.

— The *Melbourne Argus* states that Mr. GOLDFIE, the plant collector, who has been exploring in New Guinea around Port Moresby, has returned to Sydney on account of ill health, bringing with him a large botanical and zoological collection of a very interesting character. Fifteen cases of living plants have been sent to this country, while preserved specimens have been forwarded to HIRON MÜLLER, of the Melbourne University, for description and comparison. Mr. GOLDFIE started from Port Moresby, but did not penetrate farther inland than about 20 miles from the shore. He was enabled, however, to observe many interesting facts, as well as to study the manners and customs of several tribes of natives, whose confidence he in every instance won by kindness. A splendid grazing country, with many grasses identical with those found in Australia, well watered with numerous small rivers, and dotted with stunted Eucalypti, was found to be the general character of the coast district, beyond which a mountain range was seen to rise far inland. Here and there were seen villages, surrounded by extensive plains, on which the natives had large Cocoa-nut and Banana plantations in cultivation. A little way inland the traveller met with an insufferable torment in the shape of a minute reddish insect, which covered the body from head to foot with pimples, causing the greatest irritation. It was found extremely unorthly on the coast, and the mission station at Port Moresby has been entirely abandoned by Europeans; a few Rotongona native teachers remain, but great sickness abounds even amongst them. It was observed as remarkable that the sea breeze was invariably unhealthy, while the wind from the interior was salubrious.

— From REGEI'S *Gartenflora* we learn that the FOUKROYA GIGANTEA, already mentioned in these columns as having flowered at Munich, attained a height of about 21 feet, and of this it made nearly half during the month of October. The greatest elongation in twenty-four hours was 6.3 inches, in a day temperature of 92°-75 and a night temperature of 56°-75. No particulars are given respecting the period of the twenty-four hours in which the maximum intensity of growth took place. At the beginning of October it was about 10 feet high, and by the 16th it had increased nearly 8 feet, or at the rate of about 6 inches per day. After this date, with a much lower temperature both day and night, the rate of growth was much slower.

— THE VEGETABLE POISONS USED BY THE SAMOA ISLANDERS to coat their spears and arrows formed the subject of a paper by the Rev. THOMAS FOWELL, read at the Linnean Society, March 15. It is stated that human thigh-bones are used to tip the spears. The arrows are dipped in a preparation of the chief poisonous ingredient of which is a milky juice from several trees, among others Calophyllum Inophyllum? To this is added a substance got from wasps' nests, and also the fluid derived from putrescent Sea Cucumbers (Holothuria). After dipping, the arrows are smoked in a kind of kiln, and stuck into the flower-stalk of a species of Tacca. This preserved from damp they are laid aside ready for use as occasion may arise. The poison it is said brings on convulsions, tetanus, and death follows; but occasionally only local irritating wounds arise. ERNSTHOLD SEEMANN in his *Flora Vitiensis* has already described certain trees said to yield poisonous extracts, and these somewhat agree with this later account; there are others, however, that are dubious as to the virulent effects that may arise from the said poisoned weapons.

— Although outside of the charmed circle of florists' flowers, the many beautiful species of the HARDY FERULAS offer to the florist material worth both of his love and attention. Perhaps no class of plants present so excellent advantages for hybridisation, especially to the patient and industrious worker;

but even if no beneficial result should flow out of hours so spent there is a fund of happiness in store at all times in the possession of a nice selection of these hardy gems. That the majority begin to flower in the early spring months is rather an advantage, as few of them boast of beauty of a ready kind. Their blooms are rather simple and unpretentious, that might fade into insignificance when compared with the gorgeous Rose or the brilliant Pelargonium; but when seen in spring, ere the eye has become satiated with rich hues, they are gems indeed. How beautiful just now are the forms of denticulata and purpurea, the latter especially presenting a great advance on the first-named in size of truss and colour of flower. The snowy white nivalls is bursting its way to open the petals of the green back of foliage, and intermedia with its pretty pale flowers is doing the same thing. Margiata, charming at all times in the beauty of its foliage, has expanded its purplish blue flowers, that are rather darker than those of intermedia; and minima is following with its pale red blooms. The earliest forms of the cortosides amœna section are already coming into flower, and these will be gay for the next two months or longer. F. abyssinica has its whorl-like truss of blooms ready to open the pale yellow tint of which will give variety to the others. Although later to bloom, the pale powdered fan-like section is not wanting in beauty, the plants looking like the albinos of a large and vari-coloured family.

— Most of our readers, and those especially who are interested in any way in hot-water boilers, will have heard of the "ENDLESS-FLAME-IMPACT BOILER," patented and manufactured by MESSRS. WILLIAM WRIGHT & CO., of Aldrie, N.B. and who, in a pamphlet of the same name, have somewhat volitionally advocated the merits of the new-comer in a pamphlet, entitled *Our Boilers and Heating*, several copies of which have reached us. The Messrs. WRIGHT appear to be very anxious to have their invention taken notice of, and have no doubt an honest belief, in their own interests, in the thing, as indeed they are justly entitled to have; but in the pamphlet before us, which is well reasoned out, and gives some good and sound advice, they have rather oversteer the mark, and claim more for their invention than it is entitled to. The principle of the endless-flame-impact boiler is a good one for attaining quick action, the line of draught being the natural or upright one, which causes the fire, when the damper is the least open, to rush swiftly and smoothly through the flues of the boiler into the chimney at the speed of a racehorse, giving off a fair amount of heat as it passes smoothly over each compartment of the boiler, and carrying a considerable amount of flame, and a large amount of heat, into the chimney, where, of course, it is of no use for heating the boiler. This is a defect in all upright draught boilers, and the more they are pushed the more heat they send into the chimney. The latter fact, of course, applies also to the horizontal boilers, but in a less degree, and, as a consequence, they are more economical. This is a fact apparent to every practical gardener who has to use boilers, and no amount of argument can alter it. Messrs. WRIGHT & Co. claim for their boiler that it is "the most economical;" but on the strength of an opinion which we have obtained from a gentleman qualified to judge of its economy in heating, and who has seen the boiler at work on a moderately cold day when it was being briskly driven, we are of opinion that, with an equal amount of the same kind of coal, as great or greater heat can be got into the same length of 4-inch pipes by means of a well-constructed and properly-set flued saddle, or, what is as good, Stevens' Trentham Boiler. With such a boiler set in the right way, and stoked in a proper manner, more heat will pass into the water for the benefit of the houses, and less up the chimney. When they are pushed, &c., when there is no draught, the action of the endless-flame-impact boilers, and that of the others we have mentioned, is the same, but when the damper is out, there is this difference between them—that the new one is likely to be more wasteful, the older ones fairly economical. What is still wanted in horizontal boilers is the means of effecting more economy when they are being pushed, as must be the case daily where any attempt is made at forcing—a necessity, now-a-days, in every garden of no great kind. Generally speaking, it is in this particular point that all complicated boilers fail, and we have to fall back

again on our old friend the saddle, or an improved modification of it. The Messrs. WRIGHT claim for their boiler that it "requires no setting," but as a matter of fact it would be much better for it, the heat being off by such an amount of highly heated surface being quite sufficient to heat an ordinary sized hot-house, and it really does make the stoker's moon, or, at least, a very hot one. The boiler undoubtedly does require "setting," and would be the better for being beicked round, because in practice it is found that flues with hot air in them, outside and in contact with a hot-water boiler, are the best preservers of the heat in the boiler. This statement is against Messrs. WRIGHT's theory, but it is a fact nevertheless, and every day's experience with horticultural boilers proves it. "Many more such theories as this in the pamphlet are quite as open to objection. The form of boiler is that at work at Drumpeller, the residence of Colonel BUCHANAN, in Lanarkshire, and at Parson's Green, near Edinburgh, the residence of W. S. MITCHELL INNES, Esq., and testimonials highly in favour of the boiler have been sent to the firm from both places. As regards the one issued by the gardener at Parson's Green, it is right that we should point out that while this boiler, a "No. 4 D.," is said in Messrs. WRIGHT's pamphlet to be heated by a steam test of 4-inch piping, it is actually heated under 2200 (not 2300 feet, as inferred by Mr. CLARK in the *Gardener*), and not a fourth of this number of feet requires to be heated above a warm greenhouse temperature at any time—that is, an average of 45° at night, and 50° to 55° during the day, so that it is ridiculous to speak of the hard work required of such a reputed powerful boiler. We will only further say of the boiler that it is a compact and useful one for a small place where room is an object, as small as a greenhouse. It will also be found very quick in getting up heat, and may be classed with GREEN'S and CANNELL'S, being very similar in principle and effect. Like all complicated boilers, it will be liable to get out of order just at the time it is most wanted, a sharp storm bringing all such cast-iron boilers to grief sooner or later. It is, we are of opinion, no more economical than other well-known boilers already in common use, and from its complicated nature we should anticipate that it is not likely to stand hard work, nor many years of wear and tear.

— Dr. KAMITZ, of Kolosvar, Hungary, has issued the first number of a Journal of Botany, under the title of *Magyar Növénytanulok*. As it is written wholly in Hungarian its circulation in this country is likely to be very limited.

— We are informed that the following gentlemen have consented to act as local hon. secretaries of the NATIONAL ROS SOCIETY, and to promote its interest in their several localities:—Bath: R. B. Cater, Esq.; Bromsgrove: R. Cordell, Esq.; Cheshie; J. Tinsley, Esq.; Croydon: E. Mawley, Esq.; Exeter: R. G. B. Baker, Esq.; Canterbury: W. Mount, Esq.; Hereford: the Rev. C. H. Balmer; Maidstone: Hubert Densted, Esq.; Leek: W. Newall, Esq.; Newark: the Rev. H. G. Cresswell, Esq.; Northampton: Alan Charles Windsor; and vicinity: G. Hawtrey Esq.; Westminster: J. Harton, Esq.; and Oxford: C. R. Ridley, Esq.

— The Swiss Government has not hesitated to make any sacrifice to stop the progress of the PHYLLOXERA, considering that if success be only temporary the arrest will save millions (francs). The stamping-out measures carried out at Pregny, near Geneva, have, according to the *Journal Officiel de la République Française*, March 8, 1877, been so far entirely successful. In consideration of these facts the French Academy of Sciences has recommended to the Government:—1. The prohibition of the export of Vines out of infested districts. 2. The prohibition of the introduction and planting of infested Vines in districts not yet affected. 3. To uproot and burn all Vines and roots of Vines, and to disinfest the soil in the neighbourhood of an infested district, so as to afford no point for fresh attack. 4. To disinfest the soil and the plants around the district in which the Vines have been thus destroyed. 5. To disinfest the Vines in the district around the last-mentioned area.

— In consequence of the death of the late EDWARD NEWMAN some changes have been made

in the editorial staff of that useful publication, the *Entomologist*. A list of the more recently discovered insects and gaul producers is given, together with a great variety of useful and interesting information, showing a healthy tendency on the part of entomologists to break away from the mere collecting and recording tendencies of former days, or rather to add to it by notes on the life history of the observed insects. Woodcuts are also given, that in the February number representing a bumble bee in this country, or, at least, not previously recorded—*Melitta didyma*. A new feature is to be introduced in the shape of photographic portraits of eminent naturalists.

— Some members of the Central Horticultural Society of France are engaged on some cultural and applicatory EXPERIMENTS WITH *CYPERUS ESCULENTUS*, a sedge having edible tuberos roots. Some cakes and a preparation of a kind of oregan from the tubers were declared by the Society to be excellent, and further experiments were recommended. It had been objected that the cultivation of this plant in the climate of Paris would often prove unprofitable, because it is very susceptible to frosts, and the tubers are destroyed by comparatively slight frosts; but by the method of cultivation found most successful this is of little consequence, as the sowing or planting is done in May, and the season for lifting and using the tubers commences in August and terminates in October. The following analysis of the composition of the tubers is interesting, though it does not appear probable that the products of this plant will ever be of sufficient quantity to become of real commercial importance. In two parts there are 7.10 of water, 28.0 of oil, 29.0 of starch, 14.07 of crystallisable sugar, 0.87 of albumen, 14.01 of cellulose, and 6.89 of gum, colouring matter, salts.

— According to a report made to the General Council of Savoie and Loire, as quoted from the *Sud-Est* by the *Revue Horticole*, the experiments with the SULPHO-CARBONATE OF POTASSIUM as a remedy against the Phylloxera have been unsatisfactory. The sulpho-carbonate indeed kills the Phylloxera when it comes into contact with them, but if even only a very few insects escape contact with the poison their fertility is so great that a new population takes the place of that which has been destroyed. But a short time, therefore, has been required to show that the apparent success of the application was but temporary. In fact those Vines which on August 10 were free from Phylloxera to all appearance, on October 21 were found infested with legions of the insect, and those Vines to which the sulpho-carbonate was twice applied were fully as much affected as those to which one application only was made. The experiments were carefully carried out according to M. DUBAS' directions over a space of 2½ hectares (5 acres about) of vineyard for forty-seven days, and the result is that the sulpho-carbonate of potassium has been found powerless to destroy the Phylloxera. The cost of the experiment was calculated to be 8522 francs.

— The great YORKSHIRE GALA, which is the great floral exhibition of York, opened this year on June 13, and comprised in the schedule of prizes are a few features of more than ordinary interest. One of these is a class for twelve large Roses, distinct, in pots, for which a 1st prize of £25, and a 2d prize of £15 is offered, and the competition is limited to exhibitors residing south of the Trent. The York people, who always infuse great spirit into their shows, would, no doubt, be highly gratified by a visit from Mr. C. TURNER and others. PAUL & SON, of Leamington, in competition for the fine prizes and seeing there is a marked death of large shows in the South, these celebrated growers may perhaps be induced to take their productions to the metropolis of Yorkshire. Good prizes are also offered for sixteen hardy Rhododendrons in flower, which is a new feature in the schedule, and one likely to bring a spirited competition.

— The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, March 26, when the adjourned discussion on Mr. J. LUGAS' paper, entitled "Hydrogeology; one of the Developments of Modern Practical Geology," will be resumed. The chair to be taken at eight o'clock.

LAMBTON CASTLE.

(Continued from p. 343.)

THE VINERIES.—The glass department is very extensive, but that portion of it which is devoted to Vines, especially the principal range, wherein have been grown the Grapes that have produced such a sensation amongst growers of this fruit, and have earned for Mr. Hunter such a widespread reputation as a Grape grower, will no doubt to others, as it was to me, be of more than ordinary interest. In the early part of the immense bunches which Mr. Hunter has grown which culminated in his 21 lb. 12 oz. bunch of Black Hamburgh, exhibited at the International Show at Belfast in 1874, and which, taking the variety into account, still stands unrivalled for weight, his greatest achievement, I hold, was the collection of ten varieties shown at the Manchester International Fruit Show, September, 1873; these would fully average from 7 lb. 10 8 lb. each. Those who can grow good Grapes know how easy it is to give perfect finish to small bunches as compared with large ones; yet, notwithstanding the unusual weight of Mr. Hunter's Grapes on this occasion, they were as near perfection of finish as possible.

After Mr. Hunter had grown the extraordinary bunch of Hamburgh exhibited at the Belfast International Show already alluded to, he gave to the gardening world an account of his practice, yet the details were scarcely so complete in some respects as to clearly convey the exceptional nature of the ground on which these vineries are built, as also the considerable difference in level and temporary means connected with the cultivation of the Vines, between his practice, and that usually followed by Grape growers. The ground here presents natural difficulties such as seldom have to be contended with. There are over 30 feet of quicksand before coming to a solid foundation, yet the surface slopes rapidly to the south by south-east, necessitating the formation of terraces, on which the ranges, which are placed parallel at a considerable distance apart, are found. The first range, a lean-to 330 feet long, is a single house, and the second, a double house, is built upon pillars driven through the quicksand into the solid clay underneath, upon which the walls stand on arches. The front wall is 12 inches high above the ground-level, with hinged lights about 2 feet deep above. The top ventilation consists of a hinged light 2 feet wide, and ventilating shutters near the top of the back wall between each rafter, 2½ feet long by 10 inches wide. The rafters are 6 feet apart, and are each supported by an upright iron pillar midway from top to bottom. The rafters occupy all the inside of the house, and about 15 feet outside as well, and average 4 feet in depth, the whole concreted underneath. It is a very difficult matter to insure permanency in the drainage in such ground, as if ever the sand can get into the pipes they are certain to become choked. A brick-built drain with pipes laid inside of it runs immediately in front of the border, a little below the bottom of the concrete. Into this from back to front of the border at intervals of 6 feet are placed rows of 6-inch pipes, and in the opposite direction, from end to end of the border, are rows of 6 feet apart; between and over these was put 12 inches of bricks, above these broken stones and clean gravel, on the top and over all fresh turf, with the grass side downwards. As will be seen, such drainage is not only ample in quantity but necessarily quick in its action, and its construction is such as to render it scarcely possible that it should become choked.

The soil consists of the ordinary loam of the neighbourhood. To each six loads of loam was added one of lime rubbish, one of charcoal, one of cow manure, and 3 cwt. of broken bones; 12 portions of the loam had been stacked for a year before use, the rest was fresh cut. The first house, commencing at the eastern end, is some 90 feet by 16 feet. The Vines in this house were planted in 1869, also in the adjoining houses inside. They are seventeen in number, consisting of White Nice, Trebbiano, Royal Vineyard, Alicante, Gros Colman, Lady Downe's, both black and white varieties; Raisin de Calabre, Gros Guillaume, and Muscat Troveren. At the time of my visit an immense crop of large bunches were about ripe, as follows: White Nice Vineyard, seven bunches, 3 lb. to 4 lb.; Alicante, ten bunches, 4 lb. to 7 lb.; Gros Colman, six bunches, 4 lb. to 6 lb. Another Gros Colman,

grafted two years ago, and not more than half way up the rafter, was carrying four immense bunches, from 4 lb. to 7 lb. (see fig. 61, p. 376.) Black Lady Downe's had twelve bunches, the largest berries I have ever seen: some of the bunches would run 4 lbs.; Raisin de Calabre, one of its each (one of these I afterwards saw weighed drew 10 lb. 3 oz.); a Gros Guillaume, with two rods each, carrying six bunches, all except one of which would draw from 6 lb. to 11 lb.; Muscat Troveren, seven bunches, 5 lb. to 7 lb. The above weights I feel confident are rather under the mark, and in some cases the number of bunches mentioned are the produce of one of the two rods of which the Vine consists. The description conveys a very imperfect idea of the fine appearance of the bunches, and the unusual weight of the crop collectively, which in the case of two or three of the black varieties was too much to permit their quite covering up.

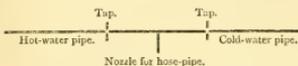
The next house is 55 feet by 22, containing thirteen Vines, all Muscats, planted about the same time as the last; half the crop was cut, the remainder was fine in every way, averaging from 3 to 5 lb. per bunch. Next this, and occupying the centre of the range, is a conservatory, which will be noticed hereafter, and through which we pass to the adjoining Vinery, in which is the Black Hamburgh Vine which bore the enormous bunch of 21 lb. 12 oz. The house is 55 feet by 22 feet, and in it are fourteen Vines, comprising Gros Guillaume, Trebbiano, Raisin de Calabre, Mrs. Pince's Black Mafta, Foster's Seedling, Burchard's Prince; the remainder, Hamburghs, collectively bearing a heavy crop of big, finely-finished bunches, similar in character to the house first described. The Burchard's Prince had eight bunches that would run from 6 lb. to 8 lb. each. The Hamburgh Vine which has grown the large bunches still shows a disposition to produce larger bunches than others in the same house.

The next and last house in this block is similar in length and width to the first vinery at the other end of the range; it is filled with Peaches and Nectarines—most of the old-established kinds, and some of the new varieties. The crop was all but over. Rivers' Victoria Nectarine was bearing some very fine highly coloured fruit.

To make the whole course of treatment, which the extraordinary Vines in this range are subject to, intelligible, it is necessary to again revert to them, and give some details as to the watering and other matters. Many things which I have conversed with, have not seen the Vines, are under the impression that the foliage and wood, especially the latter, must be of an unusual strength; in fact, proportionately with the fruit, larger and stronger than has been seen before, yet such is by no means the case. The main stems of the Vines collectively are thick for their age, but not extraordinarily so. The current year's shoots of most of them are also strong, yet not more so than ordinary varieties with, neither is the foliage anything remarkable in size, as this is made up by the immense quantity of leaves which the Vines carry. Most of the shoots before being stopped are allowed to run twice or three the length most growers permit them, often taken across the adjoining cane right up to the next Vine, 6 or 7 feet in length, but not suffered to extend further afterwards, except a few laterals that are allowed to run a short distance when the crop is approaching completion.

More front air is given them in the earlier stages of the crop than many growers admit. As Mr. Hunter stated in the paper he read before the members of the Gardeners' Institute at Darlington, he gives an extra quantity of manure-water both to the inside and outside borders. To provide this special provision is made; the natural ascent of the ground behind this range favours the supply of both hot and cold water. At the back of the next range, which runs parallel with this on the higher ground, with a considerable space betwixt, there is an immense open tank, into which can be run at pleasure from land still higher an unlimited quantity of water, so to supply the whole requirements of the houses and conservatory. From this an inch-and-a-half pipe is laid to a very large cistern, several yards square, at the back of the range of vineries in question. It is considerably elevated, so as to give sufficient pressure. This furnishes the cold water, and into it a bag of guano at a time is emptied, and kept stirred continually whilst the

water is being run on to the borders. To afford the warm water requisite to bring it up to the temperature it is applied at—85° to 90°—a similar pipe is brought from the hot-water pipes in the upper range of houses and connected together, thus—



As will be seen, the hot and cold water pipes are joined together at the junction, where is the nozzle on which to screw the hose-pipes. It will be easily understood that the temperature of the water thus mixed together can be regulated to a nicety by the use of the taps on the hot and cold water pipes respectively. The arrangement is both simple and effectual. The border inside and out of the thirdinery already noticed—and all, I understand, were similarly treated—received in a single season over 14,000 gallons of the warm manure-water, applied in this way. As Mr. Hunter truly said, if it had to be put on by the use of the watering-pot the quantity would fall very far short. A warm day is chosen for applying it, when little or no fire-heat would be needed in the range of houses from the pipes of which the warm water is brought; the fires are then put on as hard as they can go, to heat the cold water that is running into the boiler to supply the place of what is being run off.

Many have supposed there must be something in the constituents of the soil here more than usually favourable to the development of the Vine; but such evidently is not the case. From what I could see of the surrounding land I should take it to be a fair loam, but I have seen plenty I should prefer before it. The fact of the whole district resting on a bed of coal does not speak favourably for the surface soil. The capabilities of these Vines to produce such extraordinary bunches is evidently due to a combination of several conditions, any one of which, being absent would render the others nugatory. The more than ordinary root-space both in depth and superficial extent of border, and the rich ingredients in the soil, favour the existence of an unusual quantity of roots, which in their turn cause the production of an immense amount of leaf-surface, the retention of which is rendered possible by the ample head-room which the Vines have allowed them, all nourished and sustained by an unstinted supply of rich liquid feeding, which, from the porous nature of the border and perfect drainage, can be applied with the best results; whereas, if the soil were of an adhesive nature, or the drainage all deficient, it would have quickly caused the destruction of the roots, which again are prevented by the concreted bottom from getting down into anything objectionable that might be in the subsoil.

To the above collective favourable conditions, conjointly with skilful and intelligent management, I consider are due the results that have given these Vines such deserved celebrity. The way they succeed with quantities of water so much above that which is usually given, bears out an opinion I have long entertained, and frequently expressed, that Vines in this country rarely get as much water as they require, and that a good deal of the shanking and deficiency of colour we see is the result of an insufficient supply of moisture to the roots during the time it is most required when the fruit is swelling, and through which the roots are partially stagnated, and not fully able to answer the demand made upon them by the fruit in its last stages of completion. There has been so much said and written about the roots of Vines being too wet, and of the ills resulting from it, that hundreds of people are deterred from giving enough water, forgetting the widely different conditions under which the roots exist when in a close, adhesive, badly-drained border, and that in which they are placed when the border is composed of the right materials properly put together, and thoroughly drained. *T. Barnes.*

(To be continued.)

Home Correspondence.

Disease-Prevention in Potatoes.—The two concluding sentences bearing reference to my proposed treatment of Potatoes (p. 340, *ante*) will tend to produce an erroneous impression unless corrected. Will you, therefore, allow me to say I proceed upon the basis that the germs of disease are in the ground everywhere. These disease-producers need not, therefore, be looked for, because it is certain they are present in every place and in every position. My plan is simply to destroy all spores, resting-spores, and eggs in the manurial dressings (where they most abound) and in the ground during the winter and spring months. This will give the

Potatoes a fair chance at starting. In the experiments I have arranged to personally superintend I shall treat the Potatoes again just before the early autumnal rains set in in the following manner:—A dry, impalpable powder of such extreme lightness has been prepared that the slightest possible agitation will distribute it through the air in almost invisible clouds to considerable distances. This powder will be disseminated over all the plants included in the experiment, so that it may fall with tolerable evenness over the entire crop. The powder is of such a nature that the slightest moisture will dissolve it, and every individual grain thus dissolved will be simply fatal to all fungus life. It will be therefore seen my plan is to treat the Potatoes from within and from without. Thus fortified I have little fear of stray spores from infected districts, as I hope to prevent their gaining a foothold. *W. G. Smith.*

Lobelia pumila magnifica.—Mr. Morgan has given a true history, as far as it goes, of the Lobelia pumila magnifica which Mr. Davidson calls Emperor William. I have only to add that I raised the Lobelia at the Pine-apple Nursery, and received a First-class Certificate for it, both at Kensington and Regent's Park in 1874. *The Gardeners' Year Book* has it thus:—“Lobelia (pumila) magnifica” (J. Baxter). Large, deep violet-blue flowers, very free and effective.” I gave Mr. Brownell, gardener at The Mount, Harrow, a pinch of the seed from which I raised it, and on my visiting him in the September after I had received the certificate, I found he had the correct sort. Being afraid of its getting too widely distributed, as Mr. B. told me all the gardeners in the neighbourhood were asking him for some, I offered to take the lot. He would not part with all of it, so, for obvious reasons, I did not tell him what he really

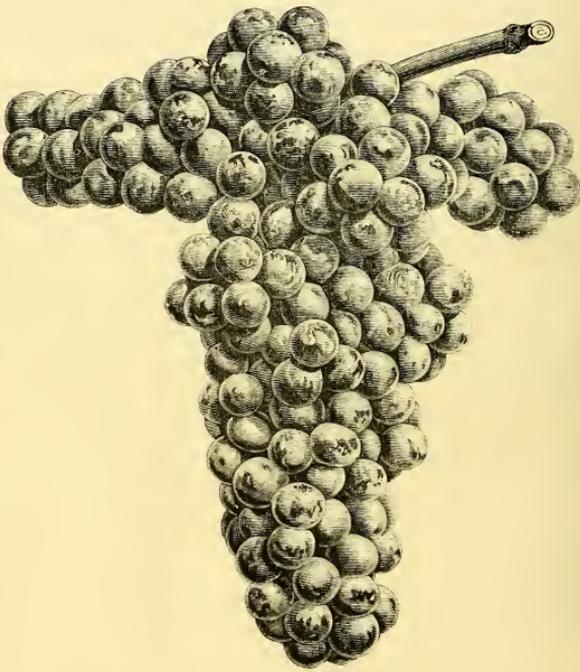


FIG. 61.—BUNCH OF GROS COLMAN GRAPE GROWN BY MR. HUNTER AT LAMPTON CASTLE.

The National Rose Society.—We must all regret that there is a clashing between the National Rose Society's exhibition and the Gardeners' Benevolent dinner on July 4, but I fear there is no remedy for it; the fact is, Mr. Cutler, who is always on the look out for some favourable gap to swell the sails of his vessel, thought, when our exhibition was announced for July 4, that he had caught the breeze, being ignorant that the members of the National Rose Society contemplated dining together also, and so the two ships have fouled one another; but, after all, I do not suppose it will affect half a dozen persons. As to the suggestion that the Rose dinner should be turned into a lunch, imagine a lunch at 2 or 3 o'clock (it could not be before) of somewhat excited exhibitors, managers, &c., and then to add to that a dinner at 6 [7] o'clock, with I do not know how many courses, &c.—what a gallant crop of headaches, bad stomachs, &c., and what a capital time for the family doctor! I do not think that plan could answer, and so I fear things must remain as they were. The committee meets on Wednesday, and their decision will be final. *D. Dial.*

had, although when he showed it me he said, “There—how is that, compared with pumila magnifica?” I should add that I sent the Pine-apple stock out in April, 1875; those Mr. Morgan speaks of I sold on my own account from Mr. Brownell's stock. *John Baxter.*

The Alnwick Seedling Grape.—I have to beg your publishing in next week's issue the enclosed letter, which I addressed to the secretary of the Fruit Committee of the Royal Horticultural Society. I think I am in all fairness entitled to this consideration, as it will serve to remove any false impression caused by the misapprehension of my previous letter, which the committee evidently had, and which will also give a fair reason for the change in the name. *D. P. Bell, Clive House, Alnwick.*

“To the Secretary of the Fruit Committee of the Royal Horticultural Society.

“SIR,—I beg to acknowledge receipt of extract from the minutes of the Fruit Committee of the Royal Horticultural Society respecting Clive House Seedling, and

most express my astonishment that the committee should have passed such a minute without first asking from me an explanation of the apparent inconsistency.

The whole of the seedlings raised by Mr. Bailey were from the same cross—the cross as given by me in my letter to the committee. You may think it paradoxical to state, in the *Journal of Horticulture*, that it is a founding, &c., but I hold that the two statements are perfectly reconcilable. The first refers to the origin of my Vine, the second to the origin of the plants now at Alnwick Castle, as the rest of my letter clearly shows.

"In addition to previous evidence I have now that of Mr. G. G. Hill, head-gardener at Alnwick Castle, Glasgow, and formerly foreman at Alnwick Castle Gardens, who planted the Vine in question, and testifies that there are no other seedlings than those left by Mr. Bailey, as he is well known to us."

"My explanation then on this point is that my statement about the uncertainty of the percentage and composition of nothing do to with the original production of the seedling, but referred to the immediate source, to the particular plant from which my plant was taken, and its relation to those now being detected to be the same as have been known to us."

"As for the name Clive House Seedling, which you may remember I reluctantly gave on the spur of the moment to have been maintained against me by the Committee, if they look upon it as implying—that I have never once pretended—that it was my own raising, and I am quite willing to adopt any name they may suggest, provided it should be free from local or personal bias."

"In closing, I must strongly disclaim the charge of the Fruit Committee, that I withheld the name of the origin of the Grape. My readiness to answer all questions, my immediate contradiction in the *Journal of Horticulture* of a groundless claim, and my full statement of the facts of the case, ought to have produced such a charge; and I trust that the Fruit Committee will see their way to withdraw it, and to place their withdrawal on their minutes.

"I have nothing of conceal. If required, I am prepared to show that I obtained my Vines fairly and openly, and am indebted to no man for them, and that I never got to blame for a mistake made which put me in possession of this one and has preserved it from destruction. At the risk of unpleasant personalities I will, if required, defend my own name and property; but I trust that my present silence on personal transactions will not be deemed a withholding of the facts of the case. If the Fruit Committee have any questions to ask, my suggestion to make it all give them my full and candid consideration.—I am, Sir, &c."

"D. P. BELL."

Chilidanthus fragrans.—It has often been a source of surprise to us that such difficulty has been experienced in flowering *Chilidanthus fragrans*, and on mentioning the fact to several well-known bulb cultivators, we were met with the reply that "they had tried all means to induce it to flower with success, and were satisfied if they could not do better than our selves." We have tried, and, as a proof that we are not boasting, enclose herewith a flower for your inspection, and think you will be delighted with its delicious fragrance. We got a great number planted out in beds during the summer of last year, and these, on the first appearance of frost, were lifted. We selected four strong bulbs from the bulk as an experiment. These were placed in a small open box containing leaf-soil, and placed in the stove. No moisture was given; in fact, they received quite a baking. About the middle of February they were placed singly in pots of loam and sand, watering gradually as growth became apparent. The first flower-spike showed itself a week ago, and it fully opened on the 17th inst. The length of the house varies from 65° to 70°. It is clear from this experiment that treating the *Chilidanthus* as a border plant is not its proper mode of culture. We think, however, that if treated as a warm greenhouse plant, and that it is a great deal of ground, you will do well to Nerine, that it will prove more easy of flowering. Mrs. Loudon, in the *Ladies' Flower Garden*, gives a plate of it, but it is represented as having an umbel of flowers, while the flowers in this case are solitary. I have mentioned *Chilidanthus fragrans* to Mr. Herbert from a dried specimen, but which appears to differ from *Chilidanthus*, the flowers of the latter being twice as large as the former and the limb four times as large. One of the flowers of the latter was collected by Koelz, in Peru, and it is possible that this may be the *Clinanthus* spoken of by Mrs. Loudon as not having yet been introduced—we shall be glad of your opinion.

The New Plant and Bulb Company, Colchester. [Since it is covered with roses, and the plants in the cross are not very uncommon, and when it happens the one flower is generally larger, by comparison. ED.]

Mice and the Peas.—I have always been troubled with the attack of mice on the earliest Peas, and have considered every means to be taken that I could think of to resist their ravages. Chopping up Gorse, and mixing it along the drills, or spreading ashes, to prevent the mice from destroying the Peas, are both failures, and the only remedy that I have found, by tracing the sun's rays to draw the Peas through the ground much earlier and cleaner. I

have trapped them in various ways, but the best way to keep mice at bay is to soak the Peas in benzoline or paraffin for a few minutes previous to sowing. Since doing this I have not had the Peas attacked in the slightest way, and even the birds have kept away, while in no respect does the oil have the least effect on the germinating power of the Peas. I should like to hear if any of your correspondents have tried this remedy, and what results? *H. C. Oyle, The Gardens, Efford Park, Lynton, Hants.*

Desfontainia spinosa.—In answer to your correspondent's question, I have pleasure in telling him what little there is to tell about my *Desfontainia*, which I planted there in a clump of cypress on my lawn. It is well surrounded by tall Cupressus and Hollies, and faces the south. I gave it good bog soil mixed with some sand. *H.*

Lilium giganteum.—A friend lately brought me from his garden in Norfolk a bulb of *Lilium giganteum*, and told me how the Lily was grown there. As the treatment is rather different from what I have tried and heard of, and seems to be thoroughly successful, I requested a note of it; my mail, I think, is useful to some of your readers. The bulb was placed at the side of a rich Vine border, which had had a heavy dressing of horse and cow manure. These have grown strongly, have flowered and seeded, while other bulbs were placed in the same soil, but in not so much large bulbs and have not flowered. *George F. Wilson, Heatherbank, Weybridge Heath, March 17.*

Reports of Societies.

Royal Horticultural: March 21.—The Treasurer, H. Webb, Esq., in the chair. The only business transacted at the ordinary general meeting was the election of numerous new Fellows. The committee meetings were held in the conservatory, and owing to the very liberal contributions made by several nurserymen the display was an eminently satisfactory one, though we are sorry to have to add that the attendance of visitors was again small.

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

Secretary to the Committee.—It was announced that Mr. Andrew Murray had undertaken to act as honorary secretary to the committee, an announcement which was received with much gratification by the committee.

Hybrid Silene.—The following communication was read from Mr. Anderson Henry:—

"I embrace the opportunity to submit a notice of a hybridising operation which may be worthy of a place in the Scientific Committee. Having, shortly after Messrs. Hooker let it out, obtained a plant of the charming *Silene Hookeri* imported by them from the Oregon, it struck me as a thing capable of improvement, both in its constitution (it is not a vigorous plant) and in the beauty of its flowers. If I could effect a cross between it and the scarcely less beautiful *Silene Elizabethæ*, from the Tyrol Alps, which, with large rose-coloured and more compact flowers, had a stronger constitution, besides being a European species, much harder and better suited to our climate, I accordingly set to work. The cross took, and from the hybridised seedlings, arising on raising one, I obtained a stock more of the habit and aspect of the male parent, *S. Elizabethæ*. Of this hybrid I was very desirous to procure seeds, and to this fact I beg to call your attention. I found that with its own pollen it was sterile, yet while the male property was deficient the female organ had all the appearance of being perfect. I then tried it with the pollen of *S. Elizabethæ*, and from the cross I obtained finely ripened seeds, which I have sown, but which have not yet vegetated. I tried a further cross on the same plan, with the pollen of *S. Elizabethæ*, but though the seed-pods swelled, and promised seeds, none came to perfection. The experiment in its result is quite new to me, as I never before found the potency of the female to be so great in the case of the majority of the plants."

Coffin-lid Disease.—The following communication was received from Mr. Berkeley, to whom the specimens referred to were submitted:—

"The Coffin-lid forwarded to me from the Scientific Committee of the Royal Horticultural Society are infested with *Hemelia*, a genus belonging to the family of the Uredineæ. I have been a student of Wadham College, Oxford, has been making numerous observations on the germination of the spores, and purposes continuing them this spring as soon as the weather is favourable. In every specimen I have seen has been a species of *Penicillium*, but whether from spores of *Penicillium* attached to the *Hemelia* spores is at present uncertain. I have numerous drawings from Mr. Abbey, some of which are highly curious, but last year, when at my request making new observations with a particular view, the spores refused to germinate altogether, and the germination of the majority of them to Mr. Thwaites, who, like myself, is in a state of

philosophic doubt. Doubtless sulphur in some form would destroy the fungus."

Exudation from Leaves of Pines.—Dr. Moore of Glasgow forwarded Pine leaves encrusted with a whitish exudation, which it was suggested might be the work of some fungus. The general opinion of the committee was that it was an exudation not necessarily connected with either fungus or insect.

Aspidiotus Latensis.—Leaves of a species of *Latania* infested with this insect were shown.

Haplus humuli.—Mr. G. F. Wilson showed specimens of the larva of this insect, which had attacked the roots of various species of Heliolebe.

Removal of Male Flowers of Maize.—Mr. A. W. Bennett, of Alnwick Castle, Alnwick, Northumberland, had observed that the farmers cut off the male spikes of the Maize except in one corner of the field, and, on inquiry, he had learnt that it was done either as a matter of routine or with a view of strengthening the plant. He considered that the practice might be advantageous in securing cross-fertilisation. It was stated that in North Italy and in India the practice was not generally followed, and inquiry had been made as to whether the practice was adopted in America.

American Blight on Auricula.—The existence of this was mentioned, and it was desired that specimens be sent for examination.

Japanese Auricula.—Professor Dyer showed a volume of botanical plates executed in Japan, with the native name, as well as with the botanical appellations affixed.

Curious Specimen of Silver Fir.—Mr. Green, Botanic Nurseries, Scapton, showed a specimen of Silver Fir, the trunk of which was rotten and hollow, except at the points whence the branches emerged. It was mentioned that similar phenomena were caused by horrets, which scooped out the softer tissues, leaving the hard and woody portions.

Species of Muscari.—Mr. Harpur-Crewe showed several specimens, which were referred to Mr. Baker for identification. Mr. Crewe also showed a hybrid form from *Cheiranthus matulis*, with darker flowers than usual.

Lachnalia, &c.—Mr. Green showed a flowering plant of *Tillandsia* sp. and of a *Lachnalia*, which were referred to Mr. Baker for determination.

Dryopteris exaltata.—Dr. Masters showed a flower of this plant which he had taken from the garden of the conservatory of the Dowager Marchioness of Normandy, and to which, on account of its rarity, a silver medal was awarded by the Floral Committee. The plant flourishes in the Lakes in the West of England, and was figured in their *Botanical Cabinet*. It has also flowered several times on the Continent, and is figured in Kegel's *Gartenflora*, 1864, t. 421.

Cycad Genus.—Dr. Masters showed, on the part of Mr. W. Bull, a male spike of *Macrozamia M. Kennii*, supposed to be from New Australia, and a female cone of *Lacœpalcarrus cycadifolius*.

Athous niger.—Mr. Barclay, q. to the Earl of Rosebery, showed specimens of this beetle, which was found in a piece of decayed wood.

Proceedings.—A discussion ensued as to the best mode of improving the procedure of the committee so as to render its meetings more generally useful, and to permit freer admission to it on the part of the public. It was ultimately agreed that a sub-committee, consisting of the President, Dr. Hooker, Dr. Masters, Mr. Green, and Mr. Andrew Murray, be appointed to confer with the Council on the subject.

FLORAL COMMITTEE.—G. F. Wilson, Esq., in the chair. A silver-gilt medal was awarded to Messrs. James Veitch & Sons for a large and in all respects admirable display of flowering plants, which consisted of 15 vases of Hyacinths, 2 of Tulips, 2 of the batch shown at Regent's Park, and more fully alluded to in another column; a nice lot of Tulips, a fine display of small flowering plants of various sorts of Clematis, and a charming group of Roses in pots. A silver-gilt medal was also awarded to Mr. John Wills for a large and effective group of admirably grown examples of his various new hybrid *Dracœnas*; and to the same exhibitor the award of a silver medal was made for a large and tastefully arranged group of decorative plants. A silver-gilt medal was also awarded to Mr. Turner for a beautiful group of flowering *Camellias* and *Azaleas*; to Messrs. Cutbush & Son, for an admirable display of Hyacinths; to Messrs. Osborn & Sons for a charming group of plants, principally beautifully grown young specimens of various *Fatimas*; and to Mr. Head, q. to Sir Henry Deek, M.P., Wimbledon House, for a small but select group of Orchids. Certificates of the first class were awarded to Messrs. Veitch and Sons, for *Croton MacArthur*, a large and handsome variety with yellow leaf-stalks and long narrow arching leaves, dilated at the base, intruding towards the apex in some cases, the midrib running out with long thread-like hairs owing to the young specimens of *Fatima*; and to Mr. Turner, for a very pretty, consisting of abundant irregular blotches of clear yellow on a dark green ground; and

Markets.

COVENT GARDEN, March 23. Few samples of good late Grapes are now coming, consequently prices are much enhanced. Strawberries are quite equal to the demand, and are realising some prices as last week. Forced vegetables are in good request, and, with the exception of Cucumbers and new Potatoes, are making higher prices. We are still well supplied with St. Michael's Finest, and also with the following quotations: James Webber, Wholesale Apple Market.

VEGETABLES.

Table listing vegetable prices: Arichokes, per bush, 4 0-; Egg Globe, do., 2 0-; Asparagus, Fr. bun, 1 0-; English, p. bun, 8 0-; Natural bun, 1 0-; Marrows, per bun, 1 6-; Beans, French (new), per 100, 2 0-; French Long-pod, 1/2 bushel, 1 0-; Cauliflowers, per dozen, 1 0-; Brussels Spets, 7 0-; Cabbages, per doz., 1 0-; Carrots, per bunch, 0 6-; New Fr. p. bun, 2 0-; Rhubarb, per bundle, 1 0-; Celery, per bundle, 1 6-; Chalk, per doz., 3 0-; Cucumbers, each, 4 0-; Endive, per doz., 1 0-; Garlic, per lb., 0 6-; Herts, per bunch, 10 0-; Potatoes - Kent, 10 0-; Kidney, £8 per ton.

FRUIT.

Table listing fruit prices: Apples, per 1/2 bushel, 1 0-; Coles, per lb., 1 0-; Raspberries, per 100, 1 0-; Oranges, per 100, 4 0-; Peaches, per doz., 1 0-; Pears, per doz., 1 0-; Pine-apples, per lb., 1 0-; Strawberries, per doz., 1 6-; Plums, per doz., 1 0-.

PLANTS IN POTS.

Table listing potted plants: Azaleas, per dozen, 14 0-; Begonias, per doz., 6 0-; Fuchsias, do., 12 0-; Geraniums, do., 9 0-; Calceolarias, per doz., 9 0-; Pelargoniums, do., 9 0-; Cereus, per dozen, 3 0-; Cyclamen, per doz., 12 0-; Dracena terminalis, 30 0-; Ficus, per doz., 10 0-; Ferns, in pot, p. doz., 6 0-; Ficus elastica, 2 6-; Geraniums, per doz., 9 0-; Heaths, variety, doz., 6 0-; Heliotrope, per doz., 6 0-.

CUT FLOWERS.

Table listing cut flowers: Azaleas, 12 sprays, 0 6-; Carnations, 12 blooms, 2 0-; Camellias, per dozen, 1 6-; Cyclamen, per doz., 3 0-; Fuchsias, per doz., 1 0-; Euphyllium, 12 blms., 1 0-; Euphorbia, 12 sprays, 2 0-; Geraniums, per doz., 9 0-; Heliotrope, 12 spr., 6 0-; Hyacinths, p. dozen, 2 0-; Roman, 12 spr., 1 0-.

SEEDS.

LONDON: March 21. - We have to report an improved inquiry for farm seeds, which, with a continuance of favourable weather, would develop into a brisk demand. For all the leading varieties the prices show this week no alteration. In the absence of any reports from the moderate stocks held in London are of course being reduced by every order which comes to hand. The recent exports of American seed to London from the Continent have also tended to lighten our market. Nearly all the home-grown samples of red Clover which now find their way to Mark Lane are brown and yellow. In the absence of a good harvest of clover at the moderate currencies now ruling, Alkali and white Clover are steady alike in value and demand. Ryegrasses have a lively request, and the same may be said of other varieties which better prices are obtaining. For Sanfoin there is a fair sale at last week's quotations: this article when milled experiences every year increased favour. Ryegrass sown in the autumn is doing well, and seed is held on former terms: the demand continues extremely meagre. For feeding Linseed the trade is also very dull. Lucerne seed being cheap attracts notice. Other articles in the market are at the seed rate, call for no remark. John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.

POTATOS.

The thorough and Spitalfields markets reports state that there has been a quiet sale for Potatoes, and prices have recently varied very little. The market is moderately extensive scale. Kent Regents, 10s. to 11s. per ton; Essex do., 8s. to 10s.; Scotch do., 9s. to 10s.; rocks, 6s. to 10s.; flukes, 12s. to 16s.; Victoria, 10s. to 12s. per ton. In the London market the week comprised 21,322 bags from Hamburg, 16,395 Antwerp, 1797 Bremen, 1503 Brussels, 300 Rango, 49 Rotterdam, 1500 a plingling, 1300 cat. 95 barrels M. 240 sacks. Bolognese, 139 bags Dautic and 115 Herts.

SEED POTATOS.

Special Offer. WARMED True and Free from Disease. In cwt. bags. FLESKIND FLOWER, 5s. per cwt. JERSEY BLUE, 8s. per cwt. DUTCH BELG, 5s. per cwt. EARLY ROSE, 12s. 6d. per cwt. EARLY ORFORD, 10s. per cwt. Fifty other sorts in stock. Net prices for cash orders. No charge for bags, and delivered free on Rail, Norwich. DANIELS BROS., Norwich.

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MESSRS. CLIBRAN AND SON will have great pleasure in sending their PRICED CATALOGUE, 5s. per copy, free by post on application. Their stock of Florist Flowers, Bedding and Soft-wooded Plants generally, are surpassed by few, if any, either in extent or quality, and most of the best varieties being constantly added to the various classes, and the greatest care is taken to keep the varieties true to name. Another great advantage to Customers that order of the plants sent direct from a warm propagating house and sent off, but are all carefully hardened and most of them potted off singly, and are thereby fitted to travel either by rail or post without the slightest injury. A great proportion are autumn-struck plants, and of the best underculture. A. Abutilon, in variety, 3s. per doz. Achillea, in variety, 3s. per doz. Ageratums, in variety, 3s. per doz. Begonias, tuberosa, 6s. and 9s. per doz. Caladium, 12s. per dozen. Camellias, 30s. and 42s. per dozen. Carnations and Fuchsias, 12 plants, 6s.; 12 pairs, 10s. 6d. Carnation, tree, in variety, 2s. per pair. Centaurea rugulosa, 3s. per doz. Christmas trees, near 10,000 now ready, 30s. per 100, 3s. 6d. per doz. Cinerarias, 42s. per 100, 6s. per dozen. Clematis, in variety, 6s. per doz. Cyclamen, in variety, 30s. per 100, 3s. 6d. per doz. Dactylis elegantissima, 3s. per 100, 3s. 6d. per doz. Dahlias, 25s. per 100, 4s. per doz. Delphiniums, splendid sorts, 10s. to 12s. per dozen. Euphorbia, 12s. to 18s. per dozen. Ferns, in pot, and greenhouse, 2s. to 18s. per dozen. Fuchsias, 30s. per 100, 3s. per dozen. Garden Florida, 6s. to 12s. per dozen. Geraniums, in pots, 9s. to 18s. per dozen. Geraniums, Tricolor, 3s. 6d. per dozen. "Bicolor, 30s. per 100, 3s. per dozen. "Silver-edged, 3s. 6d. per dozen. "Double, 30s. per 100, 3s. per dozen. "In pot, for bedding, 12s. to 30s. per dozen. "Zonal, for pot culture, no alteration. Gladioli, to name, 6s. to 9s. per doz. "splendid seedlings, 2s. per 100, 3s. per dozen. "for cutting, 2s. to 6s. per 100, 1s. 2d. per dozen. Helianthus, 2s. 6d. per dozen. "in pot, 12s. to 18s. per dozen. Heraculus Plants, 2s. per doz. "in pot, 12s. to 18s. per dozen. Heliotrope, in variety, 2s. 6d. per dozen. The Oldfield Nurseries, Altrincham.

SURPLUS NURSERY STOCK.

TAMARIX, 200 sorts, to 3 feet, 12s. 6d. per 100. "FUTURA, 100 sorts, 12s. 6d. per 100. FUCHSIA GRACILIS, 30s. per 100. "VINE, 100 sorts, 12s. 6d. per 100. YEW, English (small), 15s. to 25s. feet, 25s. per 100. "VINE, 6 to 12 inches, 20s. to 24s. per 100. BERBERIS DARWINII, 15s. to 2s. feet, 16s. per 100; 2 to 3 feet, 20s. per 100. COTON-EASTER MICROPHYLLA, 2 to 3 feet, 16s. per 100. BUDDLEA GLOIOSA, 15s. to 1 feet, 16s. per 100. "INDICA, about 12 feet, 12s. per dozen, 75s. per 100; stronger, 30s. per 100. CISTUS, strong, many sorts, 4s. per dozen. "VINE, 100 sorts, 12s. 6d. per 100. Ceanothus, many sorts, 6s. to 12s. per dozen. "VINE, 100 sorts, 12s. 6d. per 100. "VINE, 100 sorts, 12s. 6d. per 100. POPLAR, Lombardy, 2 to 4 feet, 35s. per 100. "Canadian, 4 to 5 feet, 35s. per 100; 5 to 6 feet, 30s. per 100; 6 to 8 feet, 20s. per 100; 8 to 10 feet, 12s. per 100. PRIVET, green, 2 to 4 feet, 30s. per 100. SYCAMORE, 4 to 6 feet, 30s. per 100. RODGER McCLELLAN & Co., 64, Hill Street, Newry.

RHODODENDRON PONTICUM, 500,000.

All twice or three transplanted, bushy plants: 4 to 6 inches, 150 per 100, £4 per 1000. 6 to 12 inches, 12s. per 100, £2 per 1000. 9 to 12 inches, 15s. per 100, £2 1/2 per 1000. 12 to 15 inches, 18s. per 100, £3 per 1000. 15 to 18 inches, 20s. per 100, £4 per 1000. RHODODENDRON HYBRIDUM, 300,000, bushy plants: 4 to 6 inches, 12s. per 100, £3 per 1000. 6 to 12 inches, 15s. per 100, £3 1/2 per 1000. 9 to 12 inches, 20s. per 100, £4 1/2 per 1000. 12 to 15 inches, 25s. per 100, £5 per 1000. 15 to 18 inches, 30s. per 100, £5 1/2 per 1000. 18 to 24 inches, 40s. per 100, £7 per 1000. See CATALOGUE. JAMES SMITH, Darley Dale Nurseries, near Matlock.

From Paris - Roses, Frontons, Camellias.

LEVEQUE AND SON, NURSERYMEN, 67, Rue du Louvre, Paris. Their plants are particularly recommended - their flowers equal to the named sorts (seeds have been taken from the best sorts of the collection). GLADIOLI Seedlings, 4s. per 100, £4 per 1000 mixed white, red, pink. Separate colours, 12s. to 20s. per 100; 12s. to 20s. per 1000. Named sorts, 20s. to 30s. per 100; 20s. to 30s. per 1000. All good flowering bulbs, English Catalogue London, or Post-office Orders on Paris, accepted in payment.

From Paris - Large Bulbs of Gladioli, Seedlings and Named Sorts.

LEVEQUE AND SON, NURSERYMEN, 67, Rue du Louvre, Paris. Their plants are particularly recommended - their flowers equal to the named sorts (seeds have been taken from the best sorts of the collection). GLADIOLI Seedlings, 4s. per 100, £4 per 1000 mixed white, red, pink. Separate colours, 12s. to 20s. per 100; 12s. to 20s. per 1000. Named sorts, 20s. to 30s. per 100; 20s. to 30s. per 1000. All good flowering bulbs, English Catalogue London, or Post-office Orders on Paris, accepted in payment.

BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from £5 to £10 per 100, and 18s. to 30s. per dozen. Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15s. to 18s., in 12s. and 18s. per doz., or £5 per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded, £5 to £7 per 100, or 18s. per dozen.

ANTHONY WATERER, KNAP HILL NURSERY, WOKING, SURREY.

NEW PLANTS FOR MAY, 1877.

FRINGED PELARGONIUM, ROYALTY, 10s. 6d. each. PICOTEE, PRINCESS OF WALES, 5s. each.

Orders are now being booked, and will be sent out on and after May 1.

FREDERICK PERKINS, NURSERYMAN, REGENT STREET, LEMINGTON.

Pelargonium "Wonderful" (George Smith's). GEORGE SMITH has again much pleasure in offering this most popular and successful flower. Having received most pleasing accounts from all parts of the County, G. S. can confidently recommend it as the finest German ever offered, and highly recommended for pot culture, being a very bloomer, colour a brilliant orange-scarlet, and the petals of a most grand acquisition - the flowers fine in shape, and will be used in the choicest bouquet where no other variety can find a place. It has taken six First-class Certificates, and highly recommended by the Floral Press. Prices: 12s. per dozen; selected, 18s. per dozen; stronger, 24s. per dozen. Special prices for larger quantities on application.

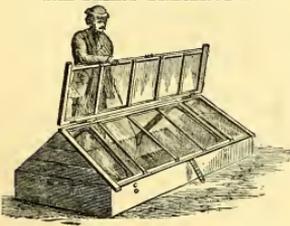
EVENING STAR (George Smith's) - This new and beautiful variety is most attractive and successful flower. It has a large pink eye, giving it a very striking appearance; the flowers of great substance, smooth, and a fine tinge of orange a light rose, and of good habit. This is an every year first-class flower, and no collection will be complete without it. It has taken six First-class Certificates.

"DREAMUGHT" (George Smith's) - A most distinct and beautiful variety, colour rich peach-blush, with white eye; the colour is particularly rich and fine, the pipe are large, with fine tuess; a very fine bloomer, and good habit. It is in every way first-class, and of great acquisition. 6s. per dozen. Orders made payable at Lemington. Road to GEORGE SMITH, to accompany all orders from unknown correspondents.

Tollington Nursery, Hornsey Road, Hillingdon, N.

BOULTON & PAUL, NORWICH, HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MAKERS.

No. 60.—PATENT PORTABLE UNIVERSAL PLANT PRESERVER.

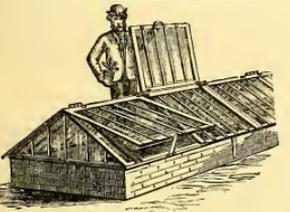


These excellent span-roof frames are made with wood sides, which are bolted iron girders to carry the lights. These lights will turn completely over and lie on the other side while attending to the plants inside. They are very portable; a man can easily remove the small size, two men can carry any size up to 12 feet by 4 feet. The use to which they may be applied is unlimited, as almost any class of plants can be grown in them.

CASH PRICES—CARRIAGE PAID ON Orders of goods and upwards.

Pointed 4 times, and glazed with 21-oz. glass.		Height of ridge.		Ends	
Length.	Width.	1 ft. 3 in.	1 ft. 6 in.	£ s. d.	per pair.
6 feet	2 feet	1	5	0	5
6 "	3 "	1	10	0	5
6 "	4 feet	1	15	0	5
6 "	5 "	1	20	0	5
6 "	6 "	1	25	0	5
6 "	7 "	1	30	0	5
6 "	8 "	1	35	0	5
6 "	9 "	1	40	0	5
6 "	10 "	1	45	0	5
6 "	11 "	1	50	0	5
6 "	12 "	1	55	0	5

No. 64.—PATENT PLANT PRESERVERS, ARRANGED TO BUILD ON BRICK WALLS.



This is the Practical Gardener's and Nurseryman's favourite frame, now largely used for storing the great quantities of bedding plants in winter, and in summer for growing Melons, &c. This is made for building on brickwork, as shown by section of No. 64.

Section No. 64 shows the frame built on brickwork, with a pit sunk low enough for making a dung bed for growing Cucumbers, Melons, &c. This form can be adapted to any length required.

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

CASH PRICES—CARRIAGE PAID. Including a glass ends to each end, pointed 4 times, glazed with 21-oz. glass. Carriage paid.

Length.	Width.	£ s. d.	Length.	Width.	£ s. d.
12 feet	5 feet	5	0	12 feet	6 feet
18 "	7 5 0	15	0	18 "	7 5 0
24 "	9 2 6	24	0	24 "	11 10 0
30 "	11 2 6	30	0	30 "	14 0 0
36 "	13 2 6	36	0	36 "	16 10 0
42 "	15 0 0	42	0	42 "	19 0 0

"Gentlemen,—The frames arrived safely, and give satisfaction. I would not have thought they could have been packed to have come in such good order, the point on the lights was not even scratched.

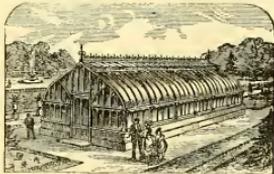
Carriage paid to any Railway Station in England, also to Dublin, Edinburgh, and Glasgow.

Packing Cases are charged, and half of the cost allowed if they are returned in good order, carriage paid, to our Works, within a month of delivery of the frame. New Illustrated CATALOGUE of Conservatories, Greenhouses, Peach Houses, Forcing Houses, &c., post-free, on receipt of 24 penny stamps, the cost of which will be deducted from the amount of first order.

No. 62.—PLANT CASES.

These neat and ornamental frames will be found useful to place on a Lawn or Terrace, or may be used for a Fern Case indoors. The larger sizes make excellent Vicerays; in No. 6 size 11 to 15 ft. of Grapes may be grown. Made of the best material, painted four coats, glazed with best zinc sheet glass. Any size can be put together in a few minutes, and is then ready for use. All sizes are 2 feet high at the sides.

For LARGER SIZES see SPECIAL LIST.



Winter Gardens, Conservatories, Greenhouses, Orchard-houses, Vinerias, Plant-houses, Forcing-houses, Ferneries, Peach-houses, Cucumber and Melon-houses, Patent Plant Preservers, Forcing Pits and Frames, Melon Frames, &c., constructed of the best materials in Wood and Iron combined, on a thoroughly practical and scientific principle, efficiency being our first consideration, while due regard is paid to design and ornament.

Conservatories visited upon and advised as to the best method of arranging Horticultural Buildings of every description.

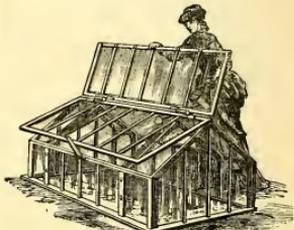
Designs prepared, Plans and Estimates furnished, Architects' Designs carried out, Hot-water Apparatus of all descriptions, on the best system erected and guaranteed to work in the most satisfactory manner. Estimates on application.

Boilers.—A great variety of the best Hot-water Boilers and Stop-valves kept in stock. Illustrated Price Lists free on application.

A new Catalogue of Horticultural Buildings post-free for 24 penny stamps, the cost of which will be deducted from the amount of first order. Ready March 1, 1877.

Amateurs' Greenhouses as Tenants' Fixtures, Price Lists free on application. Plant Preservers, Grand Vinerias, Melon Frames, &c., Price Lists free on application.

Melon Frames and Forcing Frames.—The largest stock in the kingdom. Price Lists free on application.



CASH PRICES—CARRIAGE PAID.

No.	Length.	Width.	£ s. d.
No. 1	5 feet	2 feet 6 inches	3 0 0
No. 2	5 feet	3 feet	3 0 0
No. 3	6 feet	3 feet	3 17 6
No. 4	6 feet	4 feet	4 8 0
No. 5	9 feet	4 feet	6 0 0
No. 6	9 feet	5 feet	7 0 0

No. 1 and 2 made with bottoms and side trays for planting Ferns; extra for No. 1 size, 12s. 6d., No. 2 size, 15s.

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

Our illustration shows a New Frame for growing Cucumbers, Melons, and for straining plants. It is made to give greater height and more convenience than the Melon frame, No. 75. The front is 11 ft. high, without the light, 21 in. high at the ridge, and 21 in. high at the back. The front lights are turned back on the lights behind, and back lights turned on to the front lights, giving access to all the plants inside. They are made of the best red deal, sides and ends 1 1/2 in. thick, 2 in. lights; all are painted four times, and glazed with 21-oz. sheet glass, milled and gutted in, same as the Melon Frame, No. 75. The illustration shows the lights to open with gearing; any of the lights can be lifted up when required without the other lights. Back and front gearing work separately.



CASH PRICES—CARRIAGE PAID. Geiring extra to 8 ft. size and upwards.

No.	Length.	Width.	£ s. d.
No. 1	4 feet long	6 feet from front to back	3 0 0
No. 2	8 "	6 "	4 15 0
No. 3	12 "	6 "	5 15 0
No. 4	16 "	6 "	7 6 0
No. 5	20 "	6 "	8 10 0

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

"Hunting Cottage, Oskmere, Northwich, January 7, 1877.

"I remain, gentlemen, your humble servant, "ALBERT LAING, Gardener.

"ARCHIMEDEAN" AMERICAN LAWN MOWERS,

Will cut Long and Wet Grass (as well as Dry and Short) without Clogging.

They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

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- Silver Medal, Vienna, 1870.
- Silver Medal, Hamburg, 1866.

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- H.R.H. THE PRINCE OF WALES,
- H.H.M. THE EMPRESS OF GERMANY,
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- THE EMPEROR OF THE FRENCH,
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- "Remarkably easy to work."—*Vide the Gardener's Magazine.*
- "The quietest, most simple, and most efficient mower ever used."—*Vide the Gardener's Chronicle.*
- "We feel bound to recommend it to our readers as one of the best mowers we have as yet made acquaintance with."—*Vide the Floral World.*

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Warranted to give satisfaction.

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B. WHITHAM, The Nurseries, Reddish, near Stockport, begs to offer the following fine healthy **NURSERY STOCK**, many times transplanted, in fine pyramidal form for Parks, Avenues, &c., as the ground must be cleared in consequence of expiration of lease—**YEW**s, English, 9 to 12 inches, 20s. per 100, 50s. per 1000; 1 to 2½ feet, 15s. per 100, 50s. per 1000; 2½ to 3 feet, 2s. per 100, 51s. per 1000; 3 to 4 feet, 40s. per 100, 61s. per 1000; 4 to 6 feet, 10s. per 100, 40s. per 1000. **LIMES**, 5 to 6 feet, 20s. per 100; 5 to 8 feet, 30s. per 100. **BEECH**, 4 to 5 feet, 10s. per 100, 4s. per 1000; 5 to 6 feet, 20s. per 100; 6 to 8 feet, 30s. per 100; 8 to 10 feet, 50s. per 100. **CURRANTS**, Black Nipples, 4 yrs. old, strong fruiting trees, 10s. per 100. **STRAWBERRY**, new seedling, Clarendon, extra fine, prolific bearer, 4s. 5s. per 100. **DAISIES**, red and white, 4s. per 100.

COCOANUT FIBRE REFUSE, newly made—Reduced price, no bushels, 6s. 6d.; 100 20s. or Truck-load, 40s. Delivered free to any rail in London. **J. STEVENS** and **CO.**, Fibre Works, 134, High Street, Battersea, S.W.

COCOANUT FIBRE REFUSE, is invaluable for Gardening purposes. One thousand test-tons. Four-bushel bag, 1s. 6d. included; truck-load, 10s. free to any Rail, 3s.

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COCOANUT FIBRE REFUSE—Cheapest and Best Advertised—100 bushels, delivered free within 4 miles of London Bridge, for 25s. Supplied to Carter, Vetch, Bull, Mills, Ewing, Daniels, Henderson, Linn, &c. **MANURE**, from Blood, Bone, &c., of Animals. **PLASTER**, **SILVER SAND**, **SPHAGNUM MOSS**, 8s. 6d. per sack. Before purchasing elsewhere write for sample and Price List. Goods free to Rail or Wharf. **M. H. BENTONTE, Nunhead, S.E.**

PEAT—A few hundred Tons of superior Peat, delivered at the Farnborough Station on the South-Western or South-Eastern Railways, at 17s. per ton. **W. TARRY, Balif, Bagshot, Surrey.**

Fibrous Peat for Orchids, &c.
BROWN FIBROUS PEAT, best quality for Orchids, Show Plants, &c., 4s. 6d. per truck. **BLACK FIBROUS PEAT**, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 17s. per ton. Delivered on rail at Blackwater, S. E. R., at Farnborough, S. W. R., by the truck-load. Sample sack, 4s. 6d. each. Fresh **SPHAGNUM**, 10s. 6d. per sack. **WALKER AND CO., Farnborough Station, Hants.**

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Brown acid, 3 to 6 per cent. ammonia.
(Dr. Simon's analysis) Free on rail in Yorkshire, bags included. Also **BONE-SCENTED GRAY and BLACK SHODDIES, ROUGH BEDDING SHODDIES, &c.** Sold by all respectable Agricultural Merchants; manufactured by **FERRAK FENTON, Dewsbury, Yorkshire.**

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

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GARDEN BROOMS at 2s. 3s., and 4s. per doz. (does not less than two dozen), sent to any part on receipt of Post-office order. The Trade and Shippers supplied. **GEOR. MANLEY, South Street, Long Lane, Borough, S. E.**

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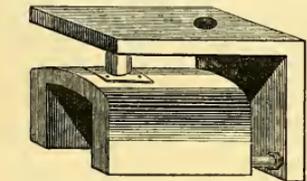
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ROCHESTER, KENT; 72, CANNON ST., LONDON,
E.C.; and 9, AVENUE MONTAIGNE, PARIS.**

AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the first trials of the Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of three and one-fifth pounds of coal per horse-power per hour.

AN EXTRAORDINARY BOILER.
During the Great Boiler Contest at Birmingham, in 1875, all Boilers were severely tested to prove their respective merits. One test was "How long can each Boiler go without Night Attention?" However, one Boiler proved that to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.) it still retained its heat in 1000 feet of 4-inch pipes, and yet had made more than a barrel of fire drawn from four bars of common iron. What a boon to Gardeners. This was THE CHAMPION, Deards' Patent Close Coil Boiler, for Drawings and Prices of which send two stamps to Messrs. DEARDS, Boiler Works, Harlow.

who now have their Boilers at work in every county of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Silver Medals.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



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

Sizes.		To heat of 4-in. Pipe.		Price.	
High.	Wide.	Logg.	Feet.	£	d.
18 in.	15 in.	300	400	6	0
20 "	15 "	300	400	8	0
20 "	15 "	300	500	9	0
24 "	15 "	300	700	12	0
24 "	15 "	300	850	14	0
24 "	15 "	300	1,000	15	0
24 "	15 "	300	1,400	20	0
24 "	15 "	300	1,800	25	0

Larger sizes if required.

From Mr. CHARLES YOUNG, Nurseries, Batham Hill, S.W., May 29, 1877.

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

PRICE LISTS OF HOT-WATER PIPES AND CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES FOR HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES and SONS, Iron Merchants, 6, Bankside, Southwark, LONDON S.E.

When ordering Boilers please refer to the above advertisement.

NETTING FOR FRUIT TREES, SEED BEDS, RIFE STRAWBERRIES, &c.
TANNED NETTING for protecting the above from Frost, Blight, Birds, &c. 2 yards wide, 3d per yard, or 20 yards, 2s. 4 yards wide, 6d per yard, or 20 yards, 2s. 4 yards wide, 2s. 6d per yard, or 20 yards, 2s. 6d per yard. NEW TANNED NETTING, suited for all of the above purposes, as well as a Fence for Fowls, 2 yards wide, 6d per yard; 4 yards wide, 1s. per yard; 5-inch mesh, 4 yards wide, 12d per yard. TIFANY, 6d. 6d. and 20. 6d. per piece of all the above.

EATON and DELLER, 6 & 7, Crooked Lane, London Bridge.

RALPH WALLER AND CO., 45, Dale Street, MANCHESTER.
Ralph Waller, Manufacturers of all kinds of GARDEN NETTING, &c., for protecting Fruit Trees from Frost; also FRIGI DOMO, a new and improved 2 yards wide, HOTHOUSE SHADINGS of various thicknesses, superior to any other yet discovered for lightness, strength, and durability, standing as they are all winter.

TIFANY'S various kinds always on hand. Netting and Shading in pieces 20 yards long by 1 1/2 yard wide. Tiffany in pieces 20 yards long, 30 inches wide. Also Tiffany in mineralised state.

For prices, &c., apply to the above address—45, Dale Street, Manchester.

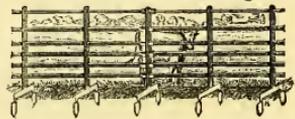
Established over a Quarter of a Century.



Is in use over many thousand miles, And has been awarded the Medals and highest Commendation of all the leading Agricultural Societies.

It is constructed with POWERFUL WINDING STRAINING PILLARS, RIGID INTERMEDIATE IRON POSTS, STRONG and DURABLE WIRE CABLE STRANDS, Forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

Continuous Bar Iron Fencing.



With bars secured by F. M. & Co.'s Patent Self-locking Joints, which effectually prevent the uprights being pushed aside, and are independent of loose pins, wedges, or staples.

IRON ENTRANCE and FIELD GATES, IN WROUGHT and CAST IRON, Designed for the Mansion, Villa, or Farm, WICKET and GARDEN GATES.

Iron Hurdles, Railing, Tree Guards, FRUIT ESPALIERS, WALL FRUIT TRAINERS, &c. Illustrated and Described in F. M. & Co.'s New Catalogue, sent on application.

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R. H. HAMPSON, Egerton Mills, Stockport.
Manufacturer of HORTICULTURAL SHADINGS for protecting Wall Trees from Frost and Insects, &c. 54 and 60 inches wide, any length up to 100 yds. Prices on application.

E. T. ARCHER'S "FRIGI DOMO,"
Patronised by Her Majesty the Queen, for Windsor Castle and Frogmore Gardens, the late Sir J. Paxton, and the late Professor Lindley, &c.

MAD. OF PREPARED HAIR and WOOL. A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. A good covering for Pits and Fencing Frames.

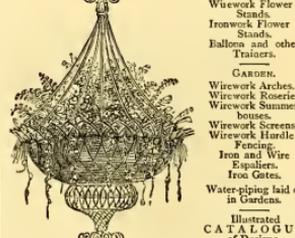
PROTECTION FROM COLD WINDS and MORNING FROSTS.

"FRIGI DOMO" CANVAS. 2 yards wide ... 1s. 10d. per yard run. 4 yards wide ... 2s. per yard.

ELISHA T. ARCHER, only Maker of "Frigi Domo," Brockley Road, Forest Hill, LONDON, S.E.; and of all Florists and Seedsmen. All goods carriage paid to London.

NOTICE—REMOVED from 3, CANNON STREET, CITY. SHAW'S TIFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW and CO., 29, Oxford Street, Manchester.

HORTICULTURAL IRON and WIRE WORKS.

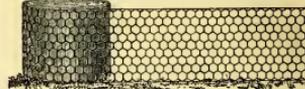


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The Sole International Prize Medals for

GALVANIZED WIRE NETTING

Have been awarded to Messrs. J. B. BROWN and CO., at the VIENNA EXHIBITION, 1873, and at the PHILADELPHIA CENTENNIAL and INTERNATIONAL EXHIBITION, 1876.



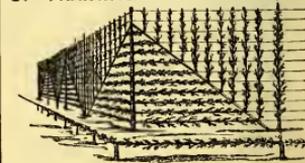
Prices per Lineal Yard, 24 inches high—

Size of Mesh.	Mostly used for	Gauge, or Light.	Mediam.	Gauge, or Strong.
10 in.	Dogs or Poultry.	19	3 1/2 d.	18 1/2 d.
1 1/2 in.	Small Rabbits, &c.	19	4 1/2 d.	18 5/8 d.
1 1/2 in.	Smallest Rabbits.	19	5 1/2 d.	18 3/4 d.

* Price Lists, with further particulars of WIRE NETTING, IRON FENCING, POULTRY FENCES, DIAMOND and other TRELLIS WORKS, on application.

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THE FRENCH SYSTEM OF TRAINING FRUIT TREES, &c.



Extreme standards of T or angle iron, for ends or angles, for straining the wires from, self set; also stays for these standards, at prices as under—

Intermediate Standards, 10 ft. apart, at half these prices. Painted Galv'd. 4 1/2 ft. high... 4s. 6d. 6 ft. high... 7s. 6d. 8 ft. high... 10s. 0d. 10 ft. high... 13s. 0d. 12 ft. high... 16s. 0d. 14 ft. high... 19s. 0d. 16 ft. high... 22s. 0d. 18 ft. high... 25s. 0d. 20 ft. high... 28s. 0d. 22 ft. high... 31s. 0d. 24 ft. high... 34s. 0d.

STRAINING SCREWS and NUTS, one to end of each wire, 3s. per dozen.

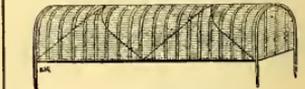
No. 13 WIRE, 10 inches apart, 2s. 3d. per 100 yards.

* Prices of Material for WIRING GARDEN WALLS on the FRENCH SYSTEM on application.

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REDUCED PRICES. SEASON 1877. Superior Quality. Galvanized after made. NEW PATTERN WITH DIAGONAL STAYS.



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Two end pieces included with each dozen. The above are strongly recommended, being much smaller in the mesh than the ordinary diamond pattern, and proof against the smallest birds.

Having a large stock of the above, Orders can be executed on receipt. Illustrated and Priced Catalogues of Horticultural Wirework on application.

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Special quotations for large quantities. J. J. THOMAS & CO., BADDINGTON WIREWORKS, 285 and 286, EDGWARE ROAD, LONDON, W.

Post-free Orders to be made payable at 310, Edgware Road, W. BELGIAN GLASS for GREENHOUSES, &c., Can be obtained in all sizes and qualities, of BETHAM & SON, 9, LOWER THAMES STREET, LONDON, E.C.

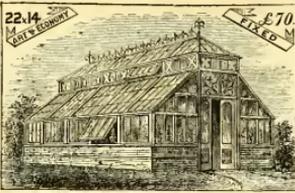
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Estimates given on application for GREENHOUSES and
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GARDEN BOXES and LIGHTS. Each.
 Portable Box with One Light, 6 feet by 4 feet, glazed
 good 16-oz. sheet glass, painted four coats, and
 packed ready for use 35 0
 Portable Box with Two Lights, as above, each Light
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LIGHTS ONLY.
 4 feet by 4 feet Light, not painted nor glazed .. 3 6
 Ditto glazed, good 16-oz. sheet glass, and painted 4 coats 10 0
 6 feet by 4 feet, not painted nor glazed 6 0
 Ditto glazed and painted four coats 16 6

Metallic Hothouse Builder to Her Majesty.
HENRY HOPE
 (late Clark & Hope, formerly Clark),
 HOTHOUSE BUILDER and HOT-WATER
 APPARATUS ENGINEER.
 35, Lionel Street, Birmingham. Established A.D. 1848.
 BOOKS OF DESIGNS, 5s. each.
 The Extensive Range of Metallic Hothouses in the
 Royal Gardens, Windsor and Osborne, were executed at this
 Establishment.



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 HORTICULTURAL BUILDERS and HOT-WATER ENGINEERS.
 Patents & Manufacturers of the Self-adjusting Throttle Valve.
 See Illustrated CATALOGUE, Two Stamps.
 Designs and Estimates free of cost.

WORKS: ANCHOR STREET, CHELMSFORD.
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 Rough Sketches, with plans required. Heating apparatus
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Greenhouses.
H. FREEMAN and SONS, HORTICUL-
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 MANUFACTURERS, Cambridge Heath Bridge, Hackney, E.—
 Good substantial-made GREENHOUSE, glazed ready for
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For Sale, a
STEVENS' IMPROVED TRENTHAM
WROUGHT IRON HORTICULTURAL BOXES,
 6 feet long by a feet diameter, fitted with Inlet and Two Outlet
 Pipes, Fire-door and Gate complete. For price and particu-
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HILL and SMITH, Brierley Hill Ironworks, Dudley.

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TABLE CUTLERY.		Table.		Dessert.		Carvers, per pair.	
The Blades are all of the finest Steel.							
3½-inch ivory handles	... per doz.	14	0	12	0	6	0
3½	" " to balance	18	0	14	0	7	0
3½	" " " "	20	0	15	0	7	0
3½	" " " "	26	0	20	0	8	0
4	" " " "	30	0	22	0	8	0
4	" " extra large	33	0	24	0	9	0
4	" " Africa	42	0	35	0	13	0
4	" " silver French	44	0	35	0	15	0
4	" " silver blades	48	0	35	0	—	—
Do. electro-silvered handles	..	23	0	19	0	7	6

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PATENT "SILENS MESSOR,"
 Or Noiseless Lawn-mowing, Rolling, and
 Collecting Machines for 1877.

The Winner of every Prize in all cases of competition.

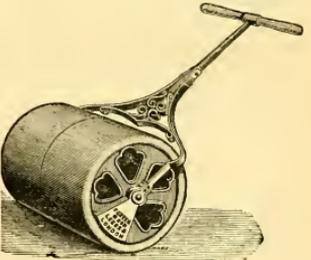


The superiority of these Machines over those of all other
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These advantages no other Lawn Mowers possess.
 They are the simplest in construction, the easiest to work,
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 Every Lawn Mower sent out is guaranteed to give entire
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 N.B.—Those who have Lawn Mowers to repair will do well
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 they will have prompt attention, as an Efficient Staff of
 Workmen is kept at all places.

Descriptive Illustrated Price List free on application.

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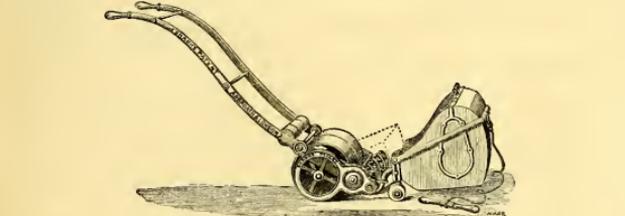
For Lawns, Drives, Bowling Greens,
 Cricket Fields, and Gravel Paths.
 SUITABLE FOR HAND OR HORSE POWER.



They can be had of all respectable Ironmongers and Seedsmen
 in the United Kingdom; or direct from the Manufacturers,
THOMAS GREEN & SON,
 SMITHFIELD IRONWORKS, LEEDS;
 And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.

SHANKS' NEW PATENT
LAWN MOWERS,
 Under the Patronage of Her Most Gracious Majesty the Queen, and
 most of the Nobility of Great Britain.

The merits of these Machines are now so well known, and their superiority so universally
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 refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is
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 the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced,
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PRICES,
 Including Carriage to any Railway Station or Shipping Port in the Kingdom:—

NEW HAND MACHINE.		NEW PONY and DONKEY MACHINE.	
10-inch Machine	£3 10 0	22-inch Machine	£13 10 0
12-inch Machine	4 15 0	28-inch Machine	15 15 0
14-inch Machine	5 15 0	30-inch Machine	17 0 0
16-inch Machine	6 15 0	The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.	
18-inch Machine	8 0 0	Price, for the 28-inch and 30-inch Machines, 50s. extra; 25-inch Machine, 25s. extra. Silent Movement, 12s. 6d. extra. Boots for Pony, 24s.; for Donkey, 20s. per set.	
24-inch Machine	10 0 0	NEW HORSE MACHINE.	
The Hand Machines are all fitted with Silens Movement, and can be used either with or without the usual Front Rollers.			
30-inch Machine	£10 10 0	42-inch Machine	£18 0 0
36-inch Machine	11 0 0	48-inch Machine	32 0 0

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 Boots for Horse's feet, 20s. per set.

A Staff of experienced Workmen always kept in London, so that Repairs can be done there as well as at the Manufactory.

SHANKS' PATENT LAWN MOWERS
 Are warranted to give ample satisfaction, and if not approved of can be at once returned.

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 Dens Ironworks, Arbroath; and 27, Leadenhall Street, London, E.C.

27, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can
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Sole Consignees for Great Britain, Ireland and France.

The "Excelsior" has never been beaten in Competitive Trials. For Agencies, Catalogues, and Trade Terms, apply to above.



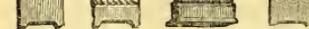
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W. RICHARDS, 41, Wellington Street, Strand, W.C.

REVUE de HORTICULTURE BELGE et ETANGER (Belgian and Foreign Horticultural Review)—Among the principal Contributors are—A. Allard, E. Andrieux, F. Barthelet, F. Cefin, Comte de Conner, De Jonge van Elteren, O. de Kerchove de Denterghem, J. De Lathuyse, H. J. Van Hulle, Jongkindt Gonicq, C. Koch, J. Kieck, L. Linden, T. Moore, C. Naudin, B. Oliver, H. Origies, E. Pynaert, K. Rodigas, A. Sieber, D. Thomas, A. Van Goozen, Van Hulle, Van Volsem, H. J. Veitch, A. Westmael, and F. Wolkenstein. The D. Journal appears twice a month, in Parts of 24 pages, 16w, with a Coloured Plate and numerous Engravings. Terms of Subscription for the United Kingdom—One year, payable in advance. Post office Order to be made payable to M. E. PYNART, at the Chief Post-office, Ghent.

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ADVERTISERS are requested to note that although we do not object to receive Letters to be called for, we cannot undertake to forward them.

WANTED, a HEAD WORKING GARDENER. Must understand Stove and other Plants. Apply by Letter to P. D. K., Chatham House, Grove Road, Clapham Park, S.W.

WANTED, an industrious and active HEAD WORKING GARDENER, age about 30; must thoroughly understand Stove, Fernery, Grape Growing, Forcing, and the Cultivation of Plants generally. Flower, Kitchen Gardening. Two Under Gardeners kept. Wages, 50s. per week. Good references previously obtained (none required).—Apply, by letter, stating wages, put away full particulars, to Mr. STEARNS, West Hill, Putney, S.W.

WANTED, a steady, practical GARDENER, or GARDENER and WIFE. Wife to be good Plain Cook. A good man and woman must be suitable couple. Personal references required.—Apply, from 11 to 17, at Detham Lodge, West Kensington Gardens, Westminster, W. R. WOOD.

WANTED, IMMEDIATELY, a GARDENER, a Man who thoroughly understands Growing Soft-wooded Plants and Fruit; as he has been accustomed to Grow for the last twenty years, stating particulars, to W. INGRAM, Vine Nursery, Aylesbury.

WANTED, a GARDENER (single), to live on the Premises. One competent to take charge of a Garden under an acre, with two small Greenhouses. Wages 5 guineas a month. Apply by letter only, to E. J. C., B. Birch Lane, London, E.C.

WANTED, a good WORKING GARDENER, who understands Forcing Grapes, Cucumbers, Salads, &c. None but industrious men, whose characters can be proved by the best references, apply. Wife must do the washing, which is paid for. Wages about 25s. cash a week, including coal and expenses.

WANTED, an UNDER GARDENER, with a knowledge House Gardener, to attend to Houses, Fires, &c.—Applicants to state age, past experience, references, wages expected with lodgings found, to E. W., Farnborough Garden, Banbury.

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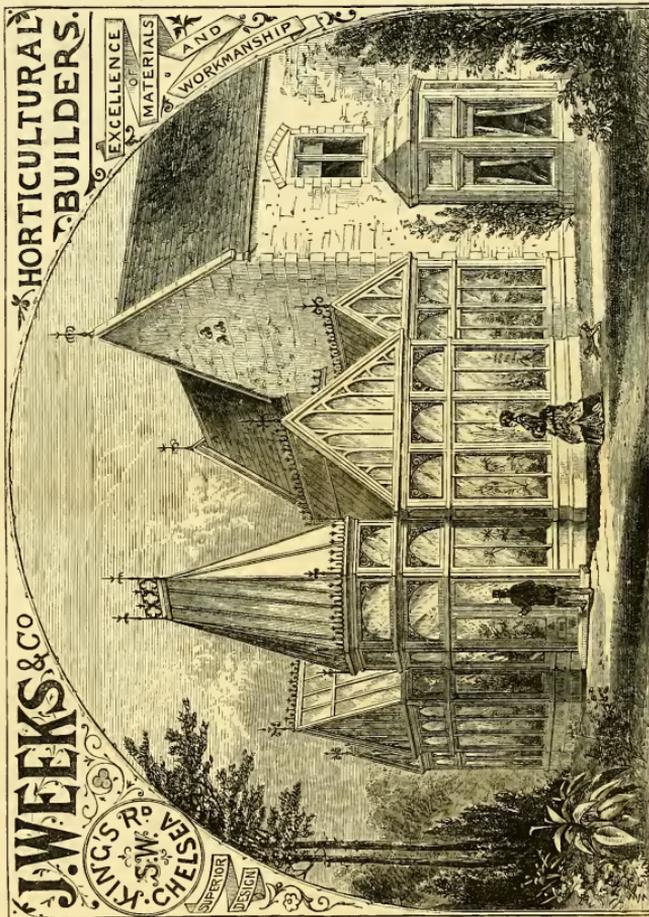
WANTED, a JOURNEYMAN; must have good experience in Forcing Houses, and be a good Workman. Wages to commence at 14s. per week. Good rooms the Garden, Cook and Housewife attached. Send copy of testimonials, &c.—H. V. A. MANN, The Gardens, St. Vincent's, Graham.

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WEEKS'S IMPROVED CONSERVATORIES IN WOOD AND IRON.

THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 170.—VOL. VII. { NEW SERIES. }

SATURDAY, MARCH 31, 1877.

{ Registered at the General } Price 5d.
{ Post Office as a Newspaper. } POST FREE, 5d.

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The "Gardener's Chronicle" in America. THE ANNUAL SUBSCRIPTION TO THE

GARDENERS' CHRONICLE, including postage to the United States, is \$6.30 gold, to which add premium on gold for U.S. money at the time, and 25 cents exchange—PAYABLE IN ADVANCE.
Agents:—Messrs. B. K. BLISS and SONS, Seed Merchants, 25 Bay Street, New York; Messrs. M. COLE and CO., Drawer No. 41, 414 South Post Office, Atlanta, Georgia; and Mr. C. H. MAROT, 814, Chestnut Street, Philadelphia; through whom Subscriptions may be sent.

Now Ready, in cloth, 16s. 6d. THE GARDENERS' CHRONICLE VOLUME FOR JULY TO DECEMBER, 1876.

W. RICHARDS, 47, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W. NOTICE—SCIENTIFIC, FRUIT and FLORAL COMMITTEES MEETINGS on WEDNESDAY next, April 4, at 1 o'clock. GENERAL MEETING for ELECTION of FELLOWS, &c., at 3 o'clock. Admission 1s. Band of the Royal Hort. Socy. Blue, 3s. 6d.

N.B.—On this occasion the Fruit and Floral Committees will meet in the CONSERVATORY, where Exhibits will also be shown.

CRYSTAL PALACE.—AURICULA SHOW, April 24; GREAT FLOWER SHOW, May 12; ROSE SHOW, June 23. Schedules for the two latter can be had on application to:

GENERAL MANAGER, Crystal Palace.

NATIONAL ROSE SOCIETY.—GRAND EXHIBITION OF ROSES at St. James's Hall, WEDNESDAY, July 4. Twelve Two-Color and Eighty Founds given in Prizes, including Three Silver Cups. The most liberal Rose Schedule ever issued. Schedules sent on application to:

H. HONYWOOD & D'ARRAN, } Hon. Secs.
HORACE K. MAYOR, }
Horticultural Club, 3, Adelphi Terrace, W.C.

KENDAL and DISTRICT HORTICULTURAL SOCIETY, JULY 26. The following SPECIAL PRIZES: For twelve Rose or Greenhouse Plants, distinct, six at least in flower, first, 4s.; second, 2s.; third, 1s. Fruit, eight varieties, first, 4s.; second, 2s.; third, 1s.; best 50 other prizes. Entries by return of July 20, to:

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Gentlemen's Gardeners, Amateurs, and Others REQUIRING GARDEN POTS of best quality, are requested to send their orders to:

J. MATTHEWS, Royal Pottery, Westonsuper-Mare. Price List on application.

Horticultural Potteries, Bristol.—Established 1850. JAMES MAULE and SONS are manufacturing a very useful and durable Pot for Bedding and other Plants. "Long Tons" as illustrated in drawing. Price 1s. 6d. per dozen. Price Lists forwarded on application. The Trade supplied.

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M. S. WILLIAMS has still on hand a large stock of MUSCAT of ALEXANDRIA and SCOTT'S BUNSLAT, stringing for Fruiting Canes, 5s. each. Early orders respectfully solicited.
Victoria and Paradise Nurseries, Upper Holloway, N.

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THE COWAN PATENTS' COMPANY, The Vineyard, Garden, near Liverpool, can supply excellent Fruiting Canes of all the leading varieties from their well-known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.

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JAMES EIRD, Nurseryman, Dowham.

ASPARAGUS, Giant, 3-yr. and 4-yr., fine, good plants, 12s. per 1000.
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CUCUMBER PLANTS, Telegraph.—Strong plants now ready.
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Finest Lawn Mixtures.
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CHARLES TURNER'S CATALOGUE of PLANTS is now ready and may be had free on application. The Royal Nurseries, Slough.

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CALCEOLARIAS.—Golden Gem, extra fine, well-rooted plants, 5s. per 100, 50s. per 1000; Prince of Orange, per 100, 50s. per 1000. All orders.
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JOHN VOELBART offers White, Scarlet, Purple, Pink, Crimson, Rose, and other mixed sorts, good strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000. For price and particulars apply to:
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MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 23, King Street, Covent Garden, W.C., on SATURDAY, April 7, at half-past 12 o'clock, precisely, a quantity of Choice Half-Standard, Dwarf, and Climbing ROSES, from a well-known English Nursery; SHRUB FRUIT TREES, HERBaceous Plants, and valuable sorts of GREENHOUSES, FRANKS, GLADIOLI, LILiums, MUSK GARDEN-WORK, &c. On view the morning of Sale, and Catalogues had.

Orchids. MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 23, King Street, Covent Garden, W.C., on THURSDAY, April 12, at half-past 12 o'clock, precisely, a quantity of Choice Orchids, from a Gentleman's Collection, comprising many fine plants rare and valuable sorts, such as the following:—Cattleya Schilleriana, Lata purpurata, Oncidium Marshallianum, Oncidium Longuepierre, and many other choice sorts, 250 fine plants of Miss Emmet's, a few Seeds from Madagascar. On view the morning of Sale, and Catalogues had.

Specimen Plants—Tree Ferns. MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 23, King Street, Covent Garden, W.C., on THURSDAY, April 12, at half-past 12 o'clock, precisely, a quantity of Choice Specimen PALMS, FERNS, CROTONS, DRACENAS, &c., all in good healthy condition; also some TREE FERNS from the New Plant and Bull Company, comprising the entire stock of a New Cynthesia, Dicksonia squarrosa, Caysthea Smithii, Cynthesia dealbata, &c. On view the morning of Sale, and Catalogues had.

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Auction Mart, Tottenham Yard, London, E.C. MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, as above, on MONDAY, April 23, at half-past 12 o'clock, precisely, a quantity of Choice KRAMERIA, and other choice species, just arrived from Japan in splendid condition; a quantity of COOL ORCHIDS and HARDY BIRCH, also a few fine Choice White and other CAMELLIAS, &c. Further particulars will appear next week. Auction and Estimates, 93, Gracechurch Street, E.C.

To Nurserymen, Seedsmen, and Florists. FOR DISPOSAL, a BUSINESS, fine large HOUSE and SHOP, small compact NURSERY close to, three Greenhouses well heated with hot water, and sixteen Frames, fully stocked with valuable Bedding Plants. Good Fobbing connection, and very cheap, and increasing it. Shop in first-class position. Long Lease and moderate rent. Apply for further particulars on the premises, or to Swiss Terrace (forming Swiss Cottage Station, Metropolitan Railway), Delance Road, St. John's Wood, N.W.

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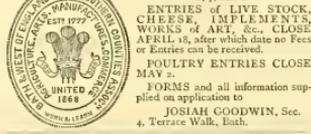
Green Ferns of sorts in fine kinds. ROBERT PARKER, having a surplus stock of Small-leaved IVES in pots, suitable for edgings, pattern beds, covering banks, &c., will be pleased to dispose of such quantities at very low prices, in Choice White and other colors, 10s. per 100, or 2000, will be given on application. Etcotic Nursery, Footing, Surrey.

To the Trade—Mangel Wurzel Seed. BOLTON AND CO. have a fine stock of BERKSHIRE PRIZE YELLOW GLOBE MANGEL, a variety well known for its large producing qualities; also an extensive stock of LONG WERY MANGEL, which is equally well known for its quality of the celebrated GATE FOST MANGEL. Prices on application. BOLTON AND CO., Seed Merchants, Wood Green, London, N.

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ENTRIES OF LIVE STOCK, CHEESE, &c. FOR THE BATH MEETINGS, 4th, 5th, 6th, 7th, and 8th. ENTRIES OF LIVE STOCK, CHEESE, &c. FOR THE BATH MEETINGS, 4th, 5th, 6th, 7th, and 8th. ENTRIES OF LIVE STOCK, CHEESE, &c. FOR THE BATH MEETINGS, 4th, 5th, 6th, 7th, and 8th. ENTRIES OF LIVE STOCK, CHEESE, &c. FOR THE BATH MEETINGS, 4th, 5th, 6th, 7th, and 8th. ENTRIES OF LIVE STOCK, CHEESE, &c. FOR THE BATH MEETINGS, 4th, 5th, 6th, 7th, and 8th.

MESSRS. J. CROUCHER and H. BOLLER beg to inform the Public that they have TAKEN THE BUSINESS lately carried on by P. FEERSDORFF, at 75, South Row, Kenal New Town, and have to receive the confidence of those cultivating plants in the country, also the Public generally. For any Succulent Plants, both miniature and other, will receive prompt attention. Messrs. C. & H., having had particular attention in this class of plants, can guarantee correct stock. The Trade supplied.

patent-gumming, Pelargoniums. JAMES HOLDER and SON have a fine healthy stock of the above to offer, at the following low prices for Cash, viz.: 25s. per 100, disty, 20s. basket and packages included; also extra strong plants, in pots, 6s. per dozen, in 48-pots, 5s. per dozen, 6s. per 100, hamper and packing extra. Crown Nursery, Reading.

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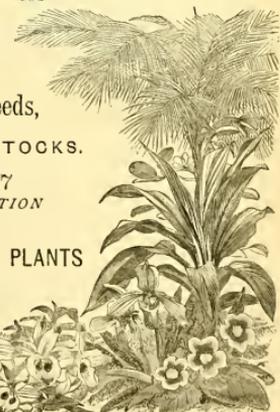
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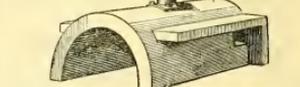
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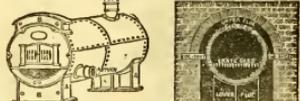
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This JOURNAL, being the official medium of the Direction, will contain all that can be of interest to the Exhibitors, Directors, Jurymen, Members of the Congress, and visitors in general.

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To realise these plans no efforts nor expenses will be spared.

This Daily JOURNAL will be, without doubt, a very desirable and effective medium for the insertion of Advertisements, especially of all articles appertaining to Horticulture, but also of those intended for the public in general. It will certainly have a very extensive sale, not only in the Exhibition grounds, but also in the country and abroad, to every one who takes an interest in this Exhibition.

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A profuse flowering variety, of dwarf compact habit, remaining in bloom for a considerable period, hence it is invaluable for growing in pots for conservatory or drawing-room decoration. We have this season succeeded in saving six distinct colours, which greatly increases the value of this beautiful Aster for bedding purposes.

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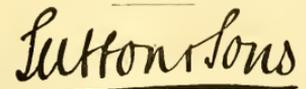
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 Price, 1s. 3d. per lb., 22s. 6d. per bushel, carriage free.

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds
 Gratis and post-free.



THE QUEEN'S SEEDSMEN,
 READING, BERKS.



SATURDAY, MARCH 31, 1877.

SPRING.

LIKE Conn, the Shaughraun, who snatches a draught of whiskey when stretched upon his bier, vegetable nature does not die completely even during the winter months. She assists, like the above-mentioned Irishman, in her own wake, especially when the winter is as mild as the past has been. Yet, in spite of Winter Roses, patches of green beneath the snow, and other occasional proofs of Nature not being quite dead, the winter season—and more particularly November, when the leaves are still rotting before our eyes—is the most melancholy period of the year. Sad indeed is the spectacle of falling leaves, browned evergreens, and all other evidences of the annual descent of vegetation into an apparent tomb. Then the litter of Asparagus and Bean stalks, the disorder of Potato haulms, and the uninviting look of Scarlet Runners blackened in a night, and of old, unweaten Cabbages frozen to the ground! These first forbidding symptoms of decay mark that melancholy period of the year when winter's grip, in a sudden frost, spoils the gardens, and snatches the leaves from twig and branch to mingle with earth. This occurred last year after the heavy rains, when the frost-bite smote all deciduous vegetation and brought down the leaves shivering to the ground. It is a most distressing period for those who pride themselves upon their lawns. In a case of that kind last year twelve men were employed walking in a row, with brooms and aprons, to catch and sweep off the falling leaves. This period of decay is unquestionably the least joyous period of the year. A little later and all signs of what has happened—death without immediate burial—will be covered up a spit deep, and the calm of resignation, or even the anticipation of a merry Christmas, will succeed to the dark hour of autumn's first hard frost.

Then how rapidly the season marches on! Early in November last year a winding-sheet of snow was spread over the Scotch mountains from Thurso to the Tweed. The Fir plantations of Strathpey were muffled early in the white familiar mantle, and in travelling homewards the same covering was on the trees at Perth, and southward to the English border, where the snow lay a mere film upon the hills. In the south of England the land last winter escaped the usual ice-lock. There were outdoor fountains at Christmas, and a hedgerow near Eastbourne sheltered a Primrose on January 15. As a rule, Nature lies conventionally dead five months. Then comes the annual summons, and before the earth is quite awake, and previous to the commencement of the general bird-chorus, you see that Nature's sleep in field and forest is over. Presently the leaves burst their wrappers, prepared to flutter till October; but first of all the pastures exchange their brown coats for the brightest liveries of green, and amidst the many touching incidents of the general revival there is nothing more affecting than this resurrection of the myriad lowly herbs which are individually too obscure for the general eye, though they form collectively the pastoral covering of more than one-half of England.

And while the earth is being re-decorated the gardener beckons his bedding plants, and

commences the work of grouping them and arranging their various hues in due harmony and contrast. What a magician he is in spring-time. "Man cannot live by bread alone," might be his motto. It is because of that constant yearning of the soul for beauty that all men must have flowers, gardens, and gardeners, if attainable. For what is beauty but perfection? and where can that be found if not in a flower? True, it must be evanescent, but so are most things, and we have preached throughout this sermon its renewal. Flowers, and indeed all plants, resemble, in that respect, our lives, and the bounding of the heart and joy in the annual spectacle and miracle of spring are premonitions of immortality.

We have here laid down a principle which covers all the reasons why the heart is touched by the phenomena of spring. Young grass is, in one aspect, only prospective beef and mutton, and a promise of butter yet to come. A cornfield is equally a promise of new bread; and the routes by which the hearts of some men may be reached being circuitous, the source of their pleasure in spring is simply appetite. But happily most persons are more spiritual than they imagine, and hence the general love of gardening. An increasing number of gardeners is continually being trained for the cultivation, to a large extent, of unnecessary crops, because the world is growing less utilitarian and more disposed to grow those crops which fancy alone can feed on. In that noble structure of Nathaniel Hawthorne's, "the Hall of Phantasy," he enumerated among the crowds upon its marble floors, poets and other men of fancy—the greatest benefactors of their race. And we would add gardeners to the number, as the greatest annual creators of beauty in an important department of decorative art.

NOVELTY.

THE BANDED RUSH.—At present we do not know the botanical position of this singular novelty. What we do know is that it is a very striking hardy variegated plant, and variegated as few plants are, viz., in the form of rings, of yellow colour, alternating with similar rings in which the green colouring matter is present, as usual, thus presenting a near resemblance to a porcupine quill (fig. 62). To what cause are we to attribute the absence of colour in this particular manner? To this question we can at present give no answer. It is an interesting illustration of the independent action and separate life of individual cells or groups of cells, but the reason of it in this case we do not know. The plant, from what we have seen of it, is likely to be a favourite, as the variegation is distinct, the plant hardy, and the culture of the simplest. It was introduced from Japan by way of America, we believe, at any rate the stock is now in the hands of Mr. W. Bull, by whom it will be sent out. The similarly banded *Eulalia* we shall figure on a future occasion.

EXPERIMENTS IN VINE CULTURE.*

As a rule horticulturalists welcome and hail with pleasure any substantial aid to their profession brought under their notice. Hence a few experiments made after nine years' experience, painstaking and careful observation in the county of Durham, will, I trust, be thought worthy of notice. Having been invited to read a paper, I agreed, I confess somewhat reluctantly, fearing I might fail to make you evening as instructive and enjoyable as it might be, by some one more used and better adapted to public speaking.

It will be remembered that some two years ago, when here, I partially promised to give some account of an experiment made with a house of Vines planted (if the term may be considered correct) without natural soil. Some three or four years ago the influence of soil on Grape growing attracted a fair share of attention, and was criticised freely in the horticultural papers by practical men. It occurred to me that Grapes could

be grown without soil, and I resolved to give such a method a trial, and soon after an opportunity was presented, and the experiment was made in a small house, 30 feet by 12 feet. In the month of August, 1873, immediately after gathering a crop of Hamburgs, the Vines, which for several years had been severely forced, were taken out. Immediately inside of the front wall I had the old soil removed down to the drainage for a width of 4 feet; this was refilled with the freshest of last year's leaves, and green cow-manure pressed as firmly together as possible. The Vines were then planted, and a little soil was used to surround the balls; in November I added to the border 4 feet outside and 4 feet inside, making a compost, but the soil was a most unmanageable mixture in which to plant young Vines. The first part of the border made has become a light black soil without any adhesive texture, and is soft and spongy when trod on. No doubt to some this experiment will appear very startling, more especially to those who condemn the practice of using manure in a raw state in the formation of a Vine border. But we are told clear-sighted men of science sometimes get into mental fog, and make comical delinquencies. We are also told that one fact is worth a thousand arguments. Now let us set this border to prepare for producing fruit equal in every respect to what the house before produced, and to what houses of the same size are now producing where the borders have been prepared in the old way. The varieties planted were varied for experiment, and consisted of Dr. Hogg, Canon Hall Muscat, Barbarosa, Foster's Seedling, Black Hamburg, Duke of Buccleuch, Waltham Cross, and a seedling. There was nothing in the Vines or fruit that would lead one to suppose that they were growing in any other than the usually prepared soil. The borders were the first to ripen and flavour, Canon Hall set like Hamburgs, and Waltham Cross had none of the small berries it often produces from imperfect setting. This Grape was good, and well liked at the table, in February, at Lambton.

In the latter end of August, 1875, I planted another house of the same dimensions as the one already described, and with a view of retaining the turf as long as possible in a fresh condition it was not broken up, as is generally done when making a Vine border, but put in the following 5 inches, commencing at the bottom and working upwards, placing the turves as a mason would bricks in building, and using cow manure as mortar. To quote the words of Mr. Westcott, of Raby, when looking over the gardens at Lambton, after an explanation, he said, "Well, you have just gained a year on my young Vines," when only the year before I had congratulated him on their vigorous growth. I don't wish it to be understood that I prefer manure to grow Vines, or that I consider it better than other mixtures, but I believe it to be good along with them, and that in my estimation no newly made border is perfect without it. In the many gardening periodicals now published we have writers who may differ in their management of the Vine, but whose articles are hailed with interest and read with pleasure by those in pursuit of knowledge. If every one were as fond of writing on the Vine as I am of reading about it, we should have a periodical devoted to the Vine alone. I read all the conflicting evidence on its cultivation, and hope that we may ultimately agree as to the perfection of Grape growing. Many ills are caused against an over-rich border, such as mildew, gross growth, watery shoots, badly ripened wood, an abnormal amount of pith, shanking, bad coloured Grapes, and so forth; but when one ventures an experiment and finds it puts all these aside, what then?

I cannot help thinking there is much to be learned, but when we are able to put our hand with more certainty on the causes which produce the ills the Vine is heathen, we shall become more ready to remedy them. I have shared myself (but more so after another year's experience) to say, that the build of a

Vine depends more upon the internal atmosphere, the amount of moisture it is charged with, and the light under which it is grown, than upon the richness of the border; it seems to me one of those plants which cannot be grown too fast or too strong. Some tell us it is not from the strongest wood we get our finest fruit; granted in some cases, there being so many ways of growing and ripening the canes. While some house has every attention paid to it—properly drained, and as a rule looked through in the evening, and a temperature of 65°, 70°, or 75° rigidly adhered to, a close growing atmosphere kept up, and the Vines encouraged to make their growth in darkness, instead of daylight—hence come the watery shoots if you like, and an abnormal amount of pith. And from such management the strength of the Vine is reduced until tendrils instead of bunches are the reward.

From the time Vines commence to grow a little air should be considered of the greatest importance, and the quantity should be increased as the foliage becomes stouter and able to endure it. A given temperature sufficiently high for the well-being of the Vine can easily be maintained with a requisite quantity of air to prevent the growth of watery shoots, if encouraged and grown in sufficient light to do so. One of these plants, I find glass used as extensively to indicate the strength of light as they now are to register so correctly the temperature. Before finishing my paper I may add I trust my experiments may lead to some further researches in this or some other way that will be advantageous to Grape growers, and denote a secure future progress. *F. Hunter, The Gardens, Lambton Castle.*

ON HOLLAND-BELGIAN BORDER-LAND.

RAILWAY travelling will not be perfect until you can traverse large towns—small capitals, or cities which think themselves as important as capitals—without a break; especially as the distance between some of them is inconsiderable from a railway point of view. If you want to see them, or to halt for rest, the rupture of continuity is of little consequence; but if you have seen them, and don't want refreshment but do want to get on, it is a waste of time and patience—the travelling time is so inflated with delay as to be a bore because inevitable. On arriving at Brussels from Calais, for instance, you cannot go straight to the Rhine without stopping and driving from one station to another, although many tourists might like to do so. And on proceeding from Ghent to Holland *via* Antwerp, you take your departure from the latter city by the Station Hollandaise, the Hollando-Belgian Station.

The line carries you over a plain in no wise remarkable and in some respects disagreeable, irrespective of its monotony, which is broken by a field or two of yellow-flowered Rapine, stretching the landscape's dull tints in due season with patches of gamboge. Then you have plantations of Firs, sown and left to grow much too thick, so that a struggle for life ensues in which all seem likely to succumb and not one to survive victorious. Their only use appears to be to furnish sticks and firewood, perhaps also to prevent the light soil from being carried off by the winds to improve and manure the heavier lands of some distant region. The possibility of this contingency is demonstrated when you come to wide-railroad tracks, where a crossing which the train raises clouds of fine dust, whose penetrating powers are manifested by every fold of your garments when you would tidy yourself up a little at your hotel before dinner.

After their first passage through this pulverised plague of heated silver-sand and desiccated heath-mould, many people make a stern resolve. "Most unpleasant," they say; "disgusting, unbearable! Next time we come, we'll avoid this nuisance by taking the steamer from Rotterdam to Rotterdam. On that, we shall not be stifled and choked. Plenty of fresh air—must be a delightful passage." Yes, but inquiry acquaints them with the fact that the steamer, whose movements are regulated by the tide, sometimes starts at inconveniently small hours of the morning, that it is from seven to nine hours in going from port to port. "And," suggests a descendant of one of Job's comforters, "it probably carries a good deal of merchandise, to make it pay. How do you know that your travelling companions won't be a flock of sheep or a drove of pigs? Moreover, your guide-book says that, when the weather is rough, sea sickness is no rarity." So the firm resolution to

* Read at the Darlington Gardeners' Institute, on March 15.

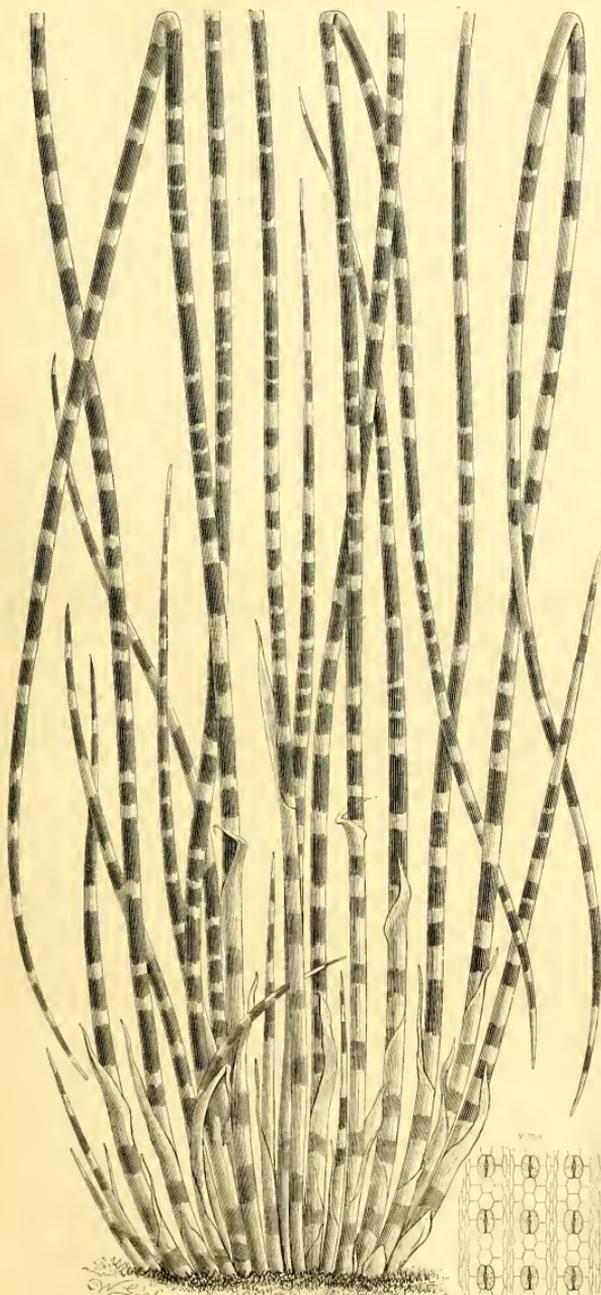


FIG. 62.—THE BANDED RUSH, WITH EPIDERMAL CELLS AND STOMATES.

steam it gives way, and the traveller, choosing the least of two evils, elects to enter Holland by land.

Crossing an untried frontier is always an interesting step. Who would hesitate here, when the very name invites you—Rozendaal, the Dale of Roses? The Dutch have not a few localities very idyllic in their significance. Haarlem possesses Vogelenzang, Bird's Song, a village of bulbous celebrity; also Bloemendaal, the Vale of Blooms; also Zomerzorg, the Summer Delight. As in passing from France into Belgium, so in crossing the frontier between Belgium and Holland, no natural limit indicates a change. The fact is revealed by the request, that is the order, to submit your baggage to the inspection of the Dutch gentlemen of the customs, whom my own experience cannot accuse of unpoliteness. They have a formality which they are compelled to fulfil; and if you don't even know what is contraband, through having nothing with you but travelling necessaries, certainly, in that case, ignorance is bliss.

After starting from Rozendaal, you soon perceive a difference. When a train halts at a station, waiters or women offer on trays tall glasses of nice looking beer, which you may drink and pay for without stirring from your seat. Dutchmen get out, offering you and (when declined with a shake of the head) leaving behind them the Dutch newspaper which they have bought and skimmed, much as some Frenchmen think it fine to leave half a glass or the quarter of a bottle of wine on the table where they have been dining. The stations are paper-hung and ornamented with printed bills, advertisements, and notices in Dutch, one of which, recommending Hardenberg's Bible Hotel at Amsterdam, is a strange novelty to English eyes. More serious than all, the moneys have changed. The coins so cheerfully received in Belgium, France, Italy, and Switzerland, are no longer current here. One single reason is sufficient to stop them; they are of less value than the corresponding pieces (when there are any) of the Dutch coinage. English and French gold is taken, by exchange, at the hotels, but "put money in thy purse" of the Dutch stamp only, for use in the streets and at railway stations.

The Dutch coinage is less easily compared with English money than with French, by which latter I will therefore measure it. Accounts are kept in florins or gulden and cents, the cent is the hundredth part of the florin, so that it is a decimal system of money; as in France, the florin is worth a little more than two francs. When your bill is brought in, or the price of an article stated in florins and cents, double it, mentally add a trifle more, and you have the very approximate amount in francs and centimes. The half florin corresponds to the franc, the quarter florin (silver) or twenty-five cents to the half franc or fifty centimes piece. Coppers are the weak point of the Dutch coinage, they have only their trumpery little copper cents, worth rather more than two French centimes, or the fifth of a penny each, but nothing corresponding to our halfpenny or penny, or to the French five and ten centimes (one and two sou) pieces. Moreover, small copper coins of other countries, as of Belgium, pass for cents; whence it comes to pass that you often receive as change a handful of rubbish, which tempts you to fling it into the first canal rather than put it into your pocket. The Dutch cent is open to the further objection that it has no relation whatever to the American cent except in being the hundredth part of something. The stuiver (four cents) is non-existent in the metal, although some small dealers may count by stuivers, twenty of which would go to the florin—just as country people in France still reckon by écus (three francs) and pistoles (ten francs), all trace of which in the currency has long since disappeared. For the gold twenty-franc piece you get at hotels, perhaps varying a trifle with the rate of exchange, nine florins forty cents. But in such exchange you can only expect to receive *pas*.

If the exchange were in your favour, the exchanger might hardly feel bound to give it you, as he saves you the trouble of going to the bank; if against you, he would probably deduct the difference. Of the gold currency, to which Holland is returning, after having demonetised gold, I have seen nothing; not one of the new gold ten-franc pieces, about 16*s*. 8*d*., which are now made legal tender. There are ten-florin notes, which are so far convenient on account of their small bulk and their lightness.

No passport is needed for entrance into and circulation in Holland, but prudence will urge every traveller to be provided with one, nevertheless. At

the first opportunity he will buy the latest issue of the *Officiele Reizigs voor Nederland*, with the map, if he can get it with the map. This, being printed in Dutch, raises the important question of language. Nobody is supposed to know Dutch, but the tourist will find it most useful to learn the numerals, the days of the week, and a few other indispensable words. This is not difficult for an Englishman, especially if he have some knowledge of German. With this, a good will, and a little hard study, Dutch does not look as if it would prove an insurmountable tongue. The inscriptions in the streets invite you to learn it. No prophet is needed to help you to interpret "Takak Snuf en Sigaren," or "Koffij en Thee," or even "Boekdrukkerij" over a shop-front. "Zadelmakerij" is equally obvious to any one who ever bestrode a horse; as are "Goud en Zilver Werken" to lovers of finery; and "Broodbakkerij" and "Boter en Kaas" to hungry boys and girls. Need I explain that "Aardappelen" are earth-apples, Potatoes; "Boterhuis" a butterhouse; "Haarschijder en Scheerder" a haircutter and barber, represented perhaps by a father "en zoon?"

French will not carry you so far as you may fancy, it is little use in the streets, of almost none in the country. The gentlemen at the head of the best hotels are mostly accomplished linguists, some (not all) of the waiters also speak English or French more or less fluently. At any rate, a foreigner who speaks no language but his own is not worse off in Holland (if so badly) than he would be in France. Taken as a nation, the French are perhaps the most accomplished linguists in Europe, unless the Spaniards beat them in that negative quality. Their language is admitted as the language of Courts, and consequently of diplomacy, often too of business affairs. The French is not so great a barrier to the foreigner. In country districts, in the days when military service was not compulsory and universal, he was content to pass his life in moving in an irregular orbit round his village steeple, beyond whose sphere of attraction he never went, rarely losing sight of it for more than a few hours. Here therefore demands it a work of supererogation to acquire any other tongue than his own. If strangers come to him, he expects them not only to speak his language, but to speak it well, in which he is unusually exacting, for, at least amongst the middle classes, however correct may be the speech, the spelling is often amusingly at fault.

In Holland, on the other hand, the educated classes are often admirable linguists, wealthy not only in worldly goods, but in an acquirement of foreign tongues. Their high position as a maritime power, their colonies and their wide-spread commerce, have brought them into contact with many and various peoples, and as few strangers think it worth their while to learn Dutch, the Dutch, in all sheer necessity, learn the languages of other peoples. Dutch ladies even are to be found possessing the accomplishment of passing from one language to another with an ease and fluency which would astonish any young woman whose schooling is supposed to be "finished," although education in this world is never finished, unless by those who are contentedly resolved never to pass some given milestone of practical routine or of ignorance.

Why, then, do men, the first motive for learning a language is its social or commercial utility. Otherwise, we are told great things of Dutch literature and its attractions. The Dutch language is not, as many people fancy, a corruption of the German language. On the contrary, its independent existence, its special forms, its own peculiar character, together with great copiousness of expression. Although Dutch is called Neder Duitsch and German Hoog Duitsch, that is, low and high Dutch, the latter the more refined, the more cultivated, the nations who speak those languages. For, taking into consideration their respective areas and populations, Dutch literature has produced during the last four centuries more *chefs d'œuvre*, some of which are perhaps not less than the number of the languages. And yet nobody takes to learning Dutch, whence the Dutchman takes to learning everybody's language. †

who have worked hardest in investigating the exact nature of the Potato murrain. The men who associated the disease and guano together could give no solid and convincing reason for such association. Latterly the "guano theory" has had a strong fascination for me, and I am inclined to think the rastics of 1845 and 1846 had good reason for associating the Potato pest and the guano together: for instance—From 1814 to 1854 more than a million tons of guano were imported into this country from the China Islands. This guano came direct from the very home of the Potato plant.

2. The exotic origin of the fungus which destroys our Potatos has never been doubted, and all known facts point to the neighbourhood of Peru as its home.

3. The Potato fungus attacks other Peruvian and Chilian plants, as the Tomato, the Petunia, Schizanthus Grahami, &c.

4. The Potato fungus not only germinates readily in water and in dung, but the last two years' experiments clearly prove that it will live through one or more years in a resting condition in dry manure or its expressed juices.

5. Thick fogs at some seasons are described as being of highly occurrence on the Peruvian guano islands, and in the old times of guano collection these fogs converted the whole surface of the guano into a "greasy paste." This "greasy paste" would be the very resting-spores of the Potato fungus.

6. Known facts prove that the neighbourhood of Peru is the home of the Potato and the Potato-fungus. That the fungus there perfects its resting-spores as it does here, viz., upon excrement and refuse, there can be no reason to doubt. That the ordinary spores will grow in and upon guano, and in this material proper resting-spores, seems highly probable, and that resting-spores and guano were at one and the same time brought to Europe would also appear quite within the bounds of probability and reason. The Potato-fungus clearly does not, as because it flourishes far better on the cultivated plants of Europe than the wild and rank Solanaceæ and Scrophulariaceæ of Peru and Chili.

With these views in mind, I propose carrying out some experiments during the forthcoming autumn. In the meantime I shall be glad to make a microscopical examination of any samples of guano sent on to me, with a view towards the detection of any fungoid bodies that may possibly be present. *Worthington G. Smith.*

LAMBTON CASTLE.

(Concluded from p. 376.)

THE FRUIT-HOUSES.

The range on higher ground behind, and which has been already alluded to, consists of a number of houses, the ends standing north and south, at right angles with the others that connect them. Commencing at the westward end, the first we enter is a span-roofed Peach-house, 40 feet by 22 feet; the trees are planted on both sides, trained up near the roof, the roots occupying both outside and inside borders; they are mostly old favourite varieties. The adjoining house is a span-roofed viney, the same size and similar in every way, principally Lady Downe's and Black Alicante; they were planted before Mr. Hunter came here; although bearing a nice crop they are not quite right at the roots—a new border is to be made and replanted. The next is a hip-roofed Peach-house, 48 feet long, the trees planted in a raised border in front, and are in very good order.

We then come to a Cucumber and Melon house, each 30 feet in length. A number of varieties are grown. In continuation is a lean-to Peach-house, 33 feet by 12 feet, it is filled with one very fine tree, a Royal George, forced early every year. The back wall is covered with Figs.

Next comes a lean-to viney, 33 feet by 14 feet, two years planted with Black Hamburgs, Duke of Devon, and William Seckling; these are the Vines mentioned in the paper Mr. Hunter read and described as planted without a particle of natural soil, except a small quantity used round them at the time of planting; and as no further details were given many were puzzled not a little to conjecture what they could be planted in. The border occupies the whole of the inside of the house, and 12 feet outside; it was made in August, and consisted altogether of leaves gathered the preceding year, and cow-dung in equal proportions. It was done for an experiment, and it so far a success; as Mr. Hunter says, it remains to be seen

how long they will last in such material. They have made splendid growth, and for their age carried a very heavy crop of large-berried highly coloured fruit; so that some of the bunches of Hamburgs were not far short of 5 lb. each. I tasted some of these and the flavour was as good as their appearance, which goes to show that rich feeding does not always injure flavour. From our own house I saw many more vines, up to the last, all Black Hamburgs, and planted before Mr. Hunter's time; they were carrying a good crop of even sized, finely coloured bunches. Next is a similar viney; this house has been planted one year with Black Hamburg and some Golden Queen; the border is made of two parts loam to one of cow manure, without rubble, lime rubbish, or any material of a like nature added; they have made very fine growth.

This leads to another viney, the same size, filled with Black Hamburg and some Golden Queen; three years planted; these were forced early, and had all the appearance of having borne a good crop.

The next are two succession Pine-houses, each 28 feet long, filled with strong promising plants. Adjoining are two more hip-roofed Fig-houses, similar to that already described at the opposite end of this very long range.

The last two houses are span-roofed fruiting Pine-houses, the same size and standing in the same position—at right angles with the centre of the range as does that occupied by the trees at the opposite end. A large proportion of the plants in the first house are seedlings raised by Mr. Hunter; they are all raised from Montserrat, but differ very much in appearance from each other, and still more from the parent, being double the size with much smaller crowns than Montserrat. Many of the seedlings were in fruit, and would run from 8 lb. to 10 lb. each, one in particular Mr. Hunter has grown up to 1½ lb. In the adjoining house, which is connected with this by a narrow lean-to, in which are grown Bananas planted amazonica, all planted out, the Pines were similar in condition to the last, comprising Charlotte Rothschild, Smooth Cayenne, Black Prince, Thorsby Cayne, and Providence. These fruiting Pine-houses were the only structures I saw at Lambton that did not appear well adapted to the purpose for which they were employed, being somewhat heavy and much too lofty; for although the beds in which the plants are grown are raised much higher than usual, the tops of the Pines were almost as many feet from the glass as they should be inches. In this house I noticed a number of seedlings of the fine and scarce Palm, *Stevensonia grandifolia*.

THE CONSERVATORY.

The conservatory, as already stated, stands in the centre of the front range and at right angles to it. It is 40 feet wide by 60 in length, and, therefore, runs back 40 feet behind the back of the fruit-houses in the range. The roof is a treble span, the floor is not all on the same level the entire length, the quickly rising nature of the ground behind rendering this not possible, consequently the northern portion has to be reached by a considerable flight of steps from the southern end, and which, so far as the plants being seen from different points of view, rather enhances their appearance than otherwise. In the southern end are two noble specimens of *Dicksonia antarctica*, with clean straight stems 10 feet high, and fine spreading heads. Ascending the steps, the plants at short intervals are spanned by stout ornamental iron arches covered with twiners, and the centre of each surmounted by a low-spreading specimen plant, such as *Cibotium Schiedii*, which, with its drooping fronds, in this position is very effective. Palms, Agaves, Yuccas, *Phormium tenax variegatum*, and other subjects of a kindred character, along with whatever flowering things are in season, make up the display. This leads to a warm span-roofed fernery, 40 feet by 40 feet in which, amongst a nice assortment of these elegant plants, were some beautiful examples of *Adiantum farleyense* and *Todea superba*.

In the frame ground is a long span-roofed house, 130 feet by 18 feet, divided for stove and greenhouse plants for conservatory decoration; in the greenhouse division were *Azaleas*, *Euparacis*, *Epiphyllums*, *Valotas*, *Pelargoniums*, &c.; and on the surrounding stage next the wall in the warm portion is a nice selection of Orchids, consisting of *Cattleyas*, *Odontoglossums*, *Alexandras*, *O. Rosea*, *Cochlosoma*, *Onchidium*, *Cypripediums*, and *Calanthes*, for cutting; the centre pit

was filled with Exoras, Crotons, Palms, Dracenas, Marantas, Alocasias, and similar stock. The pits in which are wintered and propagated the bedding plants, 100,000 of which are grown, occupy a considerable space. During the summer season a great quantity of Melons are grown in these.

One thing I particularly noticed:—that the sheds, offices, backs of the lean-to-houses, as also the brick-work of those that are span-roofed, are all covered, or in course of being covered, with Concrete, Pyracantha, Ivy, or similar plants, so as to show as little of the bricks as may be. The result is, that even such places as are necessary for carrying out the garden work, and which are often unappealing but inviting in appearance, are here fair to look upon.

The ground which is occupied by the fruit and kitchen garden, including the space on which the fruit and plant houses stand, is about 11 acres. The fruit garden is fronting the principal range of vinerias, and separated from it by the broad terrace flower garden already mentioned. It is about 3 acres in extent, and enclosed by 14-foot walls, well stocked with Peaches, Apricots, Nectarines, Pears, Plums, and Cherries. The Peaches were carrying a nice crop, which residents in the South would scarcely have looked for so far north last season. This garden is divided into four quarters by broad walks, which intersect each other in the centre, at which point is a fountain and basin. The walks are edged with Box, nicely kept, within which on each side is a broad ribbon border. These were very effective, particularly when seen from the centre of the terrace above. The arrangement consisted of a front row of scarlet Pelargoniums, then a 5-feet centre of *Verbena venosa*, backed by another row of scarlet Pelargonium and Crystal Palace Gem, yellow-leaved; at the back of this border is a light iron trellis covered with Pears, the back of the corresponding cross borders being composed of pyramidal Pears and Apples—young healthy trees in good bearing condition, but this season, like most others, not over-done with fruit. Precedence is given to the harder kinds of Pears, such as Marie Louise, Louis Bonoe, Jargonelle, Beurré Rance, Hesse, and Swan's Egg.

The kitchen garden adjoins this on the eastern side, and is also in excellent order; the greater portion of this was a deep hollow, and has been filled up several feet; here the sides of the walks are planted with pyramidal Pears and Apples, well-managed young trees, just coming into bearing condition. Cullinary vegetables are thoroughly well done—Peas in bearing and full bloom without a trace of midew, showing the advantage of the unlimited supply of water at command, especially in such summers as the past, when it was next to an impossibility to keep Peas in a bearing condition where water had to be given in dribbles by hand. Cauliflowers and Veitch's Autumn Broccoli were as strong, and producing heads as large as if we had experienced a wet season.

There is one thing in particular that contributes very much to the appearance of the place—the beautiful gravel that is used in the walks both of the kitchen and fruit garden, and also of the pleasure grounds; it is of a bright yellowish brown colour, about the size of large Peas. I understand it is brought in the Earl's vessels in ballast from France, and is unequalled by any I have ever met with elsewhere. The body of the walks is made of a material got in the neighbourhood, something like a mixture of clay, loam, and lime, which binds quite close and solid, so as to have any reasonable weight. On this the gravel is laid about an inch and a half thick, left loose, and the surface raked as required. It is always perfectly clean, bright looking, and pleasant to walk upon. It gives the last touch of a complete finish to this well-kept, well-managed garden, that so favourably reflects the interest taken by the noble Earl in horticulture, and affords equal evidence of the abilities of his gardener, Mr. Hunter.

There is yet another matter that deserves mentioning. The garden is not alone thought of, but the health and comfort of the men receive great consideration. There is a large, commodious house just about completion, to accommodate some half-dozen of the young men, wherein each has a spacious lofty

bedroom, with dining-room, reading-room, and bathroom. The most effectual way to induce young men to exert themselves, and take that interest in their work alike essential to a successful fulfilment of their duties and their own well-being, is to show them that they are cared for. *T. Bates.* [The actual weight of the bunch of Gros Colman Grapes illustrated in our last issue was not stated, and we take this opportunity of supplying the omission. It was 5 lb. 2 oz.—an enormous weight for the variety. EDS.]

BRITISH GARDENERS.

JOHN WIGHTON.

Mr. WIGHTON, who has long occupied the post of gardener to the Earl of Stafford, Cossey Park, Norwich, sends us the following reminiscences of his gardening career:—

"My father began life as a gardener in the famed gardens of Dunkeld. I was born on May 25, 1803, when my father was gardener at Craiglochart to Dr. Munro, Professor of Anatomy in Edinburgh College. At the time I refer to I was only about four years of age, yet I remember seeing my father



John Wighton

with a rake catching toads, frogs, and lizards from a pond, which he said were for my uncle to dissect for Dr. Munro. I likewise remember seeing him shooting *Fi* seeds from a short gun among the crags, so that they might fall into the fissures of the rocks. I mention these little incidents merely to show how long early impressions last, and that they mould or shape the character or disposition of a man for good or evil through life. I have named my uncle because he was a gardener, but by dint of perseverance became dissector to Dr. Munro, which enabled him to publish his *Fiji's Anatomy*, yet he never lost his love for gardening.

"After Dr. Munro's death my father became gardener to the Earl of Leven, Melville House, Fifehire. I was sent to an old woman's school, and learned some short words, but stopped at the long ones, some of which the good woman did not know herself, and she used to say 'hip (miss) them'; but 'hippin' or 'skipping' words would not do afterwards at Letham parish school under a sharp master. There I had every opportunity of learning, but I regret to say I did not profit by it. I never could spell nor read correctly, perhaps owing to a 'dull ear' and slight impediment of speech, consequently I was always nearer 'hooby' than 'dux' of my class; in fact I never liked school, and used to 'cover' at the sight

of slates and pens. But this I deeply lamented in after-life, because I lost the chance of the means of acquiring knowledge which I never could recover. However, I took an interest in my father's wishes, however, and was pleased with the common Chinese Rose, which was then a novelty, so much so that Lord Leven used to invite friends to see his 'monthly Rose' in bloom trained to a warm wall.

"I now advert to my father being gardener to Ramsay Williamson, Lixmouth, near Edinburgh, which was a sweet little place, kept in excellent order. For this he had the 24 prize offered by the Horticultural Society for the best-kept garden near Edinburgh. I began now to do a little gardening work, as at my father's wishes, however, and was placed on trial to a grocer and spirit dealer of Edinburgh; but being in the heart of "Auld Reekie" weighing sugar and handing drams of whiskey over the counter to bicar-eyed women went sore against the grain with me, therefore I gave up all thoughts of shopkeeping, and told my parents I would be a gardener if I earned only 'salt to my porridge.' This led to my being apprenticed to Mr. Wright, gardener to the Earl of Rosburgh, Dumfriess Park. Being now in my proper elements, I soon acquired the knowledge of practical gardening, and was foreman during the latter part of my time there, where I passed the last five years of my 'teens.' But as my master had no taste for rare plants I left him, and went to Sir Robert Liston's, Milburn Tower. Lady Liston was a sincere lover of rare plants, and had the best private collection of them near Edinburgh. I now studied hard, and used to think a day was lost if I had not learned the names of a few plants, and also added a few specimens of them to my *hortus siccus*. When young men are thus employed they should write the names of plants correctly from a catalogue, because the act of doing so fixes them the better on the memory.

"I advert again to my own bad spelling while at school, in order to record a little anecdote of Sir Robert Liston, who came and held up a label on which was the name of a plant, and inquired who wrote it. I said it was an old one, and that I had been only a short time in his service. Then he turned to my neighbour, and put the same question, and he said 'I dinna ken.' 'Eh, ch' I replied Sir Robert, 'I find no one will own it, but I advise young men to learn to spell correctly,' and further observed that if he had not done so when at school he could not have been able to keep either plants or gardeners. I may mention that he began life as a ploughman, but by great perseverance and good patronage he became an Ambassador. While in his service I first saw the Chinese Primrose, which cost a guinea; now a better one may be had for a penny. I went from Milburn Tower to be foreman to Mr. Gibson, gardener to—Balfour, Esq., Whittinghame, East Lothian. The gardens were new, and my master's time was chiefly occupied in the general improvement of the pleasure-grounds, which was his *forte*, consequently the management of the hothouses and kitchen garden were chiefly left to my care. But though my master was kind to me still I never liked the place, because there were so many 'drinking bouts,' encouraged by some old 'dronthy' neighbors.

"The flower-gardens were formed by Gilpin in the 'natural style'—just the reverse of the geometrical, now in vogue. By the first the flower beds are irregular, while those of the latter are regular, and often within the range of the eye, hence their beauty is seen at once. Formerly our best landscape gardeners considered this bad taste, and perhaps they were right. In general pleasure arises more from looking for or expecting a thing, than the possession of it. However, there is no accounting for taste, whether of the palate or the eye. This is exemplified by the conversation of two gentlemen respecting the Serpentine, when it was first formed. One admired its graceful windings, the other said a little more expense would have made it straight. Now, on these opposite views hinges the whole art of landscape gardening.

"The natural style is the best for undulated or shaggy places like that of Whittinghame. When there I took my turn at watching the churchyard against

'resurrection men,' and so strict was the watch in Scotland that the high prices offered for subjects for dissection led brutal ruffians to strangle the living for the purpose. In these days this may seem incredible, but it is nevertheless true. Witness Burk and his associate, Hare, who were accused of strangling poor Dick Jennie, a well-known character there. The most brutal conduct of the whole band of Barkers, to which they both belonged, seemed to be of deeper dye than that of the Thags, because these strangled for the sake of some religious rite, or human offering to their satanic deity.

"I used to visit the principal gardens in the neighbourhood to see the different ways of doing gardening work. I first saw dwarf Apple and Pear trees in pots at Dunbar House, and observed the Earl of Lauderdale watering them himself. The gardens at Tyngburn were in excellent order, but the grandest feature of the place was the fine Holly hedge, the top of which was broad enough to drive a carriage upon it. At Beal—Mr. Nesbit's—the flower gardens were in the mixed style, and kept in excellent trim; so much so, indeed, that the workmen were forbidden to have large-headed nails in their shoes, because they marked the walks. At Luffness, where I had roomed to, there was a fruit wall of the southern aspect on the oval or curved plan, by which the trees are the whole length of the sun, besides which, the curves fence the cutting winds. The borders were covered with smooth turf to prevent the roots of the trees being injured by the spade. Newbyth, the seat of—Baird, Esq., was where I first saw Mushrooms grown to perfection; the gardener seemed to follow the good old maxim of doing a thing himself when he wished it to be extra well done.

"I now mention being in Messrs. Peacock's nursery, which was famed for Roses. These were raised from layers of the current season, and being on their own roots were not apt to die in the days when they were budded on Briars. From the nursery I was sent to Dalhousie Castle to put the wall trees in order, these having been neglected while Lord Dalhousie was in Canada; yet the tender plants were cared for. That, however, was mistaken economy, because it takes several years to redeem trees, while money can soon restore plants. However, I leaped from Dalhousie to Cossey Park, the seat of Lord Stafford, when I was twenty-four years of age; and in this family I remained upwards of forty years, and have been always kindly treated. I have brought up a large family, three of my sons being gardeners; and I give them and others the following advice:—Pay always due respect to your employers. Be honest and kind to the men under you, and when reproff is required do it gently but firmly. Mind your own business only, never mix up with the petty quarrels of your fellow servants. In leisure time improve your minds in reading and writing, but be careful what books you read, for 'though some give light, some blindly lead the blind.' If this advice was necessary in Ramsey's time it seems doubly so now when so much trash is published.

"As regards writing, I have myself more or less been engaged in it since the latter part of Loudon's time. I have published a book on Bees, and wrote the article on bees in *Norton's Cyclopædia* of Gardening. I have written on the following papers on various subjects, ranging from the formation of coal in antediluvian bogs, to the formation of ice at the bottom of water instead of at the top. This phenomenon, which is called 'stock frost,' and is known to the Germans as *grandee*, was discussed in *Notes and Queries*, and a 'Fen-man' said I had 'hit the right nail on the head.' I have corresponded with leading writers on natural history, among them the late Mr. Waterson, whom I have reason to remember, because he threatened me with a birch rod for having backed up what a correspondent stated in *London's Magazine* concerning squirrels being carnivorous: at least they sometimes hury birds' nests of their young.

"As gardeners by their calling are often exposed to extreme heat and cold, and thus break the organic laws, which the Almighty has wisely ordained for their benefit, I regret to say that my heedlessness against those laws has been very costly to me, and that I have, especially in after-life, with impunity."

Early in January last Mr. Wighton was presented with a valuable piece of money by his employer, Lord Sinfleur, an old man, and a friend of the late Lord's to his lordship's family. It is always pleasing to hear of such kindness, which exemplifies the good feeling that should exist between masters and



THE AURICULA AND POLYANTHUS.—I have no doubt the differences of opinion that may be assumed to exist between the Rev. Mr. Horner, as the representative of the rigid school of florists, and myself, are more fanciful than real, because I have the highest possible respect for the determined way in which he strives to maintain the rules recognised as law by which Alpine Auriculas and the Polyanthus are judged, that is, as far as they relate to the shaded flowers in one class and to the gold-laced forms in the other. Not being an Auricula fancier in the accepted sense, I prefer not to argue in relation to that flower, as no doubt those who may feel that the Northern rules are not in common with the ideas reigning in the South can take care of their own interests in the matter, but it nevertheless does appear obvious that unless some common ground of agreement is arrived at between Northern and Southern growers in relation to this question of shaded and self flowers, it will be extremely difficult to carry out a truly national Auricula exhibition either in the North or at the Crystal Palace.

In my former note it was rather my contention that, inasmuch as it is in the schedule of prizes offered for competition at the Crystal Palace on the 24th of next month, fancy and gold-laced Polyanthus were placed on equal terms, that the danger of partiality towards the latter lay in the fact that a majority of the judges were of the old Northern or rigid school, and that these would possibly refuse to look at fancy or self Polyanthus altogether. If it were a case of merit viewed as things of beauty I should have no fear of the result, but if the judgment is to resolve itself into one of "lacing," that will settle the point even before the plants are staged. The committee, with liberal intent, does not restrict the competition to gold-laced varieties, but if the judges are not influenced by the same cosmopolitan ideas, the liberal intentions of the committee are at once frustrated. It is only too evident that the establishment of classes specially for sections, the florists' merits of which are in dispute, is the only possible solution of the difficulty. At the same time, I trust it is not asking too much of the Northern florists to invite toleration, if nothing more, towards a beautiful class of hardy flowers that if not at present offering the highest conception of their ideal, may eventually lead up to it. The Auricula and gold-laced Polyanthus once had a beginning, and probably out of much inferior material to that from which a possible florist's race of self and fancy Polyanthus are being evolved. It scarcely laid in my imagination to suppose that the Polyanthus could ever "pale" the fires of the beautiful Auricula in the eyes of the genuine and enthusiastic fancier. What I desired to suggest was rather that in the beautiful and robust fancy section a powerful counter attraction to the Auricula was growing up as respects that large class of amateur cultivators who, being neither fanciers nor enthusiasts, and indeed, hardly florists, are nevertheless deeply imbued with a love for early spring flowers. To a large number the Auricula is too costly and too difficult to cultivate, thus leading to frequent loss and disappointment. To amateur growers of this class the fancy Polyanthus offers attractions that are thus far formidable to the future of the Auricula. *Thrum Etc.*

—The recent frosty and snowy weather has put TULIP CULTIVATORS on the alert. It is now a critical time with this flower, for generally there is the promise of a generous growth, but a sharp frost following on a heavy rain or snowstorm may do much harm to the occupants of an unprotected bed. The Tulip is a hardy plant, but it is wise to take all possible care of choice varieties. A mulching of short dung and leaf-mould may be given with advantage, to protect the plants from injury from frost near the surface of the soil. The covering should now be on the bed; putting it down at night when frost and snow threaten, and drawing it up by day to give the plants the benefit of sun, balmy weather, and genial soft rains. It is again very mild, but it is also a time of uncertainty, and there is no knowing how soon a change may occur, bringing with it the wintry weather

experienced last week. A little care and watchfulness at the right time will be abundantly rewarded at the blooming season.

Natural History.

SQUIRRELS AND DEAYS.—In answer to the inquiry (p. 379) with regard to squirrels' nests, or "deays," it is of some interest to note the presence of young squirrels so early, as both Professors Bell and Wood give the usual time of birth as June, or the middle of the summer. With regard to the "deay," it is a great bunch of moss, twigs, and fibres tightly worked together, and placed in the most concealable or inaccessible spot attainable, such as the fork of a high bush, or a fork or cavity of the tree; and as squirrels prefer remaining about their old haunts, the foresters or wood-worshippers of the large proprietors who suffer, would be able to give every information of a likely position. But, practically, I would recommend your correspondent to be cautious in meddling with the contents of the nest, or as certainly as his fingers are placed inside, the sharp teeth of the owner will revenge his or her wrong, and when once locked in the flesh it is no easy matter to choke the squirrel off, where all is free; and with the advantage of the nest to drag against, the bite might border on a serious matter. *O.*

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Heaths.—Seasonal winter flowering Heaths as they go out of bloom should be well cared for, otherwise it is useless expecting them to do much for the future. It is not the easiest matter to get these plants to make satisfactory growth, when they have flowered for the first time after leaving the hands of those who grow them for sale, as the treatment they usually receive is more with a view to produce an effective appearance than any consideration of their being of further service when they have once flowered. Nevertheless, if carefully managed they may be induced to grow on and attain considerable size, but their quick growth as compared with other Heaths, and their erect habit, necessitates a free use of the knife; two-thirds of their year's growth should be cut away, they should then be stood in a good light pit with attention as to air and water, and as soon as they evince signs of growing ought to be moved into pots 2 or 3 inches larger, being especially careful in their care to press the new soil firm. Their progress will be materially assisted through the spring by shutting up a little earlier in the afternoon than would be advisable for the hard-wooded section of Heaths.

Plants of Genista and Acaia armata, which were forced early into bloom and cut back after flowering some time ago, are not already potted, they should be seen to at once, otherwise the current growth will be too far advanced to benefit to the full extent by the new soil. Roses that are well established in pots by being grown in them one season at least, and have now been for some time in a house or pit where they have flowered, a little more warmth than the temperature of a greenhouse, will be fast pushing up their flowers. Plants treated in this way will bloom much finer and be of more use than such as were hurried into flower earlier with more heat. There are a few things more useful for conservatory decoration than Roses so managed, nor at any time of the year will they be found more acceptable. They will be much benefited by liberal applications of manure-water until the flowers begin to open; not only will the flowering of the present year be improved by its use, but this, too, the strength of the plants will be increased for the future. Avoid cold draughts, or midwived foliage is sure to be the result. Syringe freely, to keep down red-spider, and famigate or dip in tobacco or quassia water the moment green-fly is detected. It is useless attempting to grow pot Roses unless the growth is well forward, and ploughed after feeding, and they are thoroughly cleaned from the ground and mildew. Where there is any deficiency in the stock of pot Roses, if not already done, a sufficient number should now be potted, and plunged out-of-doors in a bed of coal ashes if possible, and regularly watered with water, and kept free from insect pests through the summer. So treated they will flower much more satisfactorily than by the makeshift practice of removing them from the open ground and potting in the autumn, as by such means they cannot be expected

THE

Gardeners' Chronicle.

SATURDAY, MARCH 31, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	April 2	Leeds Spring Show (two days).
		Royal Horticultural Society's Meeting of the Fruit and Floral Committees, at 11 A.M.; and Scientific, at 8 P.M.
WEDNESDAY,	April 3	Linnean Society's Meeting, at 8 P.M.
THURSDAY,	April 4	Sale of Scientific Apparatus, &c., at Stevens' Rooms.
FRIDAY,	April 5	Sale of Roses, Shrub, & Fruit Trees, at Stevens' Rooms.
SATURDAY	April 7	Gladioli, &c., at Stevens' Rooms.

TO no class of the community is a knowledge of ECONOMIC ENTOMOLOGY more important than to plant-cultivators. It is soothing to our vanity, no doubt, to consider ourselves as Lords of the Creation, but what with "blights" and "moulds," and the hosts of insects and fungi which prey upon ourselves and our crops, it becomes a question whether they are not the lords, and we the slaves. At any rate, nothing but knowledge of their forms and habits of life can afford us any reasonable chance of obtaining dominion over them. As a matter of pure science, the study of any of GOD'S creatures is invariably of importance and practically inexhaustible. But the gardeners and farmers have special reasons for appreciating the action of the Government in establishing a Museum of Economic Entomology. Such a museum, however, is of relatively little value, unless it is illustrated by a good catalogue. It is, therefore, with special interest that we call attention to Mr. MURRAY'S* recently published volume, which, whether as a scientific record or for practical use in matters of daily life, is of great value. Mr. MURRAY'S perfect grasp of his subject enables him to lay it before his readers in a form which all can understand, whilst those who may not be disposed for the study of the more strictly scientific parts will be led on simply by the charm of the well-given descriptions.

The volume now issued, containing APTERA, is the first part of the catalogue which it is proposed to publish of the Collection of Economic Entomology now at the Bethnal Green Museum, and which was commenced at South Kensington in 1868, when Mr. MURRAY was requested to undertake the charge of its formation and arrangement. The object of the collection is, by means of specimens, models, and drawings, to give the history of the insects most noticeable as beneficial or injurious, and (where it is possible) the remedies. The descriptive catalogue is intended not only as a guide but also for practical reference. Under the head of APTERA this volume contains Crustaceans (represented by Oniscidea), Myriapoda (centipedes), Arachnoida (spiders, scorpions and mites), Thysanura (springtails), and Parasitica (lice). Of this number, some are insects, and some come under the head of animals allied to, or likely to be mistaken for insects by similarities in habit and locality or structural affinities. Economically it is requisite they should be classed together, and the scientific reasons of the arrangement will be found given in various parts of Mr. MURRAY'S book.

After the requisite notes on the Oniscidea (the woodlice of our gardens, and the representatives here of the Crustacea), Mr. MURRAY passes to the Myriapods, giving here, as throughout the volume, a view of the distinguishing characteristics of the orders, and where (as in the case of the Acarina) the minor divisions have been little studied throwing the distinctive points (as known up to the present time) into a clearly condensed and, at the same time, readable form. The generic differences are shortly given, and

in most cases each species has its locality and habits and specialities of appearance extended, according to the interest of the subject, into longer notices. The illustrations are in some instances from life, in others of details, or of the objects scientifically displayed, and in the case of the plant gall-mites sketches are given of some of the peculiar life or bud-diseases following their attacks. In many instances each species has its illustration, and amongst the ample number, which in their clear definition no leave even the most general reader under no doubt as to the appearance of the described object, the beautiful woodcuts of the Glycyphagus palmifer, p. 284, by Mr. WHYMPER, deserve a word.

Proceeding onwards from the Oniscidea, under the Myriapoda we have the two great divisions of Julida, injurious as preying on vegetable matter, and the Scolopendride (centipedes), whose bite, dreaded in warmer latitudes, is here useful as a means of keeping the smaller insects in check.

Amongst the Arachnoida, after the scorpions (represented with us by the minute tail-less Chelifer), we pass through the link of the Galeodes (spider-like but distinguished by its segmented abdomen and tracheal breathing apparatus) to the true spiders, the Arachnoida, "the most powerful insect friends to man," as contributing largely to the destruction of other insects, and generally interesting with regard to the trap-door spiders with underground galleries, and weakly hinged doors perpetually requiring replacing; the huge hairy Mygale, and the delusions connected with the bite of the Lycosa tarantula, and other special peculiarities.

The subdivision of the Acarina or mites occupies nearly half the volume, and is of great importance economically. Here we have vast numbers of minute, sometimes microscopic insects, whose special mission in a large proportion of cases appear to be as tormentors of the vegetable animals, or injurers of vegetable growth. Amongst the eight families we have the spinning mites, represented amongst many other species by the red-spider of our gardens, harvest mites, Ixodes or ticks (adapted even to their hold position on the scaly coat of the python), and others too numerous to enter on, but the Trombidium gryllarium deserves a word as the especial scourge of the American locust. Of this species Mr. MURRAY mentions that in 1852 the locusts of the eastern coasts of America were found infested by little red mites. "Ten or a dozen of them would frequently be found pertinaciously adhering to the body of a locust beneath its wing-covers and wings. The dread of the locust has now passed from New England. It is in the Western prairies that it now reigns, where immense swarms of locusts descend from the Rocky Mountains, where they breed, and spread desolation and famine over thousands of square miles. But the little red mite that helped to reduce their numbers in the East, or an equivalent species, is there at its post in the West, employed on the same duty." The eighth division of the Acarina is of especial importance, for here we have the Phytoides, or gall-mites, the originators of the curiously shaped nail-like galls of the Lime and Maple leaf, and many others by which the leaves and young leaf-buds of our plants are injured; and the Sarcopside, the itch and louse mites.

At the first glance this particular branch of the subject is uninviting, but it is, therefore, all the more necessary to be brought forward; the prevalent ignorance of treatment and symptoms of the diseases consequent on attacks of these parasitic pests, often allowing them to gain a footing only to be met by the destruction of the attacked animal, and in this division the notes of the Sarcopside cat and S. mutans are especially to be recommended to the study of poultry

and rabbit fanciers, and those of Pisorotes equi to the caretakers of farm stock.

In the succeeding order, Anoplura (lice), we pass in the first group of Mallophaga from the feather-eating and bird-infesting louse mites just noticed to the six-legged pests of our poultry, and of some others of the vertebrata; and in the second group (Hæmatopina), restricted to mammalia, we have a most interesting account of the genus Pediculus, including LEEWEN-HOEK'S personal experiments (by tying up two large female lice between his own leg and a fine black stocking) as to the rate of increase, the result showing that "two female lice might in eight weeks be grand-mothers, and see 10,000 of their own offspring!" The methods of prevention and cure will be valuable to many, and the concluding sentence with regard to the effects of white precipitate ointment will be read with singular satisfaction—"it kills them all." Nevertheless, we have seen such ill results from careless use of so potent a poison that we think it right to add the caution, that even in this case the remedy may be worse than the disease.

Under the Thysanura (springtails), minute insects especially injurious to young vegetables, conclude the book, of which the contents are made easily attainable by an excellent index. In addition there is a list of illustrations numbering more than 400, and a list of the contents of the cases at Bethnal Green Museum described in it. It is difficult in short space to do justice to the great research powers of condensation by which the mass of useful information contained in the volume is placed so as to be clear and comprehensible to the general as well as the scientific reader.

It is an excellent book, and of a practical utility which makes it desirable that it should find a place both in our private and public libraries.

In subsequent volumes we would suggest that the index of common names be extended; for instance, there are not many gardeners who would think of looking for red-spider under the name Tetranychus telarius.

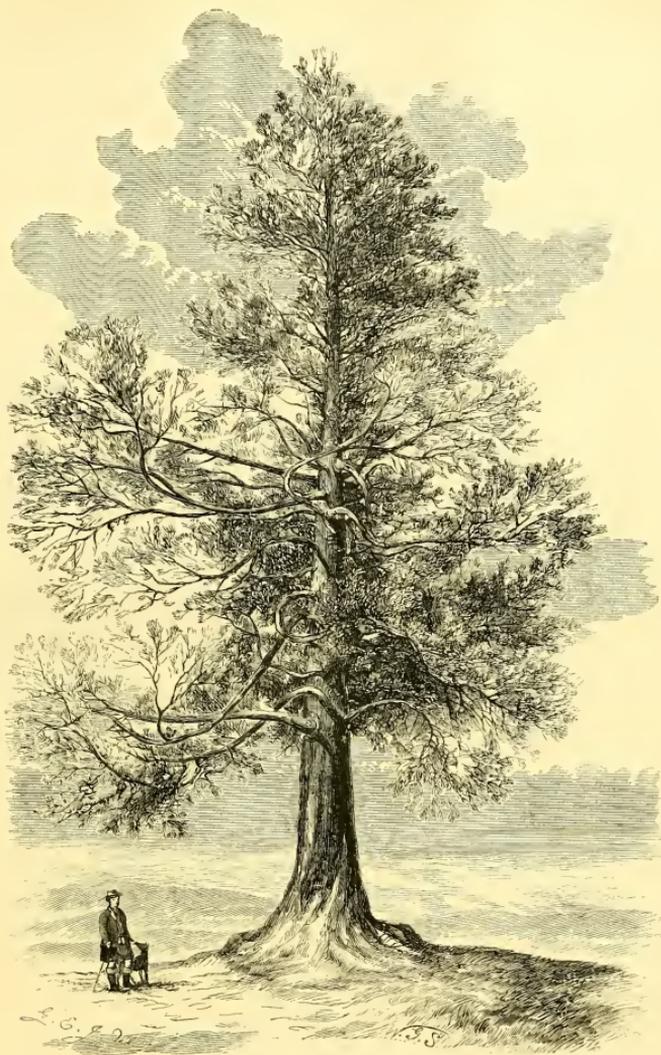
— We understand that there is a probability of the growers for Covent Garden Market having a grand field day in the Royal Horticultural Society's Gardens, South Kensington, shortly. The idea is to have an EXHIBITION OF COVENT GARDEN PRODUCE, i.e., plants, cut flowers, fruits, and vegetables, shown in exactly the same manner as they are sent to market. Such an exhibition should prove highly popular and instructive, and we heartily hope that it will be carried out to a successful issue.

— THE INTERNATIONAL POTATO EXHIBITION will not take place as originally announced, the negotiations having, through some accident, fallen through. It is now definitely arranged to be held at the Royal Aquarium, Westminster, on October 3, 4, and 5 next. The schedule provides for a series of classes ranging from twenty-four to single dishes, and the prizes amount to about £130. Copies of the schedule may be obtained on application to Mr. J. McKENZIE, Nos. 2 and 2, Great Winchester Street Buildings, E.C.

— In the descriptive account of the gardens and pleasure-grounds, woods and plantations, attached to Iweray Castle, the seat of the Duke of ARGYLE, which appeared in our columns in December last, Mr. EVERESH alludes (p. 836) to a RED CEDAR tree—a large one of its kind—measuring 6 feet in circumference at 5 feet from the ground, and at least 50 feet in height, of which we are now enabled to give an illustration (fig. 64), thanks to Mr. CAIR, who kindly obtained for us a beautiful sketch by Miss JOHNSTONE. Mr. CAIR informs us that, about the beginning of the year, some of the branches were broken off by the high winds, and this has somewhat destroyed the well-balanced appearance which the tree previously had.

— The *Hamburgers* of the *Gartencultur*, reports that last year's harvest of the Clover, grasses, and other seeds was generally very short, consequently increasingly high prices must be expected. Some kinds of

* *Economic Entomology: APTERA.* By Andrew Murray, F.L.S. (Chapman & Hall.)

FIG. 64.—THE RED CEDAR (*JUNIPERUS VIRGINIANUS*) AT INVERARY.

grass and Clover are no longer to be had first-hand. Lucerne especially is very scarce, and Clovers are short both in Europe and America. Seed of the Scots Pine, Weymouth Pine, and Pinus Abies was abundant last autumn, whereas Larch and Spruce Fir was almost wholly wanting. Acorns were scarce, and Beech-mast a total failure. It is a noteworthy fact that the same scarceness or almost total absence of certain fruits extended to this country.

— Some time since we had occasion to mention a volume by M. E. VIANNÉ, entitled *Prairies et Plantes*

Fourragères, published by M. ROTHSCHILD, of Paris; and we have now to mention a companion volume, under the title of *Les Prairies Artificielles*. It is devoted to the history and culture of the principal forage plants. The researches of Messrs. LAWES and GILBERT are laid under contribution, as well as those of French authors, the result being that we have in small compass a mass of information of great value to agriculturists. The work is copiously and well illustrated.

— The propriety of leaving FRUIT TREES UNPRUNED has been again discussed at a meeting of

the Cercle d'Arboriculture of Ghent by M. BURVENICH and others. M. BURVENICH, while admitting that the advocates of non-pruning are to some extent right in their notions, yet points out that as long as it is desirable to secure the production of fruit in a given place, so long will pruning be necessary. So long as there are walls, trellises, borders, so long will pruning be required. The unpruned tree bears fruit, but the pruned one yields them in convenient and predetermined spots. Orchard culture is not possible in all places, but there are many odd corners where fruit trees, such as Doyenné du Comice, Louise Bonne

d'Aranches, Duchesse d'Angoulême, &c., may be profitably grown as orchard trees without pruning.

— We must go abroad to read foreign journals if we wish to know what we do, and what we eat and drink, in this country. A French journal tells us, for example, that the rootstocks of *Typha latifolia* (Barrush) are eaten pickled in vinegar. It may be so, but never heard of this. The Russians in some parts of their vast territory, on the same authority, eat the young shoots of the same plant, instead of and with as much relish as Asparagus. The French comment on this is, "Quand on n'a pas ce qu'on aime, il faut aimer ce qu'on a."

— At a meeting of the SOUTHAMPTON LITERARY AND PHILOSOPHICAL SOCIETY, held on March 23, in the council chamber of the Hartley Institution, a paper entitled "The Microscope as a Means of Recreation" was read by Mr. A. C. ROGERS, son of Mr. W. H. ROGERS, J.P., of the Red Lodge Nursery, Southampton.

— French papers record the death of M. THOMAS, of the firm of SIMON LOUIS, of Metz, well-known for his pomological attainments, and author of a recently published book on fruits and their synonyms.

— The next exhibition of the NATIONAL AURICULA SOCIETY will be held in Manchester, in connection with the Botanical Society's show, in the Town Hall, King Street, on Friday, April 27.

— A correspondent in the *Journal of the Society of Arts* draws attention to the distinctly different methods which prevail in China and England in making Tea, or rather the infusion, by which he says that the millions of tea drinkers out of China are perfectly ignorant of the proper mode of extracting from the tea leaf all that is valuable, just so much and no more. First and foremost, of course, a great deal depends on the quality of the tea itself, and we are reminded that, "the upper classes in China from very long experience in the matter select the very choicest tea which they can afford, generally the young leaves from old trees. To make the infusion a few leaves are put into a cup and water not quite boiling is added; it soon cools sufficiently to be quaffed by the Chinese, who usually take their tea very hot." By the above quick method they skin, as it were, only the superficial flavour of the leaf, which is very capable of yielding up, when required, a bitter extract, which they avoid. This is the prime source whence the use leaves spoken of by analysts come from. In England, on the other hand, every resource which science can conceive is brought to bear on the opposite extreme, viz., to take out every atom of the tannic matter if possible to the last iota. Now, the infusions from choice Tea may be compared to those scents which in their concentrated form are offensive, but which when diluted are very fragrant and exhilarating. The march of science, therefore, is driving the British public in a wrong direction—one in which ladies and men with delicate or nervous constitutions so suffer that medical men here and there peremptorily put a stop to the use of tea at all." There is no doubt a great deal of truth in these remarks. Instead of a carefully prepared infusion, tea, as used in this country, is more of the character of a liquor from stewed leaves. The conclusions of the writer from whom we have gathered the foregoing remarks are, that a very delicately flavoured beverage is unknown to the bulk of the English people, because they have been taught to prepare tea by a method which "appears to have been brought in at the very extreme point of the wrong end of the matter." It is further suggested that the choicest tea at 10s. per pound is cheaper in the end than the advertised "strong tea" at 2s. 6d. per pound, inasmuch as a few leaves of the former, if used after the Chinese fashion, will suffice to make an agreeable beverage.

— We are requested to state that the address of Professor REICHENBACH for the next ten days is at the Herbarium, Royal Gardens, Kew.

— If any illustration were needed of the great decorative value of some of the hardy Primulæ at this season of the year, it would be found in a group of *PRIMULA DENTICULATA* now in bloom in the

Auricula-house of the Rev. F. D. HORNER, at Kirkby Malzeard. They are strong plants in 48 and 32 pots, each plant bearing several trusses of flower, and as they are having the advantage of some artificial heat necessary to the Auricula bloom, not only are the trusses of unusual size, but the individual blossoms are of great beauty. If this plant were now introduced for the first time, the horticultural world would go into ecstasies over it, for its delicate beauty is of a very high order. And yet it is almost new to many; and there is need for a constant reference to its excellencies of habit, freedom and duration of bloom, to attract to it some of the worship given to floral objects of a less valuable character. At Kirkby, Mr. HORNER illustrates its great fitness as an indoor plant, shining out with redoubled beauty when aided by a little general artificial warmth. At Chadderton, Manchester, during the month of April, and at the time when the genus *Primula* holds his highest festival in Cottonopolis, Mr. SAMUEL BARLOW uses it as an edging on a sheltered border by the side of his carriage drive, and with equally happy results. When is the *Primula*, with all its varied beauty of expression and transcendent charms, to have a Society formed for its encouragement, and that not nearly so much to obtain new forms as to reintroduce those already known?

— At a recent meeting of the Central Horticultural Society of France, M. DUCHARTRE adverted to his experiments made some years since on the FORCED LILAC. The learned Professor then showed—and his results have been abundantly confirmed since—that by forcing a Lilac in a well-lit forcing-house at an average temperature of +15° Cent. (59° Fahr.), perfectly white flowers were produced. In one of his experiments one branch of a Lilac was allowed to escape into the open air through a hole in the glass, while the rest of the shrub was within the forcing-house. Under these conditions the forced flowers were white, as above; but those which were on the branch exposed to the open air expanded a fortnight later, and were of the usual blue colour. M. H. DEUX added that it is only the *S. vulgaris* which acts in this manner, the flowers of *S. persica* when forced assuming the ordinary lilac colour.

— The practice of thinning-out the berries of GRAPES in order to obtain larger and more perfectly ripened fruit, appears to be gaining advocates on the Continent. The *Hamburger Gartenzeitung* describes the results of some experiments in this direction with the Early Black July Grape. Instead of an almost uneatable fruit, which is usually abandoned to sparrows, wasps, and children, good-flavoured, well-ripened bunches were produced. If such an improvement can be effected with an inferior variety, it is clear that the practice of thinning might profitably be extended to all dense-clustered varieties, when the object is to gain the best quality, and it is recommended for outdoor culture as well as under glass.

— Mr. STEPHEN OSBORN, formerly gardener to the late Sir CHARLES LOCOCK, Bart., at Binsted, Isle of Wight, has been appointed gardener and bailiff to the Earl of EPPINGHAM, at Inmoure House, Bicester, Oxon.

— *ODONTOGLOSSUM ANGSTATUM INTEGRAUM* now is fast in bloom in the splendid collection of plants belonging to J. BROME, Esq., Diddbury. The sepals and petals are sulphur in colour, beautifully spotted with purplish brown; the lip white, tipped with sulphur, and blotched on the anterior part with lilac. It is a very striking plant when flowered as this is, with branching spikes about 3 feet in height, with forty of its fully expanded blossoms. This variety is far better than *angstatum*, and is worthy of a place in every collection; and in blooming as this does, during the winter and spring months, it is the more valuable.

— The Leicester Advertiser states that all the farm labourers and workmen employed on the BEAUMANOR estate were lately summoned to the steward's office, no intimation having been given as to the reason why their presence was required. Their surprise was only equalled by their gratitude when they were informed that they had been called together to receive a legacy of one year's wages bequeathed to

them by their late benevolent master. This last proof of Mr. HERBICK'S kind consideration for all about him was fully appreciated by the poor men as they hastened home with the (to them) large sums of money they had so unexpectedly received.

— Intending visitors to London during the Easter holidays will find the DISPLAYS OF FLOWERS in all or any of the nurseries very interesting just now. The exhibitions of opening-flowering bulbous plants provided by Messrs. VEITCH & SONS and Messrs. W. CUTNISH & SONS are still in fine order, and well worth inspection. In addition to the Hyacinths, Tulips, &c., Messrs. VEITCH & SONS' Orchid-houses contain many fine things in flower, and in other departments the Roses and Clematises make a show in themselves, whilst in a few days a house of Gloxinias will provide a rich floral treat.

— THE DESTRUCTION CAUSED BY COCK-CHAFERS in some parts of the Continent is so great in some seasons as to almost ruin nurserymen and market-gardeners. It is well known that the larva of a nurseryman losing more in one season than the total revenue of his commune, and of another saving scarcely a hundredth part of his trees. All the crops in market gardens, whole fields of Lucerne, and meadows of great extent are sometimes completely devastated. Strawberry plants and Lettuce are favourite prey, and row after row disappears till none are left. It is in the larva state that they effect this kind of destruction; but the perfect insect feeds upon the leaves of trees and herbs, and does much damage. The larva feeds upon the roots, and their presence is usually indicated by the withering of the plants, of which they have devoured the roots. All sorts of remedies have been suggested and tried, but the larva in its burrow is tolerably safe until it reveals its whereabouts by the destruction of one plant at least. A Belgian contemporary recommends that a law should be enacted compelling owners to wage war with the perfect insect, just as they are now obliged to beat their hedge and trees for caterpillars before February 19. It would not be altogether without direct benefit to the nurseryman, inasmuch as that, mixed with Barley or some other meal, they form a good fattening food for pigs. In 1872 cockchafers were so abundant in Wurtemberg that they were collected by bushels and cartloads, and their value as food was tried on a large scale. Fortunately, we are seldom seriously overrun by this insect, or, indeed, by any other; and we doubtless owe our immunity in a great measure to the preservation of rooks, and the abundance of small insectivorous birds. On the other hand, there is reason to fear that the latter are becoming scarcer from year to year, in spite of the now necessary licence to use a gun, and the Birds' Protection Act. Thousands of small birds are netted to afford the abominable amusement of shooting them from a trap. We have frequently called attention to the dismal reports on the damage caused by insects in various parts of France, where a lag has long existed for shooting every bird that comes within range. Now efforts are being made to preserve the birds and restore something like an equilibrium between these different classes of the animal kingdom, which must certainly result in a great advantage to the vegetable kingdom. Without over-preserving birds, we should be careful not to give insects the chance of multiplying to an alarming extent.

— Amongst other Orchids in flower in Mr. BULL'S nursery at the present time is a very distinct variety of *ODONTOGLOSSUM TRIUMPHANS*. The lip is white, with a blotch of crimson instead of yellow and brown—the colour usually predominant in this species; and the sepals and petals are broader and smoother, more spotted rather than barred, and more intense in colour. Altogether the plant presents a pleasing variation from the common forms of *O. triumphans*. The beautiful upright flowering *Medinilla anabilis* is flowering in 5-inch pots in the same establishment.

— It would appear from a paper published by Mr. CHAS. B. FLOWRIGHT, surgeon, of King's Lynn, in the *Fuland Meteorological Circular* for February 1, that he has repeated the experiments first made by Mr. WORTHINGTON SMITH, and secondly by Mr. C. EDMUND BROME, with Potato haulms, as originally reported in these columns. As far as our knowledge went, no one, up to the present time, either

here or abroad (other than the two gentlemen above named), had succeeded in raising the RESTING SPORES OF THE POTATO FUNGUS—*Peronospora infestans*. It would now, however, appear that a third gentleman, Mr. PLOWRIGHT, has gone over the experiments with diseased Potato foliage and haulms and water, and obtained results quite similar to those recorded by Messrs. SMITH and BROOM. Mr. PLOWRIGHT writes:—"It must not be supposed that because a haulm has perished and become reduced to the state of a mere dry stick that the rest-spores in it have lost their vitality. I have before me some haulms that have been rotting in water for several months, until they have ceased to bear all semblance to haulms, and are a mere mash, yet the rest-spores are unimpaired;" and elsewhere in the same paper, "In the May of last year I had the opportunity of watching the development of some rest-spores which

other defenceless creatures, you would feed by night and lie concealed by day. So do these caterpillars. When the morning light comes they creep down the stem of the food plant, and lie concealed among the thick herbage and dry sticks and leaves near the ground, and it is obvious that under such circumstances the brown colour really becomes a protection. It might indeed be said that the caterpillars having become brown, concealed themselves on the ground; but in fact we were reversing the state of things. But this is not so, because while we may say, as a general rule, that (with some exceptions due to obvious causes) large caterpillars feed by night and lie concealed by day, it is by no means always the case that they are brown, some of them still retaining the green colour. We may then conclude that the habit of concealing themselves by day came first, and that the brown colour is a later adaptation. It is, moreover,

THE EYE SPOTS.

The last of the five points to which I called your attention was the eye-spots. In some cases spots may serve for concealment, by resembling the marks on dead leaves. In *Delilephila hippobas*, which feeds on the Hippobas, or Sea Buckthorn, a very grey-green plant, the caterpillar also is a very similar grey-green, and has, when full grown, a single red spot on each side, which, as Weismann suggests, at first sight much resembles in colour and size one of the berries of Hippobas, which, moreover, are present, though not ripe, at the same period of the year. Again, in *Cheroocampa tersa*, there is an eye-spot on each segment, which mimics the flower of the plant on which it feeds (*Spermacoe hyssopifolia*). White spots, in some cases, also resemble the spots of light which penetrate foliage. In other cases, however, eye-spots certainly render the insect more conspicuous. Now in some cases, as Wallace has pointed out, this is an advantage rather than a drawback. Suppose that from the nature of its food, or any other cause, as for instance from being covered with hair, a small green caterpillar was very bitter, or in any way disagreeable or dangerous as food, still in the number of small green caterpillars which birds love it would be continually swallowed by mistake. If on the other hand it had a conspicuous and peculiar colour, its evil taste would serve to protect it, because the birds would soon recognise and avoid it, as Weir and others have proved experimentally. We have a striking case of this among the hawk-moths in *Delilephila euphorbiae*, which feeding on the Euphorbia with its bitter milky juice, is very distasteful to birds, and is thus actually protected by its bold and striking colours. The spots on our elephant hawk-moth caterpillar do not admit of this explanation, because the insect is quite good to eat, I mean for birds; we must, therefore, if possible, account for them in some other way. There can, however, I think be little doubt that Weismann is right when he suggests that they actually protect the caterpillar by frightening its foes.

Every one must have observed that these large caterpillars have a sort of uncanny, poisonous appearance; that they suggest a small thick snake or other evil beast, and the eyes do much to increase the deception. Moreover, the segment on which they are placed is swollen, and the insect when in danger has the habit of retracting its head and front segments which gives it an additional resemblance to some small reptile. That small birds are, as a matter of fact, afraid of these caterpillars (which, however, I need not say are in reality altogether harmless) Weismann has proved by actual experiment. He put a caterpillar in a tray in which he was accustomed to place seed for birds. Soon a little flock of sparrows and other small birds assembled to feed as usual. One of them lit on the edge of this tray, and was just going to hop in, when she spied the caterpillar. Immediately she began bobbing her head up and down, but was afraid to go nearer. Another joined her, and then another, until at last there was a little company of ten or twelve birds, all looking on in astonishment, but not one ventured into the tray, while one which lit in it unsuspectingly beat a hasty retreat in evident alarm as soon as she perceived the caterpillar. After watching for some time, Weismann removed the caterpillar, when the birds soon attacked the seeds.

Other caterpillars also, probably of nearly allied species, are protected by their curious resemblance to spotted snakes.

The peculiar hues of the death's-head hawk-moth caterpillar, which feeds on the Potato, and imitates so beautifully the brown of the earth, the yellow and green of the leaves, and the blue of the flowers, that, in spite of its size, it can scarcely be perceived unless the eye be focussed exactly upon it. The other is the anercy. The caterpillars of this genus differ in style of colouring from all other sphinx larvae, having longitudinal bands of brown and green. Why is this? Their habitat is different. They feed on the leaves of the Pinaster, and their peculiar colouring offers a general similarity to the brown twigs and narrow green leaves of a conifer. There are not many species of Lepidoptera which feed on the Pine, but there are a few, and I have here diagrams of two, *Achthis spreta* and *Dendrobrius pini*, both of which, as you will see, have a very analogous style of colouring, while the latter has also tints of bluish green hair which singularly mimic the leaves of the Pine. I have added also



FIG. 65.—SPRAY OF THE RED CEDAR, JUNIPERUS VIRGINIANUS. (SEE P. 405.)

Mr. SMITH obtained last summer. It was very interesting to observe them produce the *Peronospora* and its conidia."

— The thirty-third annual competition of the SCOTCH FANSY SOCIETY will be held in the Calton Convening Rooms, Waterloo Place, Edinburgh, on Friday, June 15.

RELATIONS BETWEEN PLANTS AND INSECTS.

(Continued from page 396.)

USE OF THE BROWN COLOUR.

Now for the brown colour. It is evident that this makes the caterpillar even more conspicuous among the green leaves than would otherwise be the case. Let us see then whether the habits of the insects will throw any light upon the riddle. What would you do if you were a big caterpillar? Why, like most

interesting that while the caterpillars which live on plants often go down to the ground and turn brown, those which feed on large trees or plants remain on the underside of the leaves, and retain their green colour.

Thus, in *Smerinthus ocellatus*, which feeds on the Willow and Sallow; *S. populi*, which feeds on the Poplar; and *S. tilie*, which frequents the Lime, the caterpillars all remain green; while in the *Convolvulus* hawk-moth, which frequents the *Convolvulus*, *Cheroocampa nerii*, which feeds in this country on the Periwinkle; *Cheroocampa celeris*, *Ch. elpenor*, and *Ch. porcellus*, which feed on *Galium*, most of the caterpillars turn brown.

There are, indeed, some caterpillars which are brown, and yet do not go down to the ground, as for instance those of *Aspilathes asperaria*, and indeed of the *geometridæ* generally. These caterpillars, however, place themselves in peculiar attitudes, which, combined with their brown colour, make them look almost exactly like bits of stick or dead twigs.

which, on account of our not wanting a stock, was allowed to grow on. It came into bloom in the middle of December, and, as you will see, it began shortly after to shed the large outer bracts, and throw up thick clusters of small bracts from the centre, until the flower-bearing stem is elongated several inches with a fine rich double top and centre—not at all coarse, like the single one, but perfection itself in the bouquet and cutting. You can fancy the effect of this placed against white. I doubt not but that it will ultimately be had half the year round—at least, this looks in every way likely to continue growing shortly after to shed the large outer bracts, and if the bracts diminish will not render it the less useful for many purposes, and large plants will be particularly useful and showy. I think it the best and most useful new plant sent out for several years. *J. F., March 26.*

Mice and the Peas.—I have put a mixture of red-lead and sweet oil on my early Peas previous to sowing for the last ten years, and have never known a mouse to touch them. I have tried benzoline this year for the first time, with the same result. If any one is troubled with mice will give either of these remedies one trial, I feel assured they will be quite satisfied with the results. I sowed my first Peas on November 18 last, and neither mouse nor bird has touched them since. *George Clingen, The Gardens, Becklands, Caterham Valley, Surrey.*

Chlidanthus fragrans.—We are much pleased to be able to confirm your opinion, expressed in your last issue, p. 377, that "single-flowered varieties of species usually bearing a true and constant double flower or have to-day in flower a spike of Chlidanthus, with three flowers fully expanded." *F. H., The New Plant and Bulb Company, Colchester, March 27.*

Waltham Cross Grape.—In reference to your reply to "J. McL.," at p. 346, on the merits of the above Grape, permit me to remark that whatever may be the good qualities of that variety when it chances to be seen in good form, it will not, according to my observations, ever be generally grown or valued by two noted Grape growers who have completely failed with it. It would be interesting, if your readers who have grown Waltham Cross would give a candid report in your columns as to how it has behaved with them. Should you be inclined to do so, please send it to your editorial office. We annually grow a number of pot Vines for fruiting, and amongst our this year's batch was a strong well ripened case of Waltham Cross. The other varieties were the Hampton, Gros Colman, and the one of Foster's Seedling, all of which showed an abundance of fruit, except Waltham Cross, which did not show a single bunch. By all means let us have as many new Grapes as possible so long as they are realising a profit for their kinds, but not unless, I do not think the Fruit Committee should certificate any new Grape without having growing specimens in fruit before them, so that they may judge of its habit, constitution, &c. There are several good practical gardeners on the committee who could tell at a glance whether a Vine was likely to be a fruitful variety or not. Personally, I feel strongly on this point, as I think all true lovers of gardening must, seeing that many gardeners have got into trouble by their employing such Grapes that in a few years have had to be discarded as not worth growing. I do not think the fortunate owner of any good thing would at all suffer by mortgaging it to his employer, and the same may be said in these days of free communication amongst both employers and gardeners a real good thing soon becomes widely known, and is sure to sell in quantities. I have several times of late asked myself and other gardeners, "Is it worth the price you would our employers' desert tables or gardeners' reputations have suffered had, say, two-thirds of the new Grapes sent out this last twelve or fourteen years never seen light? My own reply and that of several gentlemen with me are in the affirmative, and not denials. What say your readers? *H. J. C. G.,*

Cyclamen Culture.—I have often heard people in this part of the country say that they have failed to grow these beautiful Cyclamens as well as they could wish, and having had myself a fair amount of success in several years past, I beg to send you the details of my mode of culture. The compost I use is made up of equal parts of loam, peat, and leaf-mould, with a liberal quantity of river-sand. Six-inch pots are well drained one-third of their depth, and the soil in them is compacted within an inch of the rims, when they are well watered with warm water, and the seeds sown thinly, and covered with about one-eighth of an inch of silver-sand. A piece of glass is placed over the pots, and they are put on a shelf near the glass in the plant-stove, and kept constantly moist. When the plants

are 1½ inch high they are potted singly into 2-inch pots, the bulbs being carefully kept above the soil at all times. They are again returned to the stove, kept in the glass, and constantly moist, and sprinkled overhead with a fine rose once or twice a day, and shaded from bright sunshine. As soon as the roots reach the side of the pots they are shifted into 5-inch pots, an addition being made to the bulk of the compost, and the plants are set in horse manure. After this the plants are kept in the stove till the pots are well filled with roots—about the third week in June—when they are removed to a pit, and the pots plunged to the time in slight bottom-heat. The plants are sprinkled overhead with warm water daily in bright weather, and an abundance of air is given when the weather is favourable, with a little shade in the middle of the day. About September they are removed to shelves in the conservatory, where a temperature of from 50° to 60° is kept up. Here they commence to flower from November, and continue to do so till May. Seed may be sown any time. I find it takes with me from twelve to fifteen months to produce good plants from seed; but I have always found young plants to produce the finest flowers. *Henry Ellis, The Hollis Garden, Timperley.*

Botryanthus conicus.—When was in Italy, some years ago, I found in the Campagna, and elsewhere a Grape Hyacinth, which appeared to me exactly intermediate between Muscari botryoides and racemosum. It has always puzzled me. The bulbs I brought home have flourished and increased in my garden, and I have since I was in Italy, sent you a specimen to the inspection of Mr. Baker, of Kew. He pronounces it to be *Botryanthus (Muscari) conicus* of Jordan. *H. Harpur-Crewe, Drayton Basschamp Rectory, Irving, March 20.*

La Grosse Sucrée Strawberry.—We find the above to be a capital variety for early forcing. We put fifty plants on a shelf in our second vinery when we started it the second week in January, and they are now ripening off a good crop of fruit, of which the enclosed is a fair average sample. One great point in its favour is that it sets its fruit well in a temperature 6° to 8° higher than our usual standard variety, viz., Keens' Seedling, consequently saving time. Our plants are growing in 5-inch pots, and average about 12 to 15 plants of all which swell to an equal size. *H. T. Clayton, Grimston Gardens, Tadcaster.*

Spent Hops.—I have been reading in your valuable paper the remarks of Mr. Duns on spent Hops for Potato culture. I notice that the use of spent Hops, if used in moderation, will do you no harm, and all agree with you. Many of your readers must know the great value of Hops as manure but many I am convinced do not. Less than ten years ago one large firm in Bristol carted their refuse Hops to the great extent as the best way of getting rid of them, that I know for a fact, which plainly shows that the market gardeners of Bristol did not believe much in Hops. With us it is quite the reverse, spent Hops are sought after quite as much as any animal manure. Near all large cities they are difficult to obtain, and fetch as good a price as the best stable manure. As I have used during the last seven years many hundred tons, I can, I think, say that I have given it a fair trial. I have tried it side by side with the best manure on such crops as Cabbages, Cabbets, Celery, Carrots, and even Wheat, Barley and Oats, and proved it quite equal to the manure, more particularly on heavy loam; on a very light soil I think it would be less beneficial. If used fresh from the brewery it will do no harm, and I prefer to have it lay in a good big heap for a year and be well turned a few times. Hotbeds made of one-half stable manure and one-half fresh spent Hops will retain heat much longer than any made entirely of stable manure. When two or three years old, and thoroughly rotten, so rotten that it will easily run through a half-inch sieve, it is a fine substitute for leaf-mould, so good in fact that we never look for it in any of our common greenhouse plants, such as Pelargoniums, Carnations, Fuchsias, Begonias, &c., in fact almost without an exception all soft-wooded greenhouse plants, thrively flourish with a liberal allowance of rotten Hops. *William Scott, Buffalo, Iowa, U.S.A.* [Spent Hops are largely used in London market gardens. Eds.]

Town Squares.—I have read with some interest your remarks and Mr. Eyles' explanation of his plan for laying out squares, &c., in London and other large towns, and I am glad to hear that you have had the consideration of those who have to take action in matters of this kind, and as I happen to fall under this denomination, will you kindly find space for one or two observations on the subject? In treating the matter of Town Squares, it must be looked at from a different point of view. The landscape gardener must consider whether his first duty is to give satisfaction

to the powers that have the management of the square, or whether he should simply seek to conscientiously fulfil his mission; by this I mean to say, is he to lay out the garden so that it shall be beautiful and pretty for a few years, or should he rather not look to the future? This is the great difficulty to contend with. Mr. Eyles' design, he tells us, is eventually to shade the promenade and gravel walk in summer time or sunny weather, and to give a good airy path for the winter (next year) and he considers a good greensward one of the greatest desiderata. Now if Mr. Eyles plants his Planes, as he proposes, at the edge of the grass, by the time they have grown sufficiently to form the arch that he speaks of, the shade will be mainly given, and a very considerably greater distance on either of the external sides, and one may safely say not less than 10 feet; and we all know that it is simply impossible in the London smoke to have the faintest semblance of grass under a dense mass of trees, and more particularly when an unlimited number of children and nursemaids convert it into a playground. I think myself, with such a number of trees in so small a space, in a few years you would neither have a good walk nor a fair sward; and I feel sure, if Mr. Eyles will give the matter a little further consideration, he will find a better issue out of the difficulty. There is one point in laying out these squares that has not been mentioned by Mr. Eyles, which will have their host of Laburnum and other such trees. It is no use—they will not be denied them; and in the old squares the inhabitants know every peculiarity of the time of flowering, difference of colour, &c., and do not care to have any such trees, and as they look with pride on the one big Plane or one Alder, or what not. These are points that must be considered, and indeed never lost sight of, or the landscape gardener is in trouble in a moment. As you justly remark, it is not the business of a landscape gardener of private gardens for those who have the right of entry, and in some of the old ones in the inner London one may see a little gardening, under almost every disadvantage, that fairly puts Belgravia and South Kensington to the blush. *R. P. G.*

Mushroom Culture.—There have been several writers of late discussing some very interesting facts respecting Mushroom and Asparagus forcing, which will make us think there has been some fairy agency at work. If the year 1877 goes on as it has begun, abounding in horticultural wonders, may we not expect to see some of the late writers have been made up of private gardeners for those who have the right of entry, and in some of the old ones in the inner London one may see a little gardening, under almost every disadvantage, that fairly puts Belgravia and South Kensington to the blush. *R. P. G.*

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the part so injured, young fibrous roots were forming freely, and this decided me to prune off all the decorated part, as I could plainly see that any of the root below was not likely to be of any further use to the Vines. I attributed their presence in this position to having top-dressed the loam with some rather fresh cow manure that was allowed to lie on the surface as a mulching, where it remained till it became so decomposed as to be incorporated with the surface soil. This matter I have collected as it laid on the pasture, and which the weevil was introduced in that way I know not, but certain it is I never had it before, except an occasional one or two, while in this case we often found as many as twenty or thirty by searching for them at night, and we had to continue destroying them in that way to prevent them devouring the whole of the lower leaves, which they otherwise would soon have accomplished. My knowledge of entomology is not sufficient to allow me to say anything as to the length of their remain in the larva state, or what becomes of them after they assume the beetle form, but no doubt many of your readers can fully enlighten us on this head, and tell us how to guard against having them in our vineyards, for which information I shall be very glad to be as they are sly, destructive fellows, working in the dark as becomes them; but this I would not object to if they would only keep above-ground, as then we could cope with them. *J. Sheppard.*

Orchids in March.—The show-house is rich in beauty but not variety, and the supply is the most abundant are not the least valuable. Next month promises to be fertile of both.

Vanda Cathartii	Odontoglossum Pescatorei
" corallines	" Roselli
" suavis Veitchii	Phalaenopsis Schilleriana
Cyclopis trianae	" Schomburgkii
" Warsceviczii golden	" rosea
" Trianae (pure white)	" rubra
" variety with delicata	" luteo-alba
lip)	Sophranopsis grandiflora
" Trianae (the richest dark	Oncidium Lindleyi
crimson)	" pulvinatum
" chelonoides	" Phalaenopsis
" bogotensis	" sphenacanthum
Lelia Lindleyana	" sphenacanthum
" longicauda	" spectabile
" crispifolia	Stenopogon macranthum,
" acuminata	imported, flower-spike
" longicauda	very large
Orchidium bicoloratum	" capillipes (rich golden)
" barbatulum	" macranthum
" pumilium	" fuscum
" speciosum Hillii	Erica lanuginosa
" longicauda	" longicauda
" Wallichii	" Veitchii
" Perrieri	" polifida
" nobile pendulum	" Polystichum glaucum
" Boxallii	Epidendrum fragrans
" apiculatum	" glaucum
" Wardianum	" Stamfordianum
" crassicauda	" recurvatum
" Kingianum (a gem)	" dichromum
Cypripedium Argus	Acinetus Humboldtii
" leucostictum	" longicauda
" venustum	Agrostis sessilispicula
" niveum biflorum	" eburneum
" caribaeum nigricans	" longicauda
" Schlimmii (a gem)	Lepidotes serotina
" Harrisonianum	Trichopilia tortilis
" Wilsonum	" longicauda
Ada aristata	" longicauda
Odontoglossum Alexandrine	" longicauda
" Cervantesii	" Gautierii
" Rossi	" longicauda
" constrictum	Coleogyne cristata

Edward W. Cox, Mount Mount, Hendon, March 26.

Japanese Mushrooms.—The Japanese are famous for doing things in a different manner from ordinary people, and in their cultivation of Mushrooms they illustrate their character for this peculiarity. In growing Mushroom-cultures they use fungi, as we learn from the report of Her Majesty's Consul in Japan, the Japanese (of Yenshin) cause Mushrooms of more than ordinary large growth to appear by heavily beating logs of wood till the wood swells. We also obtain knowledge of the remarkable fact that the same logs "are beaten given a great number of small sized Mushrooms grow up in succession." There is still another plan for forcing Mushrooms in Japan, sometimes the cut logs are covered in the ground for a year, when twelve months have passed over the logs are resurrected and "beaten in the manner above described." In all these cases the logs have been previously split by the Japanese each into four pieces, incised with hatchets and placed in a wood. "Every morning" (after three years have rolled over), says the report, these logs are "put in water, where they remain till the afternoon, when they are taken out, laid lengthwise on the ground, and beat with a mallet. They are then ranged out end in the same slanting position as before, and in two or three days Mushrooms will again make their appearance." These logs are not cut from the Walnut tree, and so can hardly be said to confirm the truth of the "Walnut tree—the more you beat it the better it is." The name of the tree, says Her Majesty's Consul, is the "Shü-tree," and the name of the fungus the "Shü-take." The report does not inform us whether

this "Shü-tree" is in any way related to the familiar British boot-maker's "boot-tree," although this relationship would not seem improbable, for we are told in the same report that the second-best Japanese Mushroom is the "Kik-uro." The names of the Mushroom localities in Japan are most peculiar, and some sound like a sneeze, as "Idza" and "Hitachi." Small parcels of fungi, says Her Majesty's Consul, "come from *Zoo*," and are estimated in "piculs and catties." *W. G. S.*

Vegetables for India.—We hear of such terrible famines in India from failure of the crops that I venture to ask whether there are not some vegetables or roots (differing from those now sown) which might resist long droughts better. There would be a great use to the country if experienced gardeners could suggest such auxiliaries, not to supersede, but to aid when the favourite crops failed, and assist at all times. I am in hopes that through your so well known *Gardener's Chronicle* some good hints may be given. *I. B.*

The Royal Horticultural Society.—Now that Mr. Veitch has set the good example of opening a list for Fellows and guinea members, it is most desirable that other nurserymen, not only in London but in the country, should follow his in this regard, but that the list of members cannot be prepared without at the same time increasing the demand for plants. *George F. Wilson, Heatherbank, Weybridge Heath, March 26.*

Reports of Societies.

Newcastle-on-Tyne Horticultural. *March 21 and 22.*—The spring exhibition of this Society was the oldest in England, having been established in 1824—took place on the above dates, and proved a success beyond the most sanguine expectations of its promoters. Long as the Society has existed it is the first spring exhibition it has ever held, and the bold venture now marks the era of a great change in the circumstances of the Society. For years past it has existed—and that is all. As this great centre of commercial enterprise increased on every hand the Society progressed in an inverse ratio, and depended on the support on money taken at the gates, and as the weather regulated the number of those who visited the shows, the committee often found themselves in grave financial difficulties. It would appear to be the fate of all societies connected with the garden, small and large, to be made involved, and in 1872, so small was the amount of money taken at the gates, that it was not sufficient to meet the working expenses, and the prize money could not be paid.

During the time of the greatest depth of depression some local horticulturists were found believing in the possibility of a better state of things, and it was considered that the claims of the Society only required to be more prominently brought before the public to result in an improved state of things. The attempt was made, the basis of the committee was broadened, two gentlemen of position—Messrs. W. J. Taylor and J. H. French—were appointed hon. secretaries, with the assistance of a working Secretary; it was put forth for the residents in the counties of Durham and Northumberland, and the venture succeeded beyond the most sanguine expectations of the promoters. The assistance so much required has been unparalytically tendered, and there is now a body of 2500 members, with an assured annual income of some £1200. The list of Vice-Presidents and Patrons includes a large number of the nobility and Members of Parliament of the counties of Durham and Northumberland, and the list is open to be liberally added to. The committee arranged to hold three Exhibitions during the present year: the spring exhibition, as above, in the Town Hall and Corn Exchange; a large summer exhibition on July 12 and 13, in the Town Hall; and a small autumn exhibition on September 12 and 13, in the Town Hall.

On the occasion of the spring show the whole of the spacious Corn Exchange was filled with plants, while the Town Hall was crowded with the floral decorations. These have long been a leading feature of interest in the district. Each competitor had to provide a table decoration of flowers, plants, and fruit, each competitor allowed table-room 10 feet by 5 feet 4 inches, and the cost of the table cloth 25s. There were five competitors for the handsome money prizes given by the President, Major Woods, of Holey Hall, the 1st prize being taken by Mr. J. Sanderson, gr. to W. H. Parker, Esq., Gosforth; the 2nd by J. Thompson, gr. to E. C. Wood, Esq., in addition there were ferns, bouquets, and buttonholes, the competition being confined to ladies, and which brought an extensive and spirited competition.

The extensive Corn Exchange had a very pleasant display of Hyacinths were the leading feature—the principal class being for twelve pots of Hyacinths, three bulbs in each. The bulbs were naturally in 32-pots, and there were some

remarkably fine spikes in the three leading collections, the exhibitors having three spikes of one variety in a pot. Some had three different varieties, viz., white, blue and red, but the result was uneven, and a confusion. The first prize was won by Mr. J. Thompson, Ravenside Nursery, Fenham, who had Charles Dickens, Grand Litas, Lord Macaulay, Ornament de la Nature, Alba Maxima, Grandcaul, Merveille, Argus (ver. Mr. W. Schiller, Victoria Mecanica), Madame Gooden and Bazan. Several other examples; (2d, Mr. W. J. Watson, seridan, Town Hall Buildings, with fine examples of Lord Macaulay, Leonidas, General Havelock, Miss Nightingale, Ida, Greenhouse, Lord Palmerston, and Hazell; 3d, Mr. Moore, Blane, and Hadyn. Mr. Thompson was also 3d, and after that there was a considerable falling off. Hyacinths were also shown in glasses. Narcissi were very attractive, the best sorts being Grand Primo, Soleil d'Or, States-General and Bazan. Several bulbs were in a pot, and good heads of blooms resulted. Narcissi were in much larger pots than are usually seen in London, and they were generally well grown—the leading varieties, Queen Victoria, white; Sir Walter Scott, pale striped, very fine; David Rizzio, purple and large yellow. Scillas in pots were capitally done, and were represented by sibirica, bifolia, and bifolia alba. Tulips were but sparingly produced, and there is no reason why they should not be more numerous, and they were better grown, as there are many fine sorts well suited for pot culture. Of single varieties the best were White Pottebakker, Van der Neer, Vermilion Brilliant, Van Vondel, Royal Standard, and Canary Bird; double varieties, Tournesol and Rex Kalbroum.

Of spring-flowering plants, Rhododendrons, Camellias, Azaleas, and Acacias were represented; and of commoner forms, Cinerarias, Lily of the Valley, Deutzias, some of them well grown and bloomed; Astilbe, and very good; Cyclamen, Mignonette, Epacris, Heatsis, &c., were in plenty. Of hardy flowering plants there were Deutzias, Anemones, Polyanthus, among which we were glad to see some new introductions, gold-veined varieties, such as Great Yellow Formosa, &c.; Arterias, Wallflowers, and Daisies.

Handsome foliage plants were shown by Mr. A. Methven, gr. to J. Lange, Esq., and other exhibitors, and flowering plants by several; and among these were some of the most beautiful megapotaemic variegatum, well grown and flowered.

Large and varied collections of spring-flowering and foliage plants, of great advantage from a decorative point of view, were furnished by the following nurserymen: Messrs. J. G. Dickson, gr. to J. J. Watson, J. Thompson, J. Charlton, R. Balfour, and Stuart & Mein, Kelso, N.B. A box of coloured Primroses, sent by Mr. R. Dean, Ealing, London, excited considerable interest.

Royal Horticultural of Antwerp.—This Society held its 128th exhibition on March 11 and following days. Although held at an unusually early date the flower show exceeded all expectations, and the variety as in the beauty, freshness, and abundance of flowering of the plants. The splendid room of the Royal Society of Harmony, so well adapted for exhibitions, was, while the show lasted, the favourite meeting-place of the aristocracy and lovers of art-culture. The room presented a dazzling appearance, and the cold weather out-of-doors made a singular contrast to this attractive glare, glittering with the brightest colours of spring flowers, and perfumed by the rich reticulated odors of the flowers. The exhibition we should be obliged to touch on every staged object, hence we shall only mention the most prominent things.

Let us speak first of the amateurs. M. Beaucaere, of Esmarne, carried off the palm of the day. He staged a remarkable lot of specimens—standard foliage, ornamental plants, Azaleas and Camellias of an uncommon height, combined with perfect culture and abundant flowering. The Ericas, Epacris, and New Holland plants of the Baron de Caters, the President of the Society, as well as the Oculids, Palms, the former especially, of Mme. Le Grelle-D'Haln, excited general admiration. A brilliant collection of hybrid Anemones, raised by M. H. Vander Linden, attracted all spectators—standard foliage, grey colours, fine forms, strong stems, no fault was to be found with these handsome flowers. In his rich group of bulbous ones plants we observed a Grimm raised so that we considered one of the finest of its kind. The flowers were generally standard. M. Flor. Pauwels were, however, surpassed by his incomparable group of hardy Rhododendrons, amongst them a Prince Camille de Rohan displayed its enormous crown, ornamented with more than 4000 crosses of fine and brilliant Hyacinths. M. Van der Linden, Enonymus, and Pelargoniums of Mme. Riquie, M. Le Comte de Bergey's good collection of hardy plants, the splendid Anthuriums and Cyceads of M. Van de Womper, the striking standard Roses of M. Van

Bomberghe, the charming new Azalea of M. de Meule, of Ghent, together with the superb *Cyclops*, the *Roses* and *Cyclamens* of M. Everaert all deserve high praise.

The nurserymen, too, contributed very much to the beauty of the exhibition. M. De Bencker had many very pretty strong *Phloxes*, many varieties of *Cacti*, and an entirely new species of *Maranta* from Brazil. M. L. Berckelaers received much praise for his *Cyclamens*, his large group of flowering plants, as also M. H. De Beukeler for his very arranged groups of annual flowers. M. Ch. Vuytsteke, of Lochristy, near Ghent, sent a most beautiful collection of a distinct variety of *Azalea indica*, with an exquisite group of hardy *Rhododendrons*, the most beautiful of which were rich and varied in colours, from the palest white to the brightest red. The valuable plants staged by M. Vander Mersch formed an attractive display, and the *Coniferæ*, &c., of M. Nagels produced a very good office.

Lastly, but not least, it must be mentioned that several artists had decorated the room with their pictures. Amongst them Mdlle. Anna Peters, of Stuttgart, held a prominent position with her charming picture in the foreground. M. De Bencker, M. and M. De Naeyer, of St. Jossent-Node, also exhibited proofs of their great talent. By means of this highly successful show Antwerp proves once more that it has made, especially of late years, a rapid improvement in its art and manufactures. We exemplify set by Ghent, the famous flower city of Belgium. C.

The Villa Garden.

ROCKWORK IN THE VILLA GARDEN.—A piece of rock garden is very often a part of a Villa residence. In a great many cases it is thought to be "the thing," and it is very frequently constructed in such a way that the plants placed thereon are characterised by a kind of unhappy existence, the appearance of the rockwork having been the first consideration, to which the well-being of the plants is subordinate, and of quite a secondary matter of importance. In many cases it happens that the rockwork is set up in a hot, dry, elevated position, in full exposure to the sun; it is therefore impossible plants can grow thereon, but then it is not unrequently the case the erection is so ornamented as that it, and not the plants, becomes the attraction.

In his pleasant book on *Rustic Adornments and Homes of Taste*, Mr. Shirley Hibberd amusingly sketches such a piece of rockwork as we have just referred to. He states:—"Take a flower garden, and in the midst of it make a pyramid of vitrified bricks and flints, or throw up a hillock of huge stones, and set upon the top of it a small plaster stage, or a cast of Queen Elizabeth, or Shakespeare, or Paganini; dash the stones over with blue and green paint, in fact, moss them and bronze them, and use plenty of colour. Then stick in anywhere a *Geranium*, a *Fern* or two, put a few shabby *Lilacs* at the back, and make round the whole a gravel path, edged with white flints or brick-rabbish, to correspond with the prominence, and you are done with those 'model rockeries' that delight Londoners when they take their walks abroad, and which many of them copy in arranging their own grounds. It is the best fun in the world to visit a garden where there is plenty of rockwork, but you must be reticent as to your opinion of it, or risk all the consequences of giving an unforgettable opinion if you should speak your mind on the matter." Grotesque as it seems, this is a very true picture of many constructions under the name of rockwork. Not long since we were invited to inspect a piece of home-constructed rockery that had cost its designer—no, not designer, for there was no design about it, as all kinds of pericled conceits had been worked in as the task proceeded, in order to make it effective—had cost the worker immense trouble; but successfully a plant was growing on it. There was scarcely a fissure into which the plants could make roots; even the common *Stonecrop* and House *Leek* looked miserable in the hot sun. To make amends for the lack of plants pieces of coloured glass, tinted shells, lumps of spar, &c., had been introduced in plenty; and this garish, gaudy, unnatural performance was considered a masterpiece of local inventive genius. Such a picture may provoke a smile; but it is a correct one, and copies of it abound.

Many residents of Villas think a piece of rockwork indispensable, and sometimes it is set up under a north wall, sometimes under a south wall; in the

former case it is rarely blessed with a gleam of sunshine, the latter it is in the full exposure of the sun, and literally roasts for want of shade. Another time a piece of rockwork is set up under trees and shut in from the genial influences of sun and air; it becomes a habitation for vermin, and the drip from the overhanging branches quenches almost every aspect of plant life.

A piece of rockwork, if properly constructed, is calculated to maintain plants in a flourishing condition in the fullest exposure, provided there be a sufficient bed of soil to root into. It is in regard to this point that so many failures occur. As we would have in our mind's eye a rocky bank, set up to separate a flower garden on a lower level from a piece of kitchen garden raised some 3 feet or so above it. Some large pieces of Bath-stone formed the foundation, but as the work proceeded the spaces were filled up with suitable soil, and as the work mounted upwards this was even more carefully attended to, the result being that a bed of soil extending to the very bottom and around well holes was provided for the plants to root into. This bank is now completely covered with plants in the most flourishing condition. In early spring there are bulbs, *Primroses*, *Aubrietias*, *Aralis*, &c., and these are followed by *Alyssum saxatile*, *Helleboricus*, *Plumbago*, *Larpete*, *Convolvulus mauritanicus*, &c.; and almost all the year round there is something of interest to attract. The secret of its success lies in the fact that there is an abundance of soil within the rockwork for the maintenance of the plants, and all such things are carefully planted in specially prepared nooks, where they cannot starve in the driest weather.

The chief mistake made is that of not providing a feeding place for the roots of plants for the embellishment of the rockwork. If the openings between the stones, however narrow they are, are filled with soil, the roots will go down deep into it, and this is how it is that the plants can bear so much exposure during hot dry weather.

The practice of employing roots or stumps of trees to maintain rockwork for rockwork, or even of constructing such a piece of work wholly of wood, is one to be condemned, and for this reason apart from others that will be given—the woodwork rots in course of time and subsides, the soil sinks down, and the arrangement becomes uneven and practically useless.

In planting rockwork a few choice subjects should be used, mixing them with a selection of plants suitable for covering it, or else certain quick-growing plants that will cover it quickly should be introduced. Much depends on the position of the rockwork. If it be in the shade, and away from the sunlight, then it may be planted with things suitable as a screen; if it be in the open let some good things form a part of the arrangement, but taking care they do not become too large in the course of time by the more robust growing plants employed for covering purposes.

Notices of Books.

The Life of a Scotch Naturalist (Thomas Edward, A.L.S.). By Samuel Smiles. London: Murray.

A book so remarkable as this should not so long have remained unnoticed in these pages had it not been necessitated by exigencies of space, and the necessity of inserting matter of more strictly horticultural character which admitted less delay. As it is, the history of "Tom Edward" is now known through the length and breadth of the land, and the thoughtful kindness of the Queen has been placed beyond the reach of absolute want.

The history of this Scottish naturalist is at once a most painful and a most amusing one. It is painful to find in Scotland, which boasts of its educational advantages and appreciation of the benefits of knowledge, that a man of such rare singleness of purpose and absolute devotion to natural history should have been suffered to drag on a miserable existence, unaided by those of his neighbours who had the means of assisting him. Whatever lessons may be learnt from his life, and they are many, "virtue is its own reward" is either not one of them, or if it be, then the reward is not what most people would desire for themselves. Apart from the grievous injustice which has somehow befallen the hero of this book, the loss to science must have been very great indeed. Much indeed has been done by Edward, as is testified by the fact that the Linnean Society of

London fulfilled one of its missions by conferring on him the honorary title of Associate, but that is rather a barren honor for a literary man. How much more might he have done had he been placed beyond the necessity of toiling for his daily bread at the cobblers' stool. We observe that a contemporary points out the very different way in which a poor country like Norway knew how to appreciate, and then how to treat a man of such rare qualities. Sars, the great Norwegian zoologist, was, it appears, raised from a position almost as unfavourable to scientific research as that of Edward by the Government. He was made a Professor in the University of Christiania, and allotted a stipend as ample as that which the general researches without the fear of penury before his eyes. It is useless, however, to lament the sins of omission on the part of those who had the opportunity of doing good service and missed it, rather would we congratulate Edward that at last he has found a good friend in Mr. Smiles, and a sympathetic benefactor in the Queen, while, following these examples, the Aberdeenians have at length done something to redress their neglect. Turning over to the darker shadows of the book we are glad that the general reader who appreciates a well-told story of a remarkable life, will find much to gratify, interest, and amuse him in the pages of this book. The story is simply that of a child born in the humblest circumstances, growing up under the most adverse and depressing conditions, over and over again almost borne to the ground in manhood by adversity, nevertheless pursuing throughout, with perfectly unquenchable zeal and love, the search for and the study of the creator's works. A theologian pursuing his studies with equal zeal and enthusiasm would have looked on in the light of a martyr or a saint, but poor Tom Edward, in spite of his homeless life, was considered simply as one not quite *comport mentis*. It is a book every one should read if he can, and may be especially commendable to young gardeners; that they will not find the task very irksome we may show by appending the following extract, of one of many showing the strains to which Edward was reduced in his love of Nature:—

"On one occasion he got some boys to accompany him to a wood near Polmuir, about two miles from town, on a bird-nesting expedition. While they were going through the wood the boys remarked one of the called out, 'A byke, a byke [a bee's' nest], stickin' on a tree, and made o' paper.'

"A byke was regarded as a glorious capture, not only for the sake of the honey, but because of the fun the boys had in skelpin' out the bees. Before they had quite reached the spot, one of the youngest boys yelled out, 'Oh, I'm stung! I'm stung!' He took to his feet, and all of them followed. They had run some distance, and there being no appearance of a foe, a halt was made, and they stood still to consider the state of affairs. But all that could be ascertained was that the byke was on a tree, that it was made of paper, and that it had lots of yellow bees about it.

"This so excited Tom's curiosity that he at once proposed to go back and take down the paper byke. His proposal was met with a decided refusal; and as his insisting upon going back, all the other boys ran away home. Nothing daunted, however, he went back to that part of the wood where the byke had been seen. He found it, and was taking it from the underside of the branch to which it was attached, when a bee lit upon one of his fingers and stung it severely. The pain was greater than from any sting that he had ever had before. He drew back, and sucked and blew the wound alternately, in vain.

"Then he thought, 'What can I do next?' There the byke hung before him. It was still in his power to remove it—if he could. To leave it was impossible. Although he had nothing to defend himself from the attacks of the bees, nor anything to put the byke into when he had taken down, still he would not go without it. His blood would scarcely do. It was too little and too holey. His stockings would not do; as though he wished to take the byke home whole. A thought struck him. There was his shirt! That would do. So he took off his jacket, and disrobed himself of his shirt. Approaching the tree very gently, though getting numerous stings by the way, he contrived to remove the byke from the branch to which it was hanging, and tucked it into his shirt. He tied the whole up into a sort of round knot, so as to keep all in that was in.

"It was now getting quite dark, and he hurried away with his prize. He got home in safety. He crept up the stairs, and put the byke into a box, so that the light of day was clear. But no! he saw his father sitting in his chair. There was an old iron pot in a recess on one side of the chair, in which Tom used to keep his numerous 'things,' and there he deposited his prize until he could

upack it in the morning. He now entered the house as if nothing had happened. 'Late as usual, Tam,' said his father. 'No farther notice was taken. Tom got his supper shortly after, and went to bed. "Where's getting into bed, he went a little out of the way to get undressed, and then, as much unseen as possible, he crept down beneath the blankets. His brother, having caught sight of his nudity, suddenly called out—

"Eh, mother, mother, look at Tam, he hasna gotten his sk'."

"Straightway his mother appeared at the bedside, and found that the statement was correct. Then the father made his appearance.

"Where's your shirt, sir?"

"A I hanna ken."

"What d'na ken I"—addressing his wife—"Where's my strap?" Tom knew the power of the strap, and found that there was no hope of escaping it.

"The strap was brought.

"Now, sir, tell me this instant—where is your shirt?"

"It's in the hole on the stair."

"Go and get it, and bring it here immediately."

"Tom went and brought it sorrowfully enough, for he dreaded the issue.

"And what have you got in it?"

"Yellow bumbee's byke."

"A What?" exclaimed his father and mother in a breath.

"A yellow bumbee's byke."

"Did I not tell you, sir," said his father, "only the other day, and made you promise me, not to bring any more of these things into the house, endangering and molesting us as well as the whole of our neighbours. Besides, only think of your stripping yourself in a wood, to get off your shirt to hold a bees' byke!"

"But this is a new one," said Tom, "it's made o' Paper."

"I made o' fiddlers' ticks!"

"Na; I'll let ye see it!"

"Let it alone, I don't want to see it. Go to bed at once, sir, or I shall give you something (shaking his strap) that will do you more good than bees' bykes!"

"Before the old couple went to bed they put Tom's shirt into a big bowl, poured a quantity of boiling water over it, and, after it was cold, they opened the shirt and found—a wasp's nest!"

Food: some Account of its Sources, Constituents, and Uses. By A. H. Church, M.A. OXON.

This is one of those marvellously cheap and good handbooks for which South Kensington Museum has become famous. As its title indicates, it bears upon the food collection, once a great point of attraction at South Kensington, but now removed to the branch museum at Bethnal Green. The history of this collection, at once so instructive and interesting, is told in a very few words in the preface to the book under notice, how the first suggestion for the formation of such a series was made by Thomas Twining, Esq., the proprietor of the ill-fated Economic Museum at Twickenham, the first arrangement of the collection at South Kensington being made in 1857—Dr. Lyon Playfair, and subsequently Dr. Lancaster, having charge of it, which charge, since its removal to Bethnal Green, has been entrusted to Professor Church, who has re-arranged and enlarged the collection, and produced the admirable descriptions attached to the different products, which in an enlarged and detailed form constitute the bulk of the present volume. The introductory part of the book, on the uses of food, the composition of the human body, the supply and qualities of water, and the chemical composition of foods, is explicitly told in a brief but comprehensive manner. Under the head of "Carbon Compounds or Heat-Givers," we have some information regarding the part which starch plays as a heat-giver in human food. Starch is abundantly contained in the cereal grains, particularly in Rice and Indian Corn, and about 15 per cent. can be obtained from Potatoes. Starch is known in various forms, as Tapioca, arrowroot, sago, &c., amounting each respectively to 81 lb. in every 100, while in fine wheaten flour it is 74 per cent. Wheat 71, and Maize 64. Sugar is another well-known and largely consumed heat-giver. The two principal commercial sources of this commodity is the Beetroot (*Beta vulgaris*) and the Sugar-cane (*Saccharum officinarum*), the latter being the best known, as the bulk of the sugar consumed in this country has until quite a recent date been derived from it. Though widely spread in tropical countries our present supplies of sugar from the Sugar-cane come from Brazil, Mauritius, and the West Indies. Latterly, however, the

Beetroot has become more extensively cultivated for sugar-making purposes, and has largely supplanted the cane. In proof of this we are told that "it has been stated that 700,000 tons of sugar from Beetroot are annually prepared in Europe, an amount which is about half of the total European import of sugar from the Sugar-cane." Of maple-sugar, furnished by *Acer saccharinum*, *A. pennsylvanicum*, *A. Negundo*, and *A. dasycarpum*, we read that "these trees of Canada and the northern United States contain a sap in which about 2 per cent. of cane-sugar occurs. In the spring the sap is collected and boiled down. It is stated that 1,546,000 lb. of maple-sugar were produced in Pennsylvania in 1870."

The distinction between cane and grape sugars is treated in such an interesting manner that we give it in the author's own words:—

"Grape-sugar," he says, "comes next in importance to cane-sugar. Just as the latter sugar is found in many plants besides the Sugar-cane, so grape-sugar is abundantly distributed through the vegetable kingdom; more than this, it may be readily made from starch, dextrin, and cane-sugar by the action of weak acids. But perhaps a still more remarkable mode of obtaining this sugar is by means of the action of strong sulphuric acid or oil of vitriol upon cellulose, the compound which forms the main substance of paper, cotton, linen rags, and some woods. Thus it happens that all these substances are now used for the manufacture of grape-sugar, or glucose, as it is called. This glucose, being immediately fermentable, may be used to strengthen the wort in brewing, and for the direct production of alcohol, which may be made from old rags and waste pawnbrokers' tickets!"

"Grape-sugar, or glucose, exists in three forms at least. Two of these, dextrose and levulose, make up the main bulk of honey; the third, maltose, occurs in malt, a sprouted grain. The variety of glucose called dextrose exists largely in sweet fruits, as the Grape, and crystallises out in hard warty masses when Ripe Grapes are dried, as in the case of Raisins and French Plums. The levulose of honey and of acid fruits will not crystallise, but can only be dried up into a glassy or resinous mass. These sugars, as well as maltose, are less sweet than the common English name being placed first, than the French, German, and Italian, and finally the Latin names, renders the book what it professes to be—a handbook on the all-important subject of food. The analyses also will be found of great interest, many of them being absolutely new and made expressly for this work.

The Lawson Company have issued a sixth edition, in a very elegant guise, of their treatise on cultivated grasses, called *Agrostographia*. But in addition to the text have been rendered necessary, but a series of illustrations have been given of the principal grasses. Of these illustrations the botanical details appear to be the best part, the specimens of the entire plant selected for illustration being in general much too small to be characteristic. The portrait of the late Lord Provost of Edinburgh will be welcome to all those who had the pleasure of his acquaintance.

The indefatigable Baron Von Mueller has gathered into one volume of about 300 pages a great amount of information concerning various plants which might be profitably introduced into cultivation in the colony of Victoria. The volume is entitled *Select Plants readily Eligible for Industrial Culture, or Naturalization in Victoria*, and, apart from its strictly local value, will be useful as a reference-book on the subject of economic botany. The plants are arranged first alphabetically, then geographically, lastly according to their uses. In addition, an index of vernacular names is given.

The *Victorian Year Book, or Notes on the Colony of Victoria* (London: Trübner), is a very valuable digest of the history, geography, meteorology, and social statistics of the colony, which should be perused by all intending emigrants, and should be kept for reference on the library shelves of those who

may at any time need information on this flourishing colony. The climate of Melbourne approximates to that of Lisbon, the seasons, of course, being reversed—thus the spring months are from September to November, the summer months from December to February, the autumn months from March to May, and the winter from June to August. The following are the mean temperatures for the several months:—

January	60.7	July	49.7
February	60.6	August	50.5
March	61.8	September	53.3
April	53.8	October	57.4
May	53.3	November	57.4
June	49.8	December	65.9

In seven years the thermometer in the shade has risen sixty-one times to or above 100° (in the months of November, December, January, and February). In the same seven years there were fifty instances wherein the thermometer fell to or below the freezing-point, July being the coldest month, the lowest temperature registered being only 27° on July, 1869. The mean temperature of the soil at the surface is noted at 62° in spring, 76° in summer, 61.9° in autumn, and 49° in winter, the yearly mean being 62.4°. The following table gives the temperature, omitting fractions, at different depths below the surface:—

Seasons.	14 inches.	3 feet.	6 feet.	8 feet.
Spring	53	87	57	56
Summer	65	67	66	63
Autumn	61	61	61	61
Winter	46	51	53	56
Year.	56	56	56	60

The rainfall is very variable in amount in different seasons, the mean of thirty-five years being 27½ inches, and the number of days on which rain fell 136. In spring there are on the average of fourteen years forty-one days on which rain falls, the amount being 7.79 inches; in summer, twenty-four days, and 6.41 inches; in autumn, twenty-eight days, and 5.7 inches; and in winter, forty-one days, and 5.6 inches of rain. The annual rainfall is not so great as that of Sydney, but much greater than that of Adelaide.

We have next to bring under the notice of our readers a similar publication to the above on the parent colony of the Australias, New South Wales, drawn up by Mr. G. H. Reid (Trübner & Co.). In this volume we have a summary of the history, physical geography, climate, social and commercial history of the colony, and of its various provinces and towns. The account of the various natural resources of the colony, of the favourable climate and other local advantages, impress the reader with a wonderful sense of the future development and possibilities of this the oldest of the Australian colonies—so old, that it has only passed its centenary by seven years, so that Lady Smith, whose death we recorded a few weeks ago, was an infant of three years when Captain Cook first landed in Australia!

Under the title of *Les Aliments*, M. Rothschild has published a translation of Vogt's treatise on the adulteration of articles of food and the means of detecting it. For those to whom Dr. Hassall's book is too bulky the present treatise may be commended. The woodcuts are excellent, and may be recommended to microscopists.

Variorum.

FRENCH STATISTICS.—An article by M. Dubost in *Annales Agronomiques* states that the number of sheep and cattle generally greatly diminished in France in 1872 as compared with 1862 and 1866—a diminution accounted for by the war, the loss of territory, cattle plague, &c. The diminution in the quantity of sheep amounted to no less than five or six millions of animals. The total value of Cabbages, Carrots, and Gourds consumed by thirty-six millions of inhabitants is estimated at fifty millions of francs, or 1 fr. 40 c. a head. Melons are estimated at twelve millions of francs, Asparagus ten millions, Artichokes seventeen millions, salads thirty-five millions, and for various vegetable produce twenty-seven millions of francs. The value of fruits exported annually from France is stated to be thirty millions of francs. In spite of the ravages of the Phylloxera, which have caused the abandonment of 200,000 hectares of vineyards, and will speedily cause the abandonment of an equal area—in

spite of all this, the three last vintages have yielded supplies above the average. The annual produce is about 55,000,000 of hectolires, rather more than half of which are sold; 5,000,000 of 6,000,000 of hectolires are converted into alcohol, and the remainder is consumed by the growers. Of cider the production is estimated at 11,000,000 of hectolires. Of beetroot sugar, 400,000,000 of kilograms are made on the average. The general annual value of the subjoined products is thus given:—

Beetroot (sugar)	180,000,000 francs.
Old-yeilding wines, &c. .. .	100,000,000 „
Wines of the vintage of 1876 ..	100,000,000 „
Olive, Walnut, and Almond ..	75,000,000 „
Silk-worms	35,000,000 „
Dye-plants	35,000,000 „
Miscellaneous	25,000,000 „
Total	513,000,000 „

TREE FILLING BY ELECTRICITY.—The accompanying note is from the *Homesward Mail*:—

“A novel and interesting experiment has been attempted in the compound of the Strangers' Home, Marazion, and there can be little doubt that ultimately great results will accrue from what may at first sight appear to have been not a great success. The experiment referred to was tree-filling by electricity instead of by the ordinary method of the clumsy axe. The patentees of the recent Mr. R. S. Furlinson and Mr. W. J. H. Martio, both of Bombay, and the experiment was conducted by Dr. Lyons. The plan is simple. The two ends of the copper wire of a galvanic battery are suspended with platinum wire, which of course instantly becomes red-hot, and while in that state it is gently sawed across the trunk of the tree to be felled. When arrangements were made for the experiment, it was never for a moment doubted that the enterprising merchants of Bombay were possessed of all the made thickness of platinum wire, but it turned out that the thickest that could be got was only that of crochot cotton. It was at once seen that a wire of such thinness would be consumed before the tree was half severed from its trunk. However, the attempt was made. The burning wire performed its task very well so long as it lasted, but, as anticipated, the wire continually broke, and at length there was no wire left. There can be little doubt that with a stronger battery—the one used was only a twelve-chambered one—and a thicker wire, the experiment would have been entirely successful. As it was the wires of a galvanic battery are through. It is calculated that under proper conditions a tree, which at present takes two hours to fell, will come to the ground by this process in fifteen minutes. It is needless to add that there is no waste of wood, no saw-dust. The process is one worth the attention of all Governments engaged on forest clearing.”

THE NETTLE TREE, CELTIS AUSTRALIS, although of moderate dimensions, furnishes a timber of great commercial value, and the slender flexible branches are in great request in many parts of Europe for whip stocks. In the neighbourhood of Udine, according to the German papers, large plantations are now cultivated, actually tilled, and manured. The trees are planted about 6 feet apart, the lower branches being trained off, and in two years the trunks attain a diameter of 6 to 8 inches. The wood from these plantations is fine-grained, is easily cleft, and, being of a beautiful yellow colour, fetches a higher price than the ordinary quality. In Istria this tree is commonly planted in the squares and near churches. In Moschenizza there is a tree with a trunk 5 feet in diameter at the base; and in Gemino there is one 6 feet in diameter, supposed to be a thousand years old.

The Weather

STATE OF THE WEATHER AT BLACKHATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, MARCH 28, 1877.

MORNING AND DAY.	BAROMETER.	TEMPERATURE OF THE AIR.		HYGROMETRY.	DIRECTIONS AND QUANTITIES OF WIND.	RAINFALL.
		At 8 A.M.	At 4 P.M.			
Mar 27	30.1	49.3	36.7	92	S.W.	0.1
28	30.0	49.3	36.7	92	S.W.	0.1
29	30.0	49.3	36.7	92	S.W.	0.1
30	30.0	49.3	36.7	92	S.W.	0.1
31	30.0	49.3	36.7	92	S.W.	0.1
Mean	30.0	49.3	36.7	92	S.W.	0.1

- March 22.—Fine but cloudy till 3 p.m. Very dull and cloudy with heavy showers of rain till 10 p.m. High 8.8 p.m.; cloudless afterwards. Hoar-frost in morning.
- 23.—A fine day, partially cloudy. Snow and sharp frost in morning. Rain at eight.
- 24.—A fine, cloudy day, with intervals. Heavy rain in early morning, and frequent showers after 3 p.m.
- 25.—A very fine bright day, partially cloudy. Showers in early morning, and at 6.30 p.m.
- 26.—A fine, cloudy day, with rain throughout.
- 27.—Fine and bright till 3 p.m. overcast, dull with rain till 9 p.m. Cloudless afterwards. A little rain also fell in early morning.
- 28.—Fine and bright, cloudy at times. Little rain fell in early morning.

LONDON: Barometer.—During the week ending Saturday, March 24, in the suburbs of London the reading of the barometer at the level of the sea decreased from 29.66 inches at the beginning of the week to 29.29 inches by the night of the 20th, increased to 29.79 inches by the morning of the 23d, and decreased to 29.01 inches by the end of the week. The mean reading for the week at sea level was 29.43 inches, being 0.25 inch below that of the preceding week, and 0.51 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 53° on the 24th to 41° on the 21st; the mean value for the week was 48°. The lowest temperatures of the air observed by night ranged from 20½° both on the 22d and 23d to 33° on the 24th; the mean value for the week was 29½°. The mean daily range of temperature in the week was 18½°, the greatest range in the day being 24½°, being 0.25 inch below that of the preceding week. The mean daily temperatures of the air during the week were as follows:—18th, 39.6; 19th, 30.7; 20th, 35.3; 21st, 35.2; 22d, 35.6; 23d, 36.7; 24th, 41.3; and the departures in defect of their respective averages were:—21st, 4.8; 22d, 3.8; 23d, 6.6; 24th, 5.3, and 0.8. The mean temperature of the air for the week was 37.2°, being 4.6 below the average of observations extending over a period of six years.

The highest readings of a thermometer, with blackened bulb in vacuum placed in sun's rays, were 109° on the 18th, 111½° on the 23d, 115½° on the 24th; on the 20th the reading did not rise above 46°. The lowest readings of a thermometer on grass with its bulb exposed to the sky were 22° on the 22d, and 25° on the 19th, on the 24th the lowest reading was 30°.

Wind.—The direction of the wind was variable, and its strength moderate. The weather during the week was fine and cold, with fine and hail showers fell on the 20th, 21st, 22d, and 23d.

Rain, hail, or melted snow was measured on five days during the week, the amount collected was 0.73 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 54½° at Bristol and 53½° at Cambridge; at Bradford 46° was the highest temperature, the mean value for all stations was 50½°. The lowest temperatures of the air observed by night were 23° at Nottingham, and 24° at both Eccles and Hull; at Leeds 31° was the lowest temperature. The general mean from all stations was 27°. The range of temperature in the week was the greatest at Nottingham, 28½°, and the least at Leeds, 16°. The mean range of temperature from all stations was 23½°.

The mean of the seven high day temperatures at Bristol, 49½°, and the lowest at Bradford, 43½°, the mean value from all stations was 46½°. The mean of the seven low night temperatures was the lowest at Wolverhampton and Eccles, 27½°, and the highest at Portsmouth, Norwich, Liverpool, and Sunderland, all 30°. The mean daily range of temperature in the week was the greatest at Eccles, 20½°, and the least at Norwich, Liverpool, and Bradford, all 16°. The mean daily range from all stations was 16°.

The mean temperature of the air for the week from all stations was 37½°, being 2½° higher than the value for the corresponding week in 1876. The highest temperature at Sunderland, 39°, and the lowest at Wolverhampton, 34½°.

Rain.—The amounts of rain and melted snow measured at the various stations ranged between 1½ inch at Stratford and Sheffield, and one-tenth of an inch at Nottingham, Bradford, and Leeds; the average fall from all stations was half an inch.

The weather during the week was somewhat fine but cold, with snow showers. Thunder was heard at Cambridge and Sunderland on the 22d, and lunar halos were seen at Cambridge on the 19th, 20th, 21st, 22d, and 23d inst.

SCOTLAND: Temperature.—The highest temperatures of the air observed by day varied from 49° at Edinburgh and Aberdeen to 44° at Aberdeen; the general mean from all stations was 47½°. The lowest temperatures of the air observed by night ranged from 23° at Perth to 28° at Greenock; the mean

from all stations was 25½°. The mean range of temperature in the week from all stations was 21½°.

The mean temperature of the air for the week from all stations was 56½°, being 1° lower than the value for the corresponding week in 1876. The highest was 38° at Greenock, and the lowest 3° at Perth. *Rain.*—The amounts of rain or melted snow measured at the several stations varied from six-tenths of an inch at Greenock to one-tenth of an inch at Leith and Perth; the average fall over the country was a quarter of an inch.

DUBLIN.—The highest temperature of the air was 49°, the lowest 23½°, the range 25½°, the mean 37½°, and the fall of rain was 1½ inches. **JAMES GLAISHER.**

Obituary.

WE regret to record the death, on March 23, of Mr. THOMAS DICKSON of Chester, the youngest son of the late Mr. Francis Dickson, the founder of the well-known firm of Francis & Arthur Dickson & Sons, of which Mr. Arthur Dickson is now the head.

Enquiries.

17. HOSE REEL WANTED.—I shall be obliged if you, or any of your readers, can inform me where I can obtain a reel of the kind alluded to in article 16, and my water tubing for watering my garden and glass houses in the following manner: I have 80 feet of tubing fixed to a waterworks tap, whereby I get an unlimited supply of water at all times, and I wish to connect this tubing round a wheel placed as a fixture near the tap, which will revolve so easily as to admit of my carrying, in my hand, the end of the hose and delivering the water just as I require to water the plants or borders and no further, leaving the rest of the tubing round the wheel, and which must be sufficient diameter to allow the water to pass through it, and so that when I have finished watering I can wind back the tubing on to the wheel, there to remain until again required to be used. The utility of such an implement must be apparent to all, and the amount of preserving the tubing from constant bursting by getting into angles whilst in use. *A Constant Reader.*

178. TOXICOPHILA SPECTABILIS.—I shall be obliged to any of your correspondents who have flowered this plant if they would give me the course of cultivation they followed. The plant I have is old, apparently healthy, ripens its growth, and is in fruit, in a small pot for the size of plant, but it never shows for bloom. *T. P.*

179. LIME FOR CHALK SOILS.—A great part of our nursery is a light sandy loam, resting on a subsoil of broken chalk and stones, and where the soil is present chalk is thrown in more or less quantities to the surface. There are some spots in this soil (which, however, are not by any means those where the chalk is present in greatest quantities) which, in spite of heavy manurings, refuse to grow the trees planted on them with any degree of vigour. Can any of your correspondents give me any information as to what soil is this, and in what quantities in considerable quantities are ever benefited by applications of lime, and, if so, to what extent the lime should be applied? *E.*

Answers to Correspondents.

ADIANTUMS: A.M. The fronds have probably been caught by some of the gleams of sunshine we have had, and in this way become browned. The remedy would be to keep them shaded during bright intervals.

AVICULARIA EQUISETI. The next of this plant is Cornacene.

BEETLES: E. Holmes. *Hylobius Abietis*; feeds on Conifers.

CLEMATIS: J. E. M. J. You can propagate either by layering or grafting the eyes on pieces of Clematis root. The latter is the best process if you require quantity—that is, supposing you have the proper appliances of propagating pits, &c., but the former will give you a limited number of strong plants in a short period.

CREPES: O. M. Barrett. *Stantonia latifolia*, or *Passiflora coralica*.

GLADIOLUS: F. O. C. No. 3 is the correct one—*Gladiolus*.

GRAPES: F. J. Your Grapes are badly attacked by a disease known as "rust," which is brought about in several different ways, such as sanding a cone or net, or by rubbing them with the hand while thinning them, or by the application of sulphur to the pipes, &c. The only way to stop it is to guard against these contingencies.

INSECTS ON VINES: A. E. The insect was hopelessly smashed when it reached the soil, and your sample in a quart jar is all that remains.

NAMES OF PLANTS: P. Ered. We cannot undertake to name garden varieties of *Camellia*, or forists' flowers, or plants of the same name, such as *Camellia Lowiana*; 2, *Picea grandis*;—*J. K. M.* The Orchid is *Trichopilia suavis*;—*L. P.* *Eria obesa*.—*P. H. G.* *Schlimia trifida*.—*C. R.* 1, *Dendrobium*

also sanguineum, one of the best flowers we ever saw; ...

NEPENTHES RAFFLESIANA: Y. A. S. Your plant with 9 inches of bare stem and only four leaves is evidently ...

UPAS TREE, &c. I. C. A. I. Antiaris toxicaria, nat. ord. Artocarpaceae, native of Java; ...

VINE LEAVES, &c. I. W. The Primroses and Poly-anthuses we cannot undertake to name. The vine shines appear to have been scalded. The bright sun ...

VINES: Y. S. Your vines, we fear, hopeless. The insects which have been attacked at an earlier stage ...

CATALOGUES RECEIVED: Messrs. Ellwanger & Barry (Mont Hope Nurseries, Catalogue of Plants, &c. ...

COMMUNICATIONS RECEIVED: W. D. Anticipated in the ...

Markets.

COVENT GARDEN, March 28.

This being Passion Week, business has been at a standstill, consequently perishable goods have been with difficulty cleared off lower rates. James Walker, Wholesale Apple Market.

PLANTS IN POTTS.

Table listing various plants in pots such as Anselms, Begonias, Bouvardias, etc., with prices per dozen.

CUT FLOWERS table listing items like Lily of the Valley, Carnations, Cyclamen, etc., with prices per dozen.

VEGETABLES table listing items like Artichokes, Egg, Globe, d. 0-6, etc., with prices per bush or per 100.

FRUIT table listing items like Apples, Peaches, Pears, etc., with prices per dozen.

CORN.

Trade at Mark Lane on Monday was on the whole decidedly heavy. Wheat of superior quality and in good condition was well held at the prices of the previous Monday. But for inferior and ill-conditioned ...

CATTLE.

At the Metropolitan Market on Monday trade in beasts was dull and prices lower. There being a reduced demand for sheep, prices gave way in some instances. Good calves continued scarce and dear. Cumbrian ...

HAY.

Owing to the supply at Whitechapel market on Tuesday being large, trade was dull, and prices for clover were somewhat lower. Prime clover, 100s. to 120s.; inferior, 70s. to 85s.; and straw, 40s. to 45s. per load. Cumbrian Market quotations: Superior meadow hay, 120s. to 135s.; inferior, 100s. to 115s.; superior ...

POTATOS.

At the Borough and Spinnfields markets supplies of Potatoes have been plentiful and prices were very well supported. Kent Regents, 100s. to 120s. per ton; Essex do, 80s. to 110s.; Scotch do, 95s. to 110s.; rocks, 65s. to 80s.; Bales, 120s. to 150s.; Victoria, 120s. to 125s. bags 4s 6d. The imports into London last week comprised 28,553 bags from Hamburg, 21,375 Antwerp, 6,095 Ghent, 1,200 Bremen, 250 packages 291 casks Malaga, 100 bags Bonaire, 2,245 casks 100, 200, 250, 275 bags 4s 6d. Bonaire, 210 sacks Rouen, 223 bags Dordrecht, and 100 Rotterdam.

COALS.

There was a small supply of house coals at market on Monday owing to the detention of the steamers through stormy weather, and the prices advanced 1s. per ton. Quotations: Best Wyllin, 12s. 6d.; Victoria, 12s.; Hutton, 2s.; Hutton Lyons, 17s. 9d.; Lambton, 19s. 6d.; Tunstall, 17s. 9d.

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

By Her Majesty's Patent Solicitors, Messrs. W. & A. G. Letters Patent

WRIGHT'S ENDLESS-FRAME-IMPACT HOT-WATER BOILERS.

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

"The 'Boiler of the Future.' I have no doubt about this."—Wm. THOMSON, Trinidad Vineyards.

From the "Gardener," March, 1877.

WRIGHT'S PATENT ENDLESS FLAME-IMPACT BOILER.

"This boiler is attracting a good deal of attention in the horticultural world at the present time; and as I have just had one of their largest-sized ones fitted up here, and have now got it in operation, I will be allowed to give you some information which may not be without some advantage to some of your numerous readers. I have had some experience as to the annoyance and extra labour which would be incurred by any improvement effected in these to save labour and fuel demands the attention of all horticulturists who are engaged in the raising of plants in the open air, and in the case of the greenhouse being in the centre, two lean-to Vineries on each side, with Camellia-houses and general plant-houses at right angles to the main body, and a Fern-house, partly lean-to and partly span, 10 feet in length, varying in width from 20 to 25 feet. Attached to each lean-to-house is our laundry, with a drying chamber fitted up with about 50 sq. ft. of 4-inch piping.

The whole of the above houses are heated with hot water, and have a total of about 2500 feet of 4-inch piping. We had formerly used a boiler, one being 12 feet 6 inches long, the other 4 feet long. With these two boilers kept hard fire we always found great difficulty in keeping up the temperature during the winter months, and it was necessary to attend to the fires. On the last day of last year the larger boiler came to grief, the water from it dropped out of the fire; and in the evening the boiler was so hot that it had cracked beyond repair. To be thus left in the middle of winter with a boiler out of the job, was a most serious matter, and another without delay. I have given a good deal of attention to the construction of hot-water boilers, and I must say I had never seen a boiler of the kind you describe, and I thought I would until some time ago my attention was called to a drawing of a boiler of the kind you describe, and I thought I would try it. After talking the matter over with my employer, W. S. Mitchell, Esq., he at once granted permission to get the boiler in the hands of Messrs. Melkic & Philp, boilerhouse builders and hot-water engineers, Torphichen Street, and they have fitted up and attached the fire at the end of the boiler. I also got some additional light valves attached, so that if any stoppage should occur it may be attended to without disturbing the plants.

And now as to the capabilities of the boiler for the work. As formerly used, it was a considerable difficulty in keeping up the heat of the two oval boilers kept hard at work. I now find that with the remaining boiler, and the addition of the heat of the boiler in the laundry to a degree they were never before, and that with much less coal than it took to fire one of the oval fires.

"Our chimney consists of a 7-foot 70 feet long, led horizontally through centre of back wall, with 18 feet of a perpendicular stack. Some doubt was expressed that, as we required a chimney pipe attached to boiler about 6 feet long, there would be deficiency of draught; but we have found the opposite to be the case. I attached a 6-foot length of 8-inch stove pipe, with elbow at boiler, and cleaning door on the angle, and 4s I found the draught to be very good, and the boiler to be kept at the bend of the stove pipe, and am able to regulate the fire to a nicety, and by breaking up the fire at the end of the boiler, I find it is very easy to leave it to its work with the greatest confidence till the usual time of commencing labour the following morning, and it may be attended to sit up firing the half of the night at times, and sometimes whole of the night, we can retire to rest at a reasonable hour, confident of sleep, and undisturbed by any noise or smoke, or the fire getting fraint to go out. In concluding my remarks I may say that I have no objection in saying that for rapidity of circulation, small consumption of fuel, portability, and cleanliness, it is, in my opinion, the best boiler in the world. I am, Sir, your obedient servant, Wm. Wright & Co., Glasgow.

"I have taken the most perfect 'Heat Trap' yet invented."—THOMAS THOMSON, Drumsburg Park.

For details and particulars as to the various sizes made, and prices, please see our pamphlet, entitled, 'OUR HOT-WATER AND STEAM-BOILERS, &c.' which will be handed to you on application. We are prepared to supply Thirty Different Boilers of all powers, sizes, and heights, and can vary them to suit any particular situation or requirement.

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

SPECIAL NOTICE.

GRAND EASTER GIFT.

THE FINEST AND MOST VALUABLE GIFT EVER OFFERED.

EACH READER of this PAPER will be entitled to receive from the NATIONAL FINE-ART UNION, 35, Great James Street, London, W.C., a copy (23 inches by 16 inches) of the beautiful Steel-Plate Engraving, entitled

WARWICK CASTLE.

(COPYRIGHT.)

This Magnificent Picture has been specially Engraved to form a companion to that of WINDSOR CASTLE, and it is only necessary to state that the artistic merit and skill displayed in Engraving WARWICK CASTLE is fully equal, if not superior, to that of WINDSOR CASTLE.

This great work may fairly be considered as one of the finest productions of high art of modern times: it is from the celebrated Picture painted by E. DUNCAN, Esq., and is engraved in the finest style on steel by that well-known artist, G. GODFREY, Esq.

The scene is an English Pastoral one, and is one of the best examples of the English School, which is well-known to be the finest and richest in Landscapes of all the various Schools of Art. In the foreground are groups of cattle drinking from a stream of crystal clearness, which meanders through the most luxuriant and picturesque district of our island home. The magnificent woodland, in all the glories of light and shadow, stretching away to the right, leaves the central portion of the picture open for the portrayal of the most complete representation of simple and sweet country life, while the gigantic old Castle rising upward in the distance tells of a power and greatness which shall protect our hearths and homes for all time. In this picture will be found the only representation extant of that portion of Warwick Castle lately destroyed by fire. The associations that crowd around this historic structure, in which the Great Earl of Warwick, called "The King Maker," lived, are fitly exemplified in the work itself, while the ability displayed in engraving it cannot be too highly praised. It has both an historical and an artistic value, while its intrinsic worth may be gathered from the following:—

"March 29, 1877.

"Dear Sir,—The Engraving of WARWICK CASTLE is copyright, and has never been issued under the regular retail price of One Guinea. (Signed) "CHARLES GOOLD, Manager.
"National Fine-Art Union, 35, Great James Street, London, W.C."

THIS GRAND PRESENTATION PICTURE, the original of which was only finished in 1876, will be given to each reader of this Paper who cuts out the Redemption Bond found below, and sends it to the National Fine-Art Union, 35, Great James Street, London, W.C., together with 13 stamps, or P.O. Order for 1s., payable to CHARLES GOOLD, at the General Post Office, London, E.C., to pay the cost of case, transmission, copyright, and other charges. It will then be sent free to all parts of Great Britain and Ireland, securely packed and warranted to reach its destination uninjured.

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<i>This Bond entitles the holder to one copy of the beautiful Steel Plate Engraving of</i>	
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(Copyright),	
And must be sent, together with Thirteen Stamps, or Post-office Order for 1s., to	
THE NATIONAL FINE-ART UNION,	
<small>who will redeem it in the order it is received.</small>	
(Signed)	NATIONAL FINE-ART UNION, <small>35, Great James Street, London, W.C.</small>
N.B.—NOT AVAILABLE AFTER APRIL 17, 1877.	

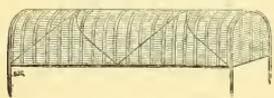
NOTE THESE INSTRUCTIONS.—All Bonds must be sent in on or before April 17, 1877. The Bond must in all cases be sent. Each copy will be sent securely packed. One copy will be sent for each Bond, and NONE CAN BE SENT WITHOUT ONE, EXCEPT UPON THE RECEIPT OF TWO GUINEAS. The Bond will not again be printed in this Paper, hence the advisability of at once cutting it out and sending it for redemption, as each will be attended to in rotation as received.

 *The Picture is well worth handsomely framing, and its artistic merit and intrinsic value will render it a desirable addition to every household.*

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 Manufacturer of **HORTICULTURAL SHADINGS**
 for protecting Wall Trees from Frost and Insects, &c. 54 and
 60 inches wide, any length up to 200 yds. Prices on application.

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REDUCED PRICES. SEASON 1877.
 Superior Quality. Galvanized after made.
 NEW PATTERN WITH DIAGONAL STAYS.



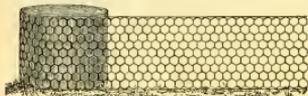
No. 76. 3 feet long, 6 inches wide, 6 inches high.
 Price, 8s. per dozen.

Two end pieces included with each dozen.
 The above are strongly recommended, being much smaller in
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 Having a large stock of the above, Orders can be executed on
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 Special quotations for large quantities.
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Size of Mesh.	Mostly used for	Gauge, or Light.	Gauge, or Medium.	Gauge, or Strong.
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GALVANIZED EYED NAILS for Stretching Wires, one at
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STRAINING SCREWS and NUTS, one to end of each
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 No. 14 **GALVANIZED WIRE**, placed 7 to 10 inches apart
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 With No. 14 Wire—One line of 20 yards, 11d.; 40 yards,
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For CONSERVATORIES.
 Wirework Baskets.
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**NETTING FOR FRUIT TREES,
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TANNED NETTING for protecting the above from Frost,
 Blight, Birds, &c. 2 yards wide, 3d. per yard, or 100 yards, 22s.;
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NEW TANNED NETTING, suited for any of the above pur-
 poses, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards
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TIFFANY, 6d. and 7s. 6d. per piece of 20 yards.
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E. T. ARCHER'S "FRIGI DOMO,"—
 Patented by Her Majesty the Queen, for Windsor
 Castle and Frogmore Gardens, the late Sir J. Paxton, and
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MADE OF PREPARED HAIR and WOOL.
 A perfect non-conductor of heat or cold, keeping a fixed
 temperature where it is applied. A good covering for Pits and
 Forcing Frames.

**PROTECTION from COLD WINDS and MORNING
 FROSTS.**

"FRIGI DOMO" CANVAS.
 2 yards wide 12. rod. per yard run.
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ELISHA T. ARCHER, only Maker of "Frige Domo,"
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 generally, that having erected new, more extensive, and com-
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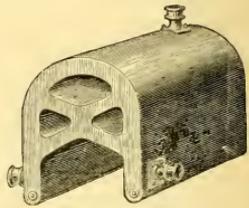
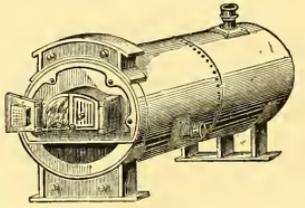
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NEW PATENT "CLIMAX" BOILER (1874). See
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 Which can be attached to any ordinary Boiler. These Tubes are the greatest Economisers of Fuel and Preservatives of Boilers,
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STANTON'S NEW PATENT FROST DEFYING LIQUID (see "*Gardeners' Chronicle*," Aug. 19, 1876).
HOT-WATER APPARATUS ERECTED COMPLETE.
 PRICE LIST on application; or, Six Stamps for DESCRIPTIVE CATALOGUE, 4th Edition.

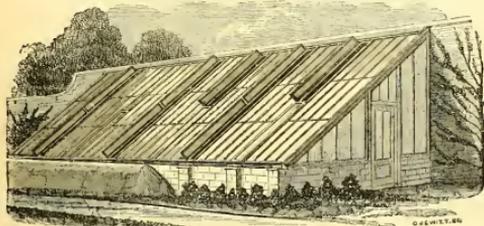
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HOUSES made of the best Materials, and Glazed with English Plate or Sheet Glass only. No Zinc used or any temporary substitute for sound work—houses intended to stand, a pleasure to the gardener and a satisfaction to the purchaser.

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With Illustrations of the various forms of Patent Roofs, Views of Conservatories, Hints for Heating, and carefully prepared Lists of Fruit Trees, &c., by S. Hereman, Chatsworth, post-free for 13 stamps.

"None who take an interest in the construction of houses, or in the management of their contents, should fail in adding this to their collection, however complete that may already be."—*The Farmer, November 13, 1877.*

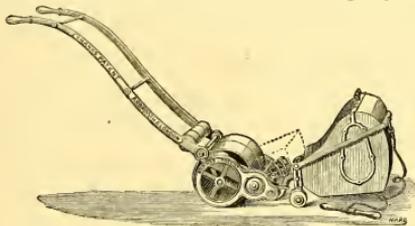
"The instructions given for the cultivation of the Vine and other crops are essentially practical, and are evidently written by one who has himself performed all the operations before he attempted to instruct others."—*Journal of Horticulture.*

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LAWN MOWERS,

Under the Patronage of Her Most Gracious Majesty the Queen, and most of the Nobility of Great Britain.

The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. A. S. & SON would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The *Sole-Plate* or *Bottom Blade* is made with *Two Edges*, enabling the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced, which prevents the Grass escaping the Box when the Machine is in use during the prevalence of wind.



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NEW HAND MACHINE.		NEW PONY AND DONKEY MACHINE.	
10-inch Machine	£13 0 0	25-inch Machine	£13 10 0
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The Hand Machines are all fitted with Silent Movement, and can be used either with or without the usual Front Rollers.

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Price, for the 28-inch, 42-inch, and 36-inch Machines, 42s. extra; for the 30-inch, 30s. extra. Silent Movement, 20s. extra. Boots for Horse's feet, 25s. per set.

A Staff of experienced Workmen always kept in London, so that Repairs can be done there as well as at the Manufactory.

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Are warranted to give ample satisfaction, and if not approved of can be at once returned.

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27, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can choose from a Stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power. Orders executed same day as received.

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One Hundred Melon and Cucumber Frames and Lights, glazed with best 21-oz. glass of the following sizes, ready for delivery. LISTS, with full particulars, post-free:—

1-light frame, 4 feet by 6 feet ..	£1 7 6
2 " " 8 " " 6 " " ..	3 5 0
3 " " 12 " " 6 " " ..	4 17 6
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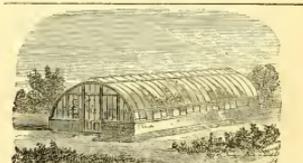
Carriage paid to any Railway Station in England and Wales, also to Dublin, Edinburgh, and Glasgow, on Orders amounting to 40s. and upwards.

PATENT PLANT PRESERVER LISTS post-free. GREENHOUSE LISTS post-free. Horticultural Buildings of any description and dimension. Designs prepared. Estimates free of charge. BOULTON & PAUL, Norwich.

Metallic Hothouse Builder to Her Majesty. HENRY HOE & CO.

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55, Lionel Street, Birmingham. Established A.D. 1848. BOOKS of DESIGNS, 2s. each. The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed at this Establishment.



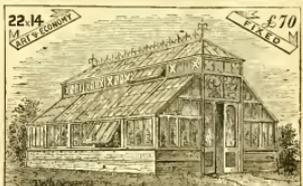
LASCALLE'S PATENT BENT WOOD CONSERVATORIES and GREENHOUSES.—All Gardeners know that Wood is better than Iron for Plant Growing, and by the above system a handsome curved house can be erected as cheaply as a plain straight one. The curved house is more durable, stronger, lighter in construction, and no bent glass is required. W. H. LASCALLE, 222, Finsbury Row, London, E.C., will supply Drawings and Estimates free of charge.

WOOD ENGRAVING

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PHOTOGRAPHY

ARTHUR F. SMITH, 15, MILDMAY GROVE, LONDON, N.



BECKETT BROS., HORTICULTURAL BUILDERS and HOT-WATER ENGINEERS.

Patentees & Manufacturers of the Self-adjusting Thistle Valve. See Illustrated CATALOGUE, Two Stamps. Designs and Estimates free of cost.

WORKS: ANCHOR STREET, CHELMSFORD.

THE FLORIST and POMOLOGIST for

MARCH contains splendidly coloured Portraits of the NEW MAGNA CHARTA, and two little-known winter Pearls of high merit, viz., AMIRAL CEXILE and BEURRE DE JONGHE, with Mr. Horner's Chapter XI. on Avocado, Mr. Dowell's Chapter XV. on Carnations; Mr. Barron's Chapter XII. on Vases and Vine Culture; Mr. Webster's Essay on a Garden of Flowers from July to November, and other interesting papers.

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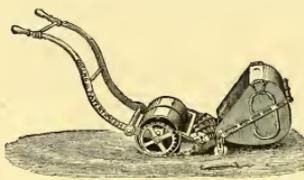
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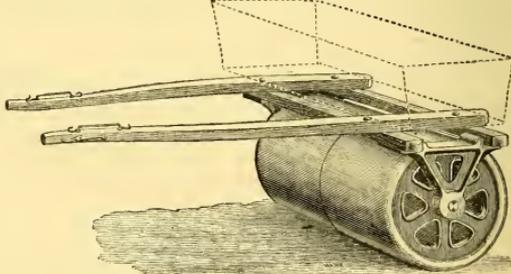
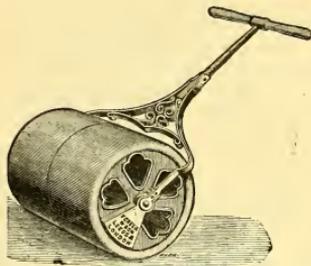


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No. 171.—VOL. VII. { NEW SERIES.

SATURDAY, APRIL 7, 1877.

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CHARLES NOLLE, Bagshot.

New Spring Catalogue.
CHARLES TURNER'S CATALOGUE OF PLANTS is now ready, and may be had free on application.
The Royal Nurseries, Slough.

Verbenas.
J. NO. CARTER, Nursery, Keighley, has to offer a few thousand **PURPLE VERENAS**, very fine and strong, from cutting pots. Price on application.

Verbenas, Verbenas.
JOHN SOLOMON offers White, Scarlet, Purple, Pink, Salmon, Rose, and other mixed sorts, good strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000, package included. Cash to accompany all orders.
Lillington Nursery, Park Street, Lillington, N.

Balsam, Cineraria, and Primula Seed.
F. AND A. SMITH offer the above, saved from their unrivalled strains, in 1s., 2s. 6d., and 5s. packets. Price per weight to the Trade on application.
The Nurseries, West Dulwich, S.E.

ORANGES, LEMONS, &c.—Large specimens for Sale.
E. COOLING, Mile Ash Nurseries, Derby.

Finest Lawn Mixture.
JAMES DICKSON AND SONS' Mixture, composed only of the finest dwarf Evergreen Grasses and Clovers, is much superior to all others. Price 1s. 2s. per lb., 12s. per cwt., carriage free.
108, Eastgate Street, Chester.

Gentlemen's Gardeners, Amateurs, and Others REQUIRING
GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEW & SONS, Pottery-works-opper-Mere. Price List on application.

To Private Growers.
WANTED, a regular supply of choice CUT FLOWERS. Description, lowest price (trade), &c., by letter, C. E., 4, Neiberwood Street, Kilburn, N.W.

WANTED, 500 Common LAURELS, about 2½ feet.
W. AND J. E. ROW, Stamford.

WANTED, EUONYMUS, Green, Gold, and Silver, various sizes. Seed samples and price per 100 for Cash to
W. FROWD, Sutton Court Nursery, Turham Green, London, W.

WANTED, strong Common ASH and BIRCH, 1 to 4 feet. Reply, by post, stating quantity to dispose of and price, to
W. BARRON AND SON, Elvaston Nurseries, Borrowash, Derby.

WANTED, transplanted Scotch FIRS and Austrian PINES, 1 to 1½ feet, and Common HOLLAND FIRS, 1 to 1½ feet, with price, to
RICHARD SMITH, Nursery, York-street, London, W.

WANTED, a quantity of AMERICAN POTATOS, either imported or grown in this country. State lowest price for any variety to
ALFRED WINFIELD, Westgate, Gloucester.

BEGONIAS, tuberous-rooted.—Strong seedlings, just starting into growth, fine for Planting Out this summer, 9s. per dozen, 6s. per set.
RODGER McCLELLAND AND CO., 61, Hill Street, Newry.

BOX EDGING.—A large quantity to be Sold, on reasonable terms.
Mr. J. BUNTON, Nurseryman, Onehouse, Stowmarket.

PONTICUM RHODODENDRONS—For Cover—2½ to 3 feet, fine, 2s per 100.
J. JACKSON, Nursery, Kidderminster.

HAWES, or THORN QUICK SEED.—Sound Haws, fit for sowing at present, or spring coming, guaranteed free from soil or other mixture, and thoroughly well preserved. About 10 tons on hand. For lowest prices apply to
GRANT AND CO., Park Nursery, Portlondon, Ireland.

BIRCH, 5 to 8 feet, 50s. per 1000.
PEARS, Hesale, Standards, 7½s. per 100.
AFRICOTS, Maidens, 60s. per 100.
WILLIAM FLETCHER, Otterburn Nursery, Chertsey, Surrey.

Larch, Alders, and Poplars.
J. NO. CARTER, Nursery, Keighley, has a few thousand LARCH, 1½ to 2½ feet, and ALDERS, 2½ to 3½ feet, really good plants; also POPLARS of sorts, 6 to 8 feet. Price on application.

CUPRESSUS LAWSONIANA, 2 to 3 feet, good plants, 15s. per 100. **RETINOSPORA PISIFERA, 2 to 3 feet, 20s. per 100.**
E. COOLING, Mile Ash Nurseries, Derby.

HOLLYHOCKS.—Lists of Varieties, with their colours and price, on application; also TEA ROSES in pots.
L. WOODTHORPE, Glazenwood Nursery, Baintree, Essex.

To the Trade.
HOLLYHOCKS.—Choice named, consisting of nearly 200 of the newest and best sorts, fine plants, free from all disease, 50s. per 100.
J. JACKSON, Nursery, Kidderminster.

To the Trade.
PINUS INSGNIS, 1½ yr., in single pots, 8s. per 100, 50s. per 1000.
IVY, 1½ yr., in single pots, 70s. per 1000, 2½ yr., about 1 to 2 feet, 8s. per 100.
RODGER McCLELLAND AND CO., 61, Hill Street, Newry.

To the Trade.
FIR S.—Scotch seedlings, 100,000, 2-yr.; Spruce, 200,000, 2-yr., guaranteed true native.
PINUS AUSTRICA, 200,000, 2-yr.
Samples and price on application to
PETER BLAKE, Summerhill, Enfield, Ireland.

CUCUMBERS.—Cooling's King and Fear-nought, the two best in cultivation, 2s. 6d. per packet each, post-free.
E. COOLING, Seed Merchant, Derby.

ASPARAGUS, Giant, 3 yr. and 4-yr., fine, price 3s. per 100.
R. BATH, Crayford, Kent.

To the Trade.
ASPARAGUS S, Giant, 1-yr., 2-yr., 3-yr.,
JAMES BIRD, Nurseryman, Downham.

ORCHARD-WOOD TREES, Fruiting in POTS—Peaches, Nectarines, Plums, Pears, Apple, Fig, Apricots, Cherries, Currants, and Oranges.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

VINES S.—Splendid Planting Canes of leading varieties, perfectly ripened without bottom-heat, and a few extra strong Canes for Immediate Fruiting.
JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

Vines, Vines, Vines.—The Planting Season.
THE COWAN PATENT COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent Planting Canes of all the leading varieties from their well-known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.

Vines.
F. AND A. SMITH can still supply strong well-grown Fruiting and Planting Canes of all the best sorts. The Nurseries, West Dulwich, S.E.

Gravo Vines.
B. S. WILLIAMS has still on hand a large stock of MUSCAT of ALEXANDRIA and SCOTT'S MUSCAT, strong Fruiting or Fruiting Canes, 5s. each. Early orders respectfully solicited.

Victoria and Paradise Nurseries, Upper Holloway, N.
SEED POTATOS.—Extra Early Vermont, a fine sample, true to name, 5s. per bushel, 12s. per sack.
W. BARNARD, High Street, Epom.

SALES BY AUCTION.

Auction Mart, Tokenhouse Yard, London, E.C.
ALTERATION OF DATE OF SALE.

IMPORTANT UNRESERVED SALE of about 3000 LILIUM KRAMERI, SPECIOSUM RUBRUM and ALBUM, just arrived from Japan in splendid condition; a quantity of GLADIOLUS, English-grown LILIES and other HARDY BULBS; a splendid assortment of 200 Standard and Dwarf ROSES, selected hardy CONIFERÆ SHRUBS and AMERICAN PLANTS, and a choice collection of CARNATIONS, PINKS, PICOTEES, &c.

MESSRS. PROTHEROE and MORRIS beg to announce that the above Stock will be SOLD BY AUCTION, at the Mart, on TUESDAY, April 10, at half-past 11 o'clock precisely (instead of the 16th, as announced last week).

On view morning of Sale. Catalogues had at the Mart, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Cheltenham.

UNRESERVED SALE of Mr. James Cypher's unrivalled Collection of Exhibition STOVE and GREENHOUSE PLANTS.

MESSRS. PROTHEROE and MORRIS are instructed to SELL the above noted COLLECTION of PLANTS, by AUCTION, on the Premises, the Queen's Road Nurseries, Cheltenham, on WEDNESDAY and THURSDAY, April 11 and 12, at half-past 12 o'clock precisely.

May now be viewed. Catalogues are now ready and may be obtained (6d. each, returnable to purchaser) on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C.

For full particulars see *Gardeners' Chronicle* of March 17.

Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 12, at half-past 12 o'clock precisely, a quantity of established ORCHIDS, part from a Gentleman's Collection, comprising many fine plants of rare and valuable sorts; also some fine established plants of *Cattleya Schilleriana*, *Lælia purpurata*, *Oncidium Marshallianum*, *Concolor*, *Odontoglossum Roezlii*, and many other choice sorts, 250 fine plants of *Musa Ensete*, and a few Seeds from Madagascar.

On view the morning of Sale, and Catalogues had.

Specimen Plants—Tree Ferns.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 12, at half-past 12 o'clock precisely, a collection of fine young Specimen PALMS, FERNS, CROTONS, DRACÆNAS, &c., all in good healthy condition; also some TREE FERNS from the New Plant and Bulb Company, comprising the entire stock of a New *Cyathea*, *Dicksonia squarrosa*, *Cyathea Smithii*, *Cyathea dealbata*, &c.

On view the morning of Sale, and Catalogues had.

Choice Imported East Indian Orchids.—(4932.)

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, April 13, at half-past 12 o'clock precisely, a quantity of EAST INDIAN ORCHIDS, recently imported in the best possible condition, consisting of 200 strong plants of *Dendrobium Wardianum*, 300 *Dendrobium crassinode*, 200 *Dendrobium Deyonianum*, several hundreds of *Dendrobium suavisimum*, fine plants of *Vanda carolinensis*, also 25 established plants in flower of *Phalenopsis Schilleriana*, and 20 good plants of *Oncidium verrucosum*, a plant of which will be on view in flower, with lip close upon 2 inches in diameter; a collection of ESTABLISHED ORCHIDS, and some specimen STOVE and GREENHOUSE PLANTS, an importation of *Odontoglossum Hallii*, *O. roseum*, *O. cirrhosum*, *Oncidium crispum*, 3 cases of *Araucarias*, and 3 cases of *Aloes*, 9 cases of *Lilium auratum*, imported masses of *Cypripedium spectabile*, and a quantity of CONIFER and PALM SEEDS.

On view morning of Sale, and Catalogues had.

Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 16, at half-past 12 o'clock precisely, a large importation of some hundreds of plants of *CYMBIDIUM EBURNEUM*, just arrived in splendid condition, several of the plants with flowers on them that have expanded in the cases while in transit; many of the plants are large and fine masses, with from six, eight, ten to twelve growths each. At the same time will be sold immense quantities of many other CHOICE ORCHIDS, such as *Vanda striata*, *Cymbidium giganteum*, *Vanda corulea*, *Vanda Cathcartii*, some hundreds of good plants of *Aerides Fieldingii* (Foxbrush), *Dendrobium formosum*, *Dendrobium nobile Wallichii*; hundreds of plants of the rare *Ceologyne barbata*, various *Pleiones*, and some good plants, just imported, of *Oncidium varicosum* varieties, *O. Rogersii* type, and some healthy plants of *Odontoglossum vexillarium*.

On view morning of Sale, and Catalogues had.

Upper Edmonton, N.

TO NURSERYMEN, FLORISTS, and OTHERS.

MR. F. W. SEARLE is instructed to SELL by AUCTION, at the Angel Hotel, Edmonton, on WEDNESDAY, April 11, at 6 o'clock in the evening, the LEASE, STOCK, and GOODWILL of all those premises situate and known as Grove Street Nursery, Snells Park, comprising about Half an Acre of Ground, Five Greenhouses, and Stock of about 30,000 Bedding and Greenhouse Plants. Held on lease, at a low ground rent. It is situate within easy distance of the markets and on good road, within 5½ miles of town.

May be viewed, and Catalogues had of the Auctioneer, Tottenham and Enfield.

Edmonton, N. (421-)

Seven miles from Covent Garden, and close to the Station. TO BE DISPOSED OF, as a Going Concern, a CAPITAL MARKET NURSERY, about 2½ Acres in extent, comprising a six-roomed detached Dwelling House, nine Greenhouses in good repair, and several Ranges of Pits. Lease nineteen years unexpired, at £100 per annum. Stock and Utensils in Trade at a Valuation, or open to an offer. Incoming about £400. Further particulars of Messrs. PROTHEROE and MORRIS, 98, Gracechurch Street, E.C.

To Nurserymen, Seedsmen, and Florists. FOR DISPOSAL, a BUSINESS, fine large HOUSE and SHOP, small compact NURSERY close to, three Greenhouses well heated with hot water, and sixteen Frames, fully stocked with saleable Bedding Plants. Good Jobbing connection, and every chance of greatly increasing it. Shop in first-class position. Long Lease and moderate rent. Apply for further particulars on the premises, 2, Swiss Terrace (adjoining Swiss Cottage Station, Metropolitan Railway), Belsize Road, St. John's Wood, N.W.

To Nurserymen and Florists.

TO BE LET on LEASE, in a commanding position for Business, in south-west district of London, a HOUSE and SHOP, with HALF AN ACRE of GROUND adjoining; has been a Nursery for the last thirty years. To an energetic man with small capital a first-rate opening. For terms apply by letter to Mr. JOHN EASTERBROOK, Gloucester Brewery, Croydon, Surrey.

Centenary Celebration.

BATH and WEST OF ENGLAND SOCIETY (Established 1777), and SOUTHERN COUNTIES ASSOCIATION.

BATH MEETING, JUNE 4, 5, 6, 7, and 8.



ENTRIES of LIVE STOCK, CHEESE, IMPLEMENTS, WORKS of ART, &c. CLOSE APRIL 18, after which date no Fees or Entries can be received.

POULTRY ENTRIES CLOSE MAY 2.

FORMS and all information supplied on application to

JOSIAH GOODWIN, Sec. 4, Terrace Walk, Bath.

NOTICE.—The Business heretofore carried on by the undersigned WILLIAM HOOPER, under the style of HOOPER & Co., in Central Avenue, Covent Garden, W.C., and elsewhere, WILL BE CARRIED ON henceforth by the undersigned BENNETT HOOPER, who will RECEIVE and PAY ALL MONEYS DUE to and from the said Business.—Dated March 31, 1877.

W. HOOPER, BENNETT HOOPER. Witness—O. E. DAWSON, 10, Hart Street, Bloomsbury Square, Solicitor.

Transfer of Business.

MESSRS. J. CROUCHER and H. BOLLER beg to inform the Public that they have TAKEN THE BUSINESS lately carried on by C. PFERSDORFF, at 75, South Row, Kensal New Town, and hope to receive the confidence of those who patronised the late C. Pfersdorff; also the Public generally.

All orders for any Succulent Plants, both miniature and others, will receive prompt attention.

Messrs. C. & B., having had great experience in this class of plants, can guarantee correct names. The Trade supplied.

T. FOX (late of Tooting), having spare time, is open to SELL NURSERY STOCK, or Covent Garden Market Produce, on Commission.—T. F., *Gardeners' Chronicle* Office, W.C.

Superior New English Scarlet Runner Beans.

FREDERICK GEE has to offer a few Quarters of the above, at 35s. per bushel, for cash. These are a very rare article this season, and are far preferable to Foreign, which are now being sold; also a few Quarters of EARLY LONGPOD BEANS, at 7s. 6d. per bushel; common WINDSORS, at 10s.; fine Selected BROAD WINDSORS, at 14s. per bushel.

Seed Establishment, Biggleswade, Beds.

ROSES, Dwarf, on Manetti, fine plants, 25s. per 100.

SEAKALE, good Planting, 25s. per 1000. ASPARAGUS, Giant, 2-yr., 15s. per 1000; 3-yr., 20s. per 1000. SEAKALE CUTTINGS, fit for Planting, 7s. 6d. per 1000.

Cash only. RICHARD LOCKE, Redhill, Surrey.

Pelargoniums, Pelargoniums.

JAMES HOLDER and SON have a fine healthy Stock of the above to offer, at the following low prices for Cash, viz. 35s. per 100, distinct sorts, hamper and package included; also extra strong plants, in 32-pots, 18s. per dozen, in 48-pots, 9s. per dozen, 60s. per 100, basket and packing extra. Crown Nursery, Reading.

Important Notice.

JAMES HOLDER and SON beg to inform their numerous customers, and the public generally, that the PELARGONIUMS advertised by them are not the Zonal Class, but consist of Show, French, and Fancy varieties. The Stock and Collection is First-class, as certified by numerous testimonials received from various parts of the country. Crown Nursery, Reading.

WEBB'S PRIZE COB FILBERTS, and other PRIZE COB NUTS and FILBERTS. LISTS of these varieties from Mr. WEBB, Calcot, Reading.

WEBB'S NEW GIANT POLYANTHUS, Florist Flower, and GIANT COWSLIP SEEDS; also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double; with every sort of Early Spring Flowers. LIST on application. Mr. WEBB, Calcot, Reading.

Centaura candidissima or ragulina, PACKAGE FREE.

WOOD and INGRAM offer fine plants of the above, thoroughly established in single pots, at 20s. per 100, or £5 per 1000. Not less than 50 will be sold at the 100 price, or 500 at the 1000 price. The Nurseries, Huntingdon.

Verbenas, Verbenas, Verbenas.

WILLIAM BADMAN offers Purple King, White, Scarlet, Crimson, and Rose VERBENAS, in single pots, at 12s. per 100; or turned out of pots, 10s. per 100. Good rooted Cuttings, 6s. per 100, 50s. per 1000, package included. Terms Cash. Cemetery Nursery, Gravesend, S.E.

Special Offer.—150,000 Vesuvius.

WILLIAM BADMAN offers strong autumn-struck VESUVIUS, from single pots, 20s. per 100; or from store-pots, 8s. per 100, 75s. per 1000, package included. Terms Cash. Cemetery Nursery, Gravesend, S.E.

SEEDS—SEEDS—ALL KINDS.—

Before ordering your Seeds, send for Illustrated CATALOGUE, which contains full Directions, How, When and What to Sow. PENGILLVEY and POOL (successors to the Heatherside Nurseries Company), 59, Queen Victoria Street, London, E.C.

To the Trade.

STANDARD and DWARF ROSES of the leading sorts—splendid Plants, no better in the Trade, well-ripened wood—about 15,000 Standards and 5000 Dwarfs, guaranteed true to name. For lowest prices apply to GRANT and CO., Park Nursery, Portadown, Ireland.

To the Trade.—Turnip Seeds.

H. AND F. SHARPE are prepared to make special offers to the Trade of all their fine selected home-grown TURNIP SEEDS, comprising all the sorts worthy of Cultivation. Special quotations, with samples, may be had on application.

Seed Growing Establishment, Wisbech.

IVY, Irish (*Hedera canariensis*).—Good plants, 3s. per dozen, 20s. per 100, 80s. per 1000. Eighteen other kinds. See CATALOGUE.

LAURISTINUS (*Viburnum tinus*).—Nice plants, with fine roots, 9 to 12 inches, 3s. per dozen, 15s. per 100, £6 10s. per 1000; 15 to 18 inches, 4s. per dozen, 20s. per 100, £8 per 1000. JAMES SMITH, Darley Dale Nurseries, near Matlock.

VERBENAS, VERBENAS, VERBENAS.—Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6s. per 100, 50s. per 1000. 1000 rooted cuttings, in 12 distinct and beautiful varieties, first prize flowers, for 6s. Terms cash.

H. BLANDFORD, The Dorset Nurseries, Blandford.

SYMPHYTUM ASPERRIMUM, or CAUCASIAN PRICKLY COMFREY.—Whole Roots and Crowns PURCHASED after Examination. Seed full particulars to

THOMAS CHRISTY and CO., 155, Fenchurch Street, London, E.C.

Australian Plants and Seeds.

EUCALYPTUS GLOBULUS, PALMS, CYCADS, FERNS, and all kinds of PLANTS and SEEDS indigenous to Australia, Fiji, &c., supplied on the most reasonable terms. Price CATALOGUES and Special Quotations on application.

SHEPHERD and CO., Nurserymen and Seedsmen, Darling Nursery, Sydney, New South Wales. (Established 1877.) Agents: Messrs. C. J. BLACKITH and CO., Cox's Quay, Lower Thames Street, London, E.C.

H. AND F. SHARPE'S Wholesale Spring CATALOGUE of HOME-GROWN AGRICULTURAL and GARDEN SEEDS is now ready, and may be had on application. The prices will be found very moderate.

Seed Growing Establishment, Wisbech.

STATICE PROFUSA.—Clean, healthy, and vigorous, in single pots, at 1s. 6d. each, 12s. per dozen, 75s. per 100. Also best Competition FLORISTS' FLOWERS, STOVE, GREENHOUSE, and BEDDING PLANTS of all sorts, cheap. CATALOGUES on application.

JOHN FORBES, Dove Mount Nurseries, Hawick, N.B.

ASPARAGUS PLANTS.—Giant, 2-yr. old, 2s. 6d. per 100, 22s. 6d. per 1000; 3-yr. old, 3s. 6d. per 100, 30s. per 1000. Commoner's Colossal, 2-yr. old, 3s. 6d. per 100, 30s. per 1000; 4-yr. old, 7s. 6d. per 100, 63s. per 1000. Price to the Trade on application.

JAMES BACKHOUSE and SON, York.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See RICHARD SMITH'S SEED LIST for 1877.

Extra Strong SEAKALE, 2s. per dozen. RICHARD SMITH, Nurseryman, Worcester.

To the Trade.—Mangel Wurzel Seeds, 1876 Growth.

H. AND F. SHARPE invite the attention of the Trade to their fine selected stocks of home-grown MANGEL SEEDS, raised from fine picked bulbs. Special offers and samples may be had on application.

Seed Growing Establishment, Wisbech.

W. F. BOFF offers easy growing, free-blooming ORCHIDS, 21s., 30s., and 42s. per dozen.

TUBEROSES, 2s. per dozen, 12s. per 100. LILY of the VALLEY, imported clumps, 9s. per dozen.

CALCEOLARIAS, yellow, rooted cuttings, 5s. per 100. 203, Upper Street, Islington, N.

GLADIOLI for EXHIBITION, carriage free—50, in 25 superb varieties, 70s.; 25, in 25 superb varieties, 37s. 6d.; 24, in 12 choice varieties, 35s.; 12, in 12 extra fine sorts, 20s.

DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

GLADIOLI for GENERAL DECORATION.—100, in 50 choice sorts, 100s.; 50, in 50 fine varieties, 55s.; 25, in 25 fine sorts, 50s.; 25, in 25 choice varieties, 30s.; 24, in 12 fine varieties, 21s.; 12, in 12 fine sorts, 12s.; 12, in 12 good varieties, 9s.; 12, in 12 popular sorts, 6s.

DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

GLADIOLI in MIXTURE.—White ground varieties, splendid, 4s. per dozen; brilliant, scarlet and dark red varieties, 4s. per dozen; yellow ground varieties, 5s. per dozen; choicest mixed, all colours, 3s. per dozen.

DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

GLADIOLUS BRENCHELEYENSIS.—Extra fine flowering roots of this splendid scarlet, 1s. per dozen, or 6s. per 100.

DANIELS BROS., The Royal Norfolk Seed Establishment, Norwich.

Herbaceous and Alpine Plants (Illustrated). THOMAS S. WARE'S CATALOGUE of the above for the present year is Now Ready, and includes New, Rare, and Choice Perennials, Bamboos, and Ornamental Grasses, Bog Plants, and Aquatics; also, a few Bulbs. Post-free on application. Hale Farm Nurseries, Totteham, London.

THE NEW PLANT and BULB COMPANY beg to call special attention to their NEW LIST (No 31), just published. Contents:—New Hardy Bulbs, New and Rare Lilies, New Hardy Cyperidium, New Ferns, Seeds of New Hardy Flowering Plants, &c. All of sterling merit, and at low prices. Post-free on application. Lion Walk, Colchester.

WOOD AND INGRAM beg to offer:— PELARGONIUMS, Show, Spotted, and Fancy, fine plants in 5-inch pots, good named sorts, 50s. per 100. 8s. per dozen. CALCOLARIA, Herbaceous, finest exhibition strain, fine plants in 5-inch pots, 9s. per dozen, 1s. each. CARNATIONS, Border, in variety, to name, fine plants, 9s. per dozen pairs. The Nurseries, Huntingdon.

To the Trade.—Seed Potatos. H. AND F. SHARPE can still supply the following varieties of SEED POTATOS, raised from choice selected Stocks, viz.:— Rivers' Royal Ashleaf, Myatt's Prolific Ashleaf, Alma Kidney, Model, Hundredfold Fluke, King of the Flukes, Fluke Kidney, Early Dalmahoy, Early Oxford, Breese's King of the Earlies, Breese's Dwarf Prolific, Early Foxe's Seedling, Robson's Challenge, Walker's Improved Regent, Paterson's Victoria, Red-skin Flourball, Paterson's Alpha, Early American Rose, Extra Early Vermont, Eureka, American Wonder, Climax. Seed Growing Establishment Wisbech.

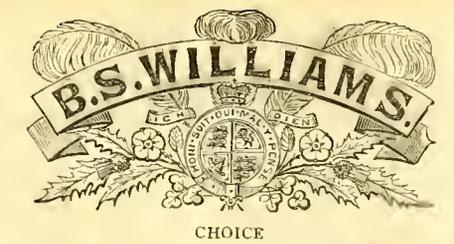
ALTERNANTHERAS, and other CARPET BEDDING PLANTS.—At 1s. 6d. per dozen, 8s. per 100, 70s. per 1000.—Alternantheras of all the varieties, Antennaria tomentosa, Arenaria balearica, Iresine Lindeni, Lamium aurea var. Lobelia pumila magnifica (true), from cuttings, the best bedding Lobelia in cultivation; Mentha pulegium gibraltarium, Sagina procumbens. At 2s. per dozen, 10s. per 100, 80s. per 1000.—Achillea umbellata, Coleus Verschaffeltii, Kleinia repens, Leucophyton Brownii, Santolina incana. At 1s. per dozen, 5s. per 100, 40s. per 1000.—Cerastium arvensis (green), tomentosum (white), Lobelia pumila grandiflora (true), from cuttings; Sedums of all varieties best suited for Carpet Bedding. For cash with order, packing included. WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

PICEA NOBILIS, 10,000, fine, healthy, well furnished plants, will carry balls of earth:— 1 1/2 to 2 feet, 8s. per dozen, 60s. per 100. 2 to 2 1/2 feet, 22s. per dozen, £8 10s. per 100. 2 1/2 to 3 feet, 35s. per dozen, £14 per 100. 3 to 3 1/2 feet, 60s. per dozen. PICEA NORDMANNIANA, 5000, fine. For sizes and prices see Catalogue. PINUS CEMBRA, 10,000, very fine, well-rooted:— 2 to 3 feet, 5s. per dozen, 20s. per 100. 2 1/2 to 3 1/2 feet, 6s. per dozen, 25s. per 100. 3 to 4 feet, 10s. per dozen, 70s. per 100. 4 to 5 feet, 30s. per dozen, 200s. per 1000. PINUS STROBUS (Weymouth Pine), various sizes. PICEA BALSAMEA (Balm of Gilead), fine healthy plants, various sizes. RETINOSPORA, fine. CRYPTOMERIA ELEGANS and others, in perfect health. LIBOCEDRUS DECURRENS (Thuja gigantea), very good. See CATALOGUE. JAMES SMITH, Darley Dale Nurseries, Matlock.

Cheap Plants—Special Offer. WILLIAM BADMAN offers, as under, all healthy strong stuff:— VERBENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 10s. per 100; well-rooted cuttings, 6s. per 100, 50s. per 1000; 12 choice named sorts, 8s. per 100. CALCOLARIA, Golden Gem, 5s. per 100, 40s. per 1000. LOBELIA, speciosa (true), 3s. per 100, 20s. per 1000; Blue-stone and pumila grandiflora, all from cuttings, 5s. per 100, 40s. per 1000. PELARGONIUMS, Vesuvius, from stores, 8s. per 100, 75s. per 1000; Jean Sisley, 10s. per 100; Madame Vaucher, 10s. per 100, 85s. per 1000; Master Christine, 12s. per 100; all from single pots. Tricolor, Mrs. Pollock, 20s. per 100; Crystal Palace Gem, 12s. per 100; Flower of Spring, 12s. per 100; May Queen (Turner's), 15s. per 100. HELIOTROPE, finest dark, good bushy plants, 12s. per 100; rooted cuttings, 6s. per 100. Packing included. Terms, cash. Cemetery Nursery, Gravesend, S.E.

CHARLES NOBLE, Bagshot, offers the following:— RHODODENDRONS, Hybrid named, fine, with buds, for forcing or grouping, 1 1/2 to 2 feet, 21s. per dozen, 150s. per 100. " " " for immediate effect, 2 1/2 to 4 feet, and same through, 42s. per dozen, 300s. per 100. " Seedling, 1 1/2 to 3 1/2 feet, 24s. per dozen, 200s. per 100. " PONTICUM, 1 1/2 to 2 feet, bushy, 6s. per dozen, 35s. per 100. KALMIA LATIFOLIA, 1 to 1 1/2 foot, buds, for potting, 75s. and 100s. per 100. ANDROMEDA FLORIBUNDA, buds, for potting, 75s. and 100s. per 100. ERICA CARNEA, very fine, 21s. per 100.

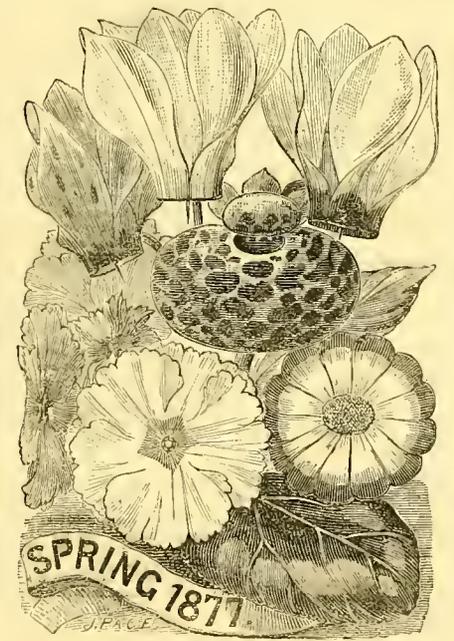
MESSRS. JNO. STANDISH AND CO.'S CATALOGUE for Autumn, 1876, and Spring, 1877, is now ready, and may be had, post-free, on application. It contains the following:— Plants of Recent Introduction. Coniferæ. Stove and Greenhouse Plants. Hardy Climbers, Clematis, &c. Plants for Winter Forcing. Rhododendrons, Azaleas, Azalea indica and Camellias. Kalmias, &c. Tree Carnations and Ericas. Roses, Standards and Dwarfis, also in pots. Ferns and Lycopods. Fruit Trees. Hardy Trees and Shrubs. Fruit Trees. Transplanted Forest Trees. Grape Vines. Dutch Bulbs, Flower Roots, &c. Royal Nurseries, Ascot, Berks.



CHOICE FLOWER AND VEGETABLE SEEDS FOR 1877.

Table listing various seeds and their prices. Columns include the name of the seed, a description, and the price per packet. Items include BALSAM, Williams' Superb Strain; BEGONIA FROEBELI; BEGONIA SEDENI SEMI-PLENA; BEGONIA Hybrid, finest mixed; CYCLAMEN PERSICUM GIGANTEUM; CYCLAMEN PERSICUM, Williams' Superb Strain; CELOSIA PYRAMIDALIS PLUMOSA; CALCOLARIA, Williams' Superb Strain; CINERARIA, Weatherill's Extra Choice Strain; GLOXINIA, Finest Drooping Varieties; PRIMULA, Williams' Superb Strain; PRIMULA SINENSIS FIMBRATA COCCINEA; PYRETHRUM GOLDEN GEM; SOLANUM, Williams' Improved Hybrids; STOCK, Williams' Improved Giant Scarlet Brompton WALLFLOWER, Harbinger, Autumn and Winter flowering.

Packets of Flower Seeds, excepting heavy kinds, Free by Post.



VEGETABLE SEEDS.

Table listing vegetable seeds and their prices. Columns include the name of the seed, a description, and the price per packet. Items include BEANS, Williams' Early Prolific Dwarf French; BRUSSELS SPROUTS, Welch's Giant; CUCUMBER, Walker's Hero (New); ENDIVE, Williams' Gloria Mundi; MELON, Osmoston Manor Hybrid; ONION, Williams' Magnum Bonum; PEA, Williams' Emperor of the Marrows; TOMATO, The 100 Days.

All seeds amounting to 20s. will be delivered free carriage to any Railway Station in England. ILLUSTRATED SEED CATALOGUE gratis and post-free to all applicants.



All the Best Selected NEW CONTINENTAL ROSES for 1877. Fine plants of the above now ready. Descriptive CATALOGUES on application. WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

LYE'S FAVOURITE.—The handsomest and best Potato ever offered. Indispensable for Exhibition. This variety will be the greatest Prize Winner of the season. We have purchased the entire Stock of Mr. James Lye, Clyffe Hall, Market Lavington, and parties wishing to grow this remarkably handsome and beautiful variety should order at once, as the stock is getting very limited. It can only be obtained direct from us. Price 5s. per lb. Orders of 20s. and upwards carriage free. DANIELS BROS., The Royal Seedsmen, Norwich.

Shallot Seed. DAVIS' PRIZE JERSEY.—A true Shallot, of immense size and exceedingly mild; with ordinary treatment bulbs have been grown 10 and even 12 inches in circumference—by far the best method of growing the Shallot. Treatment same as Onions. Price 12s. per packet. May be had of all Seedsmen in sealed packets, 20s. Wholesale of Messrs. HURST AND SON, 6, Leadenhall Street, London, E.C., or E. R. DAVIS, Nursery and Seed Warehouse, Yeovil.

The Best Hardy Bedding Plant. CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the bed. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stools improve annually. The only secret of success is a rich soil, to keep up free growth. Extra strong plants, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive LIST on application. RICHARD SMITH, Nurseryman, Worcester.

Cheap Bedding Geraniums. ALFRED FRYER offers the following good Bedders at per dozen for cash:—Golden Tricolors; Peter Grieve, 12s.; Prince of Wales, 6s.; Lady Collin, 3s. 6d.; Sir Robert Napier, 3s. 6d.; Mrs. Pollock, 3s.; Sophia Dumaresque, 3s.; Silver Tricolors; Lass of Gowrie, 4s. 6d.; Queen of Hearts, 4s. 6d.; Miss Burdett Coutts, 3s. 6d.; Mrs. John Clutton, 3s. 6d.; Prince Silverwings, 3s. Double flowered; Marie Lemoine, 3s.; or one of each for 5s. No charge for packing, if empties are returned at once; also post-free for 6d. per dozen extra. For Priced LISTS apply to ALFRED FRYER, The Nurseries, Chatteris, Cambridge-shire.

AZALEA INDICA, Splendid New. EMPEREUR DU BRÉSIL (J. Verschaffelt).—Good plants, 12s. each; strong plants, with buds, 20s. each. TRIOMPHE DES DOUBLES BLANCH (J. Verschaffelt).—Good Plants, 12s. each; larger size, no more to hand. Four for three to the Trade. For full description vide CATALOGUE No. 19, sent free on application. N.B.—A few fine plants, well set with buds, of the beautiful AZALEA IMPERATRICE CHARLOTTE, are still disposable, at 5s. each, or six plants for 25s. JEAN VERCHAFELT'S Nurseries, Ledebeg, Ghent, Belgium.

New Bedding Tropaeolum, "Hunteri." DOWNIE AND LAIRD have much pleasure in offering for Spring delivery the above Tropaeolum, which has been raised by Mr. Andrew Hunter, gardener to Lord Shaad, New Hailes House, near Edinburgh. This is an excellent Bedding Tropaeolum, surpassing its parent Cooperi, being of a dwarfier habit, and we can with perfect confidence recommend it. The Editors of the Gardeners' Chronicle say, "It grows about 6 inches high, is very neat and compact in habit, and a most profuse bloomer, the flowers being of medium size, nice form, and of a bright scarlet colour." Price, per dozen plants, 12s.; each, 1s. 6s. Usual discount to the Trade. West Coates Nursery, Edinburgh.

HARDY HEATHS, 100,000:— 12 plants in 12 varieties, 6s. 24 plants in 24 varieties, 12s. 50 plants in 25 varieties, £1. 100 plants in 40 varieties, £2. For varieties see CATALOGUE. ANDROMEDAS, various. LEDUMS, various. JAMES SMITH, Darley Dale Nurseries, Matlock.

VINES, VINES, VINES. Strong planting Canes of the following sorts:— Black Alicante, Muscat Hamburg. Howard Muscat, Mrs. Pince. Golden Champion, West's St. Peter's. Price 3s. each. W. G. CALDWELL AND SONS, The Nurseries, Knutsford, Cheshire.

FIFTY THOUSAND MAGNIFICENT DWARF ROSES, in POTS. ROSES for BEDDING, at 12s. to 18s. per dozen, 100s. per 100. TEA-SCENTED ROSES, superb, established in 6-in. pots, adapted for greenhouse or conservatory, 30s. per dozen, 200s. per 100. Descriptive CATALOGUES on application. WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

SAMUEL SHEPPERSON, FLORIST and SEEDSMAN, Prospect House, Belper, offer the following:— PANSIES, PENTSTEMONS, ANTIRRHINUMS and PHLOX, the newest and very finest varieties out, 3s. per dozen, post-free, with Descriptive List all correctly named. POLYANTHUS, fancy, in flower, for immediate effect, 7s. per 100, 60s. per 1000; sample, 12 sorts, 1s. 3d., post-free. BEDDING PANSIES and VIOLAS, finest sorts, blue, white and yellow, 12s. per 100; sample dozen, in 6 sorts, 2s., post-free.

CABBAGE PLANTS, SEEDS, ROOTS, &c., of all kinds, for the Farm or Garden.—"Gee's superior Bedfordshire-grown Plants and Seeds have attained much celebrity."—The Bedford Mercury, July 29, 1876. "The seeds of the district offer facilities enjoyed at few places for bringing away plants, &c., and under the skill and perseverance of Mr. F. Gee they are turned to good account."—The Agricultural Gazette, July 31, 1876. See other opinions of the Press, also a Treatise on the Cabbage. CATALOGUES, lowest prices, &c., on application to FREDERICK GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

NOVELTIES FOR 1877.

JAMES VEITCH & SONS

THE UNDEVELOPED SPLENDID NOVELTIES.

BEG TO ANNOUNCE THAT THEY ARE NOW SENDING OUT

ADIANTUM LUDEMANNIANUM.

A remarkable novelty, quite unlike any other Maidenhair Fern in cultivation, obtained by us from M. Ludemann, of Paris, who was the first to introduce it.

The peculiarity which distinguishes this Adiantum from all others consists in the pinnules being crested or agglomerated at the extremities of the stipes and their rachides; they are also high, stipes slender, smooth, at first deep crimson, changing to shony-black when mature, branched either near the base or higher up, pinnules on short petioles, generally fan-shaped, and deep green in colour.

It thrives well in a warm greenhouse, where it will prove one of the most attractive as well as one of the most distinct of Ferns.

It received a First-class Certificate from the Royal Horticultural Society, August 18, 1875, and a Certificate of Merit from the Royal Botanic Society, May 29, 1876.

Price 15s. each.

ADIANTUM PALMATUM.

A Maidenhair Fern, one of the most beautiful and attractive of the tribe, found at a high elevation on Chimborazo, South America. From the following description given by Mr. Moore in the *Gardener's Chronicle* of January 12, 1877, page 41, where it is also figured, it will be seen that it is quite distinct:—

The rhizome is creeping, and the fronds are of an indefinitely elongated form. A very noticeable feature in the plant is the frequent or large change of the rachides, most marked near the apex of the fronds, and in the rachides of the primary pinnae. The pinnules are herbaceous in texture, smooth, large, from 1 to 2 inches in breadth, distant and very distinctly stalked; the terminal ones are mostly wedge-shaped, while the lateral ones are usually truncate at the base, so as to become semicircular in outline; they are deeply cut down into from three to five large lobes, which are again more or less parted, an oblong, some terminating each of the divisions in the fertile portions. The fronds are deciduous.

This elegant Fern should be cultivated in an intermediate or warm house, where it attains a considerable size.

It received a Certificate of Merit, under the name of Adiantum digitatum, from the Royal Horticultural Society, March 21, 1875, and a Certificate of Merit, under the same name, from the Royal Botanic Society, April 5, 1876. Price 21s. each.

BEGONIA EMPEROR.

A magnificent hybrid of the tuberous-rooted section, of vigorous habit, and free-flowering; raised by our foreman, Mr. Sedden, at our Chelsea Nurseries.

The flowers are large and of a brilliant orange-scarlet, with the petals distinctly veined, and in diameter from seven to ten inches, according to the size and strength of the plant; the pedicels being of the same brilliant colour as the corolla.

It is figured in the *Floral and Pomologist* for 1875, at p. 265, where it is mentioned by Mr. Moore as being "one of the finest of the tuberous-rooted Begonias, and is most highly to be commended as a decorative plant."

It is also figured in the *Illustrated Magazine* for January, 1876, and described "as not only likely to prove a gorgeous ornament to the greenhouse, but also suitable for the summer flower bed."

It received the award of a First-class Certificate from the Royal Horticultural Society, and a Certificate of Merit from the Royal Botanic Society, June 16, 1875.

Price 10s. 6d. each.

CROTON EARL OF DERBY.

A splendid novelty, with leaves of the C. Ditchaei form, very highly coloured, and quite distinct from every other Croton of its class. It was received from A. H. C. Macfarre, Esq., of Sydney, N.S.W.

The stem during its earlier growth is of a remarkably bright yellow, the petioles and midribs of the three-lobed leaves springing from it are of the same rich colour, which also spreads over the greater part of the lamina or blades, the extremity of each lobe being green. As the plant increases in age the colour deepens, and finally becomes suffused with red.

Thus the *earls* of the plant presents a centre of bright yellow of almost golden hue, with the later growth of a little deeper shade, and the older growth changing to red, relieved by the cheerful green tint of the extremities of the leaves.

The habit of the plant is erect; the foliage of even growth, and gives a symmetrical outline to the whole.

We confidently recommend this Croton for decorative and for exhibition purposes as one of the best so offered.

It received a First-class Certificate from the Royal Horticultural Society, March 21 of the present year, and a Certificate of Merit from the Royal Botanic Society on the same day.

Price 63s. each.

CROTON NOBILIS.

A beautiful novelty, with long pendulous lanceolate leaves, richly coloured with many tints. The colours are crimson, yellow, and green in many shades, the crimson being predominant in the stem, the foot-stalks of the leaves, and in many of the midribs, where it is bordered by a deep green yellow-tint. The greatest charm and recommendation of the plant are the blue-green portion of the plant, at first a bright glossy hue, shadowed by age to the deepest olive-green.

The gracefully-weeping habit of the plant, together with its showy colours, cannot fail to secure for it a large share of favour. It is altogether a noble Croton, which we consider a decided improvement on C. majesticus, and worthy of a place in every collection.

Price 21s. each.

CROTON MACARTHURI.

We have cultivated this fine and distinct variety at Sir William Macarthur, the eminent amateur horticulturist of Carlton Park, near Sydney, from whom we received it. It presents indistinct diversity in the form and markings of the leaves.

The leaves are of many forms, and of various varieties of colour, numerous and remarkable; some are dilated at the base and much narrowed at the opposite end; may have the midrib and blade twisted like a spiral, in others the edges are undulated, in others again the extremities are serrated, while there are others in which two or more of these peculiarities are present.

The colour is more constant, but the markings on the different leaves are as varied as the form assumed by the leaves. The greatest charm and recommendation of the plant are its yellow, and barred or spotted variety. The midribs are yellow, and the bright green ground of the blades are spotted, blotched, and barred in indistinct variety.

A First-class Certificate was awarded to this Croton by the Royal Horticultural Society, March 21 of the present year.

Price 21s. each.

CROTON TORTILIS.

A remarkably interesting variety with twisted foliage, very ornamental and distinct. The midrib of each leaf grows in a spiral from the base to the point, the extent of the spiral twist varying in the different leaves from a slight deviation from the plain form to more than one complete turn.

The ground colour of the foliage is a deep olive-green; the midribs of the mature leaves are bright crimson, bordered on each side with a line of deep yellow; the blades are blotched and spotted with yellow. Owing to its varied colours and large foliage it is superior to C. spiralis.

Price 10s. 6d. each.

CROTON VARIABILIS.

A robust variety, sent to us by A. H. C. Macfarre, Esq., of Sydney, N.S.W. It has long leaves, marked and blotched with different shades of yellow, orange, and crimson.

The leaves, both in colour and shape, are very variable; some are straight, others are recurved, falcate, or often distorted, their surface either smooth or undulated. Some of the shades of colour are peculiar to this variety, and are seen in every tint, from deep orange-red to light sulphur-yellow.

It is quite unlike any other Croton in cultivation.

Price 21s. each.

DENNSTÆTTIA DAVALLOIDES YOUNG.

For this splendid Fern we are indebted to the kindness of J. R. Young, Esq., of Sydney, N.S.W., with whose name it is associated. It is a native of the New Hebrides, of very robust habit and vigorous growth.

The rhizome is creeping; the fronds are of noble proportions, attaining a length of 10 feet and upwards, and have stout erect or sub-erect stipes, quite smooth, rounded on one side, and flattened on the opposite or upper side, with a furrow running along the entire length; the leafy portion of the frond is arching, bi- and tripinnate, broadly lanceolate and acuminate; the pinnae are sessile or sub-sessile, spreading, the rachides furrowed on the upper side like the stipe; the pinnules are finely cut, and of a light cheerful green; the aspect of the whole frond is very bold and graceful.

It is a grand Fern for a warm collection. For a central subject in grouping, where bold and spreading foliage is required, it will be found a great acquisition to our decorative resources, and, as an exhibition Fern, it will be invaluable.

Price 10s. 6d. and 21s. each.

DRAÆNA MACARTHURI.

A Draena of very dwarf compact growth and bright coloured foliage, sent to us by Sir William Macarthur, after which it is named.

The leaves, including their petioles, scarcely reach a foot in length, with a breadth of 1 inch; they are very elegant both in form and colouring, the latter being especially brilliant and attractive, rendering this variety one of the most distinct in cultivation.

In many leaves almost the entire upper surface is coloured with a vivid rose carmine, interrupted by a few lines of deep olive-green; in others the bright colouring is confined to the margins; they are slightly undulated. It is a distinct variety, which we can confidently recommend for the many useful purposes to which this numerous family of plants is applied.

Price 10s. 6d. each.

DRAÆNA ROSEO-PINCA.

A plant of robust habit and bold aspect.

The leaves are sub-erect or slightly spreading, from 18 to 20 inches long, including the foot-stalk, with a width of 4 inches. They are beautifully coloured with a delicate rose tint, which deepens by age to a bright crimson, finely contrasting with the ground-colour, which is a deep olive-green. It appears to have a very hardy constitution, which enhances its value as a fine decorative plant. It is also useful for exhibition.

Price 10s. 6d. each.

DRAÆNA SPECIOSA.

This variety certainly rivals, if it is not superior to the well-known D. ambalis, and is of spreading habit, free growth, and showy appearance.

The leaves are broadly striped or margined with a yellowish creamy white, stained and edged with light rose pink; the ground-colour is a rather light but pleasing olive-green; it is, therefore, a rich exhibition plant, and most useful for decorative purposes generally.

Price 21s. each.

HABROTAMNUS NEWELLI.

A seedling of great merit, raised by Mr. Newell, of Rytton Hall Gardens, Downham Market.

It is a robust growing plant, with most beautiful foliage, the autumn months, in its young state, of the well-known H. elegans or H. fascicularis, whose habit it much resembles. As an ornamental conservatory and greenhouse climber it will be found one of the most useful of subjects.

It received a Certificate of Merit from the Royal Horticultural Society, May 24, and a First-class Certificate from the Royal Botanic Society, June 7, 1876.

Price 7s. 6d. each.

HYMENANTHERA CRASSIFOLIA.

A beautiful hardy evergreen shrub, a native of New Zealand, very distinct in all its leading characteristics.

It is described by Dr. Masters in the *Gardener's Chronicle* for 1875, p. 237 (Feb. 20), as "a striking shrub." He adds, "the shrub is erect or partially procumbent, with stiff cylindrical branches ramifying at acute angles, and covered with imbricated wrinkled coat, thinly leaved with which, serrate hairs. The leaves are alternate or tufted, small, apex, with a few minute whitish scales on both sides, rounded or slightly emarginate at the apex, tapering at the base into a very fine point." The flowers are small and inconspicuous, but they are succeeded by pure white berries, which render the plant particularly attractive and ornamental during the autumn months; it is therefore a fine contrast with the *Conocarpus* and other berry-bearing shrubs.

Dr. Master further adds:—"It is a welcome addition to our lists of hardy shrubs, among which it holds a noble place, and which we believe will give it a distinctive character. Essentially it is interesting as a shrubby violaceous plant, having in superficial glance nothing of the Violet about it. The structure of the flower and seed is, however, quite that of the Violet."

Price 7s. 6d. each.

HEITCH & SONS' NOVELTIES FOR 1877—(Continued).

PANAX LAOINIATUS.

An Araliaceous shrub from the South Sea Islands, sent to us by A. H. C. Macfarle, Esq., of Sydney, N.S.W. It is a foliage plant of great merit, and possesses very attractive features in the form and colour of its leaves, which are much subdivided in the most elegant manner, the ultimate segments being uniform and fern-like, and of an unlimited variety of shapes, all delicately serrated, and of a pale green.

The soft light green tint of the beautifully-cut foliage is strikingly distinct and attractive. It will prove a valuable addition to the plants used for the decoration of the dinner-table. It received a Certificate of Merit from the Royal Botanic Society, March 21st of the present year.

Price 10s. 6d. each.

PHYLANTHUS ROSEO-PICTUM.

An Euphorbiaceous shrubby plant of free growth and good habit, with beautifully variegated foliage, and of such easy culture as to be especially valuable for decorative purposes.

The variegation is exceedingly rich and varied, both in colour and form; no two coloured leaves showing precisely the same markings with like tints. Many of the leaves are bright crimson, which is also the colour of the stems during the early stage of growth; some are a light cream colour, tinged with white, others again, have a dark green hue, shaded with crimson; some are dark green, with blotches and spots of rose, while others are tricoloured, white, with different shades of rose and green.

The blending and intermixture of these pleasing tints render this plant very ornamental and distinct; it will be found invaluable for cutting sprigs for bouquets. It grows well in an intermediate stove or warm greenhouse.

"This slender growing, gracefully branching shrub well deserves culture, being one of the most elegant of new fine-foliated plants."—*The Gardener*, vol. x., p. 261.

It received a Certificate of Merit from the Royal Horticultural Society, April 19, and a Certificate of Merit from the Royal Botanic Society, May 24, 1876.

Price 10s. 6d. and 21s. each.

PLATYCERIUM WILLINKII.

We reproduce, in an abbreviated form, from the *Gardener's Chronicle* of March 6, 1875, Mr. Moore's description of this new Fern—

"This fine and very distinct species of Stag's-horn Fern is a native of Java, whence it was introduced by M. Willink, of Amsterdam."

"It is a creeping fern, with a thick, and protects its rootstock by the broad, smooth, sterile fronds of its sterile fronds, which in good specimens are 6 inches across. The fertile fronds are erect and slightly spreading, the fertile ones, which are produced in threes, fall straight down to a length of 2½ feet, are quite naked in all their parts, and forked. The fronds appear to be less coriaceous than those of the other species known in gardens."

"As a species this plant is thoroughly distinct from any of those at present known. With regard to its general habit, it groups with *P. grande*, *P. Wallisii*, and *P. bifurc.*, in having long pendent fertile fronds cut into many narrow furcate divisions, and very broad erect sessile barren fronds, with a lobate margin; but it differs entirely in its fructification. This novelty will prove a welcome addition to the few well-marked and very ornamental species of Stag's-horn Fern already familiar to our hortosists."

It received a Certificate of Merit from the Royal Botanic Society, June 16, 1875, and a First-class Certificate from the Royal Horticultural Society on August 4 following.

Price 10s. 6d. and 21s. each.

A NEW ILLUSTRATED DESCRIPTIVE CATALOGUE will be forwarded free on application.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, LONDON, S.W.

SPECIAL NOTICE.

APRIL and MAY the best Season for Transplanting HOLLIES.

WM. CUTBUSH & SON

POSSESS MANY THOUSANDS OF

VARIEGATED AND OTHER CHOICE HOLLIES,

varying from 2 to 6 feet, bushy, all transplanted in 1874, and will move with splendid roots.

An Inspection invited, or Prices, &c., sent on application.

EXTRA STRONG IRISH and OTHER IVIES.

WM. CUTBUSH & SON have a very large Stock of IVIES in Pots, which they are offering at low prices, which can be had on application—especially low to the Trade.

HIGHGATE NURSERIES, N., OR BARNET, HERTS.

IMPORTED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 16, at half-past 12 o'clock precisely, a large importation of some hundreds of plants of CYMBIDIUM EBURNEUM, just arrived in splendid condition, several of the plants with flowers on them that have expanded in the cases while in transit; many of the plants are large and fine masses, with from six, eight, ten, to twelve growths each. At the same time will be sold immense quantities of many other choice ORCHIDS, such as VANDA STRIATA, CYMBIDIUM GIGANTEUM, VANDA CŒRULEA, V. CATHARTI; some hundreds of good plants of AERIDES FIELDINGII (FOXBRUSH), DENDROBIUM FERMOSUM, D. NOBILE WALLICHII, hundreds of plants of the rare CŒLYGNE BARBATA, various PLEIONES, and some good plants, just imported, of ONCIDIUM VARICOSUM varieties, O. ROGERSII type, and some healthy plants of ODONTOGLOSSUM VEXILLARIUM.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

RHODODENDRON DUCHESS OF EDINBURGH.

We have much pleasure in offering this season the first Rhododendron of a splendid progeny of hybrids raised by our foreman Mr. Taylor, and obtained by the intercrossing of *R. javanicum*, *R. Loblii*, *R. Broodi*, and *R. Princess Royal*, and in which the gorgeous and pleasing colours of these kinds are blended into a great variety of brilliant and distinct tints.

These hybrids are of far better habit than the parents, and far more floriferous; they produce their magnificent masses of bloom while the plant is still young, and as they increase in age and strength yield splendid masses of colour; there is scarcely any season of the year in which there is not more or less bloom.

They require the same temperature as *R. Princess Royal*, and are very suitable for a warm conservatory or greenhouse, where their brilliant flowers will be found an invaluable addition to the decorative resources.

Rhododendron Duchess of Edinburgh has brilliant scarlet flowers with a perceptible shading of crimson; the flowers are of great size, and the colouring uniform throughout.

It is figured in the *Floral Magazine* for 1874, and was awarded a First-class Certificate by the Royal Horticultural Society in March of the same year.

Price 42s. and 84s. each.

RHODODENDRON TAYLORI.

We have named this variety after our foreman, Mr. Taylor, "to whose skill as a hybridist no better testimony is needed than this lovely rare greenhouse Rhododendron" (*Floral Magazine*, January, 1877, in which this beautiful kind is figured).

Rhododendron Taylori has pink flowers of a perfectly rich and brilliant hue; the tube of the corolla is white both in the interior and on the exterior; the form is perfect and the texture firm.

This variety is one of the most robust of the group, of excellent habit and very free flowering. A First-class Certificate was awarded to it by the Royal Horticultural Society, March 7 of the present year.

Price 42s. and 84s. each.

SARACENIA MOOREANA.

A hybrid plant of no ordinary interest, and exhibited for the first time at the International Exhibition held at Florence in May, 1874, by Dr. Moore, the Director of the Botanic Garden at Glasgow, by whom it was raised.

In a paper read before the Congress held during the Exhibition, Dr. Moore thus referred to this hybrid:—"It is supposed to be the first hybrid *Saracenia* which has ever yet flowered. It is the offspring of *S. flava* fertilized with pollen of *S. Drummondii*. The plant is as nearly intermediate with these two noble species of this curious genus as it will be can; and no hybrid which has hitherto come under my notice proves more decidedly the marked influence of the pollen of one plant applied to the stigma of another than this does. It makes its growth of patches similarly as *S. Drummondii*, and they are nearly as well marked with purple and white colours, but they decay much sooner in spring, and in this way they resemble those of the female parent, *S. flava*."

Price 10s. each.

AVENUE TREES.

PLATANUS OCCIDENTALIS (true), 10 to 12 feet high, and girthing 4 to 8 inches at 4 feet from the ground.

LIMES, 12 to 20 feet high, and girthing 6 to 10 inches at 4 feet from the ground.

POPULUS CANADENSIS NOVA, 15 to 16 feet high, and girthing 6 inches at 4 feet from the ground.

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Presented (by post) on application,

NEW CATALOGUE for 1877.

MESSRS. CLIBRAN AND SON will have great pleasure in sending their PRICED DESCRIPTIVE LIST for this Spring, free by post on application. Their stock of Florist and Soft-wooded Plants generally, are surpassed by few, if any, either in extent or quality, all the newest and best varieties being constantly added to the various classes, and the greatest care is taken to keep the varieties true to name. Another great advantage to Purchasers is that none of the plants offered are taken directly from a warm propagating house and sent off, but are all carefully hardened and most of them potted off singly, and are thus fitted to travel either by rail or post without the slightest injury. A great proportion are autumn-striking plants, and many of the undermentioned can be sent by post—

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WILLIAM S. BURTON, 29, OXFORD STREET, W.

Table with 4 columns: TABLE CUTLERY, Blades are all of the finest Steel, and 4 columns of prices for various items like 3 1/2-inch very handles, 12 to 14, 14 to 16, 16 to 18, 18 to 20, 20 to 22, 22 to 24, 24 to 26, 26 to 28, 28 to 30, 30 to 32, 32 to 34, 34 to 36, 36 to 38, 38 to 40, 40 to 42, 42 to 44, 44 to 46, 46 to 48, 48 to 50, 50 to 52, 52 to 54, 54 to 56, 56 to 58, 58 to 60, 60 to 62, 62 to 64, 64 to 66, 66 to 68, 68 to 70, 70 to 72, 72 to 74, 74 to 76, 76 to 78, 78 to 80, 80 to 82, 82 to 84, 84 to 86, 86 to 88, 88 to 90, 90 to 92, 92 to 94, 94 to 96, 96 to 98, 98 to 100, 100 to 102, 102 to 104, 104 to 106, 106 to 108, 108 to 110, 110 to 112, 112 to 114, 114 to 116, 116 to 118, 118 to 120, 120 to 122, 122 to 124, 124 to 126, 126 to 128, 128 to 130, 130 to 132, 132 to 134, 134 to 136, 136 to 138, 138 to 140, 140 to 142, 142 to 144, 144 to 146, 146 to 148, 148 to 150, 150 to 152, 152 to 154, 154 to 156, 156 to 158, 158 to 160, 160 to 162, 162 to 164, 164 to 166, 166 to 168, 168 to 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THE NEW ROSE, QUEEN OF BEDERS (NOBLE).

Perhaps the Finest Rose for Bedding ever sent out. COLOUR OF "CHARLES LEFEBVRE".

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that flowers were cut daily from June to November 20, 1876.

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BY SPECIAL APPOINTMENT TO HER MAJESTY AND HIS ROYAL HIGHNESS THE PRINCE OF WALES.

JOHN WILLS, F.R.H.S.,

Nurseryman, Florist, and Bouquetist to Her Majesty and the Royal Family,

ROYAL EXOTIC NURSERY and WINTER GARDEN,

ONSLow CRESCENT, SOUTH KENSINGTON, LONDON, S.W.

The most extensive Floral Decorations in London for many years have been arranged under J. W.'s personal superintendence.

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Choice Cut Flowers, &c., carefully packed and sent to any part of the country on the shortest notice.

NURSERIES FOR ORCHIDS, NEW PLANTS, &c., FULHAM, S.W.,
AND ANERLEY, NEAR THE CRYSTAL PALACE.

WILLS' NEW HYBRID DRACÆNAS.

The following Six splendid Novelties will be ready for sending out on and after April 1, 1877.

For descriptions see various articles in the *Gardeners' Chronicle*, *Journal of Horticulture*, *The Gardeners' Magazine*, &c.

D. ELIZABETHÆ (Cooperii, × regina).

Fine established plants, price 31s. 6d. each.

Large specimen plants in full character. Prices on application.

D. GLADSTONEI (excelsa, × ferrea).

Fine established plants, price 31s. 6d. each.

Large specimen plants in full character. Prices on application.

D. REBECCÆ (Cooperii, × regina).

Fine established plants, price 31s. 6d. each.

Large specimen plants in full character. Prices on application.

D. SALMONEA (concinna, × regina).

Fine established plants, price 42s. each.

Large specimen plants in full character. Prices on application.

D. SYDNEYI (concinna, × regina).

Fine established plants, price 21s. each.

Large specimen plants in full character. Prices on application.

D. TERMINALIS ALBA (nigrescens, × regina).

Fine established plants, price 42s. each.

Large specimen plants in full character. Prices on application.

Three Medals were awarded to the above Novelties, including the Grand State Medal, at the Brussels International Exhibition, on April 30, 1876.

The First Prize for the three best Dracænas in cultivation was also awarded to Mr. Wills at the same Exhibition.

WEDDING AND OTHER BOUQUETS.

ROYAL EXOTIC NURSERY AND WINTER GARDEN,
ONSLow CRESCENT, SOUTH KENSINGTON, LONDON, S.W.

NEW PLANTS, 1877.

CHARLES LEE & SON,

SUCCESSORS TO

MESSRS. JOHN AND CHARLES LEE,

OF THE

**Royal Vineyard Nursery,
HAMMERSMITH, near LONDON,**

Have the pleasure to offer the following very beautiful and interesting

NOVELTIES,

now offered by them for the first time:—

BEGONIA COLTONI.

This distinct and beautiful Begonia was raised at the Royal Vineyard Nursery. The colour of the flowers is quite new in Begonias, being of an orange-crimson. It is a most abundant bloomer, and the flowers are of the largest size. It received a First-class Certificate from the Floral Committee of the Royal Horticultural Society in 1875. Good plants, price *ret.* 6d. each.

BEGONIA RODWELLI.

This lovely Begonia was also raised at the Royal Vineyard Nursery. The flowers are of a bright vermilion-scarlet, and of the largest size; and the plant is a very abundant bloomer. It received a First-class Certificate from the Committee of the Royal Horticultural Society. Good plants, price *ret.* 6d. each.

CORNUS MAScula AUREA ELEGANTISSIMA (J. & C. Lee).

This elegant and lovely hardy shrub was raised from seed in our Isleworth Nursery, and has been proved to be perfectly constant in its beautiful variegation. A broad margin of pure gold surrounding a bright green centre is of itself a sufficient attraction, but when in July the tips of the leaves become suffused with the brightest crimson it is impossible to give an idea of the beauty and elegance of the plant, which will bear a favourable comparison with the best variegated tree or greenhouse exotics. Suffice it to say, that it has been seen and admired by many amateurs and nurserymen, and has been awarded a First-class Certificate at South Kensington. The habit of the plant is semi-pendulous, and very graceful. Price of maiden plants, 12s. each; larger specimens, 21s. each. A Coloured Plant may be had on application for 12s.

JUNIPERUS VIRGINIANA ELEGANS (J. & C. Lee).

This very elegant variety of the Red Cedar was raised from seed in our own grounds in 1850. It is scarcely necessary to remark upon the hardiness of this plant, but it is due to its character to state that the elegant cream-coloured variegation, with which the whole plant is suffused is perfectly constant, and has never been injured by frost or hard frosts in the least degree; in the hottest sunshine it is happily in the open air. The plant is of neat and free growth, and received the honour of a First-class Certificate from the Floral Committee at South Kensington, in July, 1875. Price 15s. each; larger specimens, 22s. each. A Photograph of the plant may be had on application for 2s.

POPULUS CANADENSIS AUREA VAN GEERTI (1876).

The golden variety of this noble Poplar was sent out in February last by Mr. Charles Van Geert, of Antwerp, has fully borne out in our Nurseries the description he gave of it, and has retained its golden colour much better than either the Golden Catalpa or the Golden Oak during the last tropical summer.

EXTRACT FROM MR. VAN GEERT'S DESCRIPTION:—
"We have the pleasure of offering an extremely remarkable variety of the Canadian Poplar, with a foliage which presents during the whole summer the finest taw of golden-yellow. It is in our opinion a most valuable addition to the larger trees, pronounced so by every connoisseur who has admired it in our nursery, for the coloured foliage now so frequently met with among low shrubs fails most entirely among the larger trees. The Catalpa aurea and the Quercus Robur concordia are the only trees known as possessing the same golden foliage; but the former is only a second-classified tree, and the latter has not the vigour of the common Oak. Our golden Poplar, on the other hand, is a first-class tree, of rapid and vigorous growth. Its leaves are quite as large as those of the common Canadian Poplar, and the yellow hue instead of being confined to the under and vigorous parts. The better nourished the tree is, and the more it is exposed to the sun, the more vivid is the golden hue."

Having received in February last a large consignment of this magnificent novelty from Mr. Van Geert, we are enabled to offer nice plants at 2s. 6d. each.

ABIES EXCELSA AUREA (J. & C. Lee, 1875).

This is decidedly the finest golden Conifer of large growth yet introduced. It is of free growth, and requires to be planted in the full sunshine. In such a position the whole tree is suffused with the richest gold. A First-class Certificate has been awarded to this valuable tree at South Kensington. Price of nice plants, 15s. each; larger specimens, 22s. each.

LAURUS CAMELLEIFOLIA (1876).

We can still supply a few hundreds of this extraordinary and elegant Laurel. Price 2s. 6d. each; by dozen, 25s.

**CHARLES LEE & SON,
HAMMERSMITH, W.**

**SUTTON'S
CHOICE FLOWER SEEDS,
FREE BY POST OR RAIL.**



Sutton's Improved Miniature Astrer.

A profuse flowering variety, of dwarf compact habit, remaining in bloom for a considerable period, hence it is invaluable for growing in pots for conservatory or drawing-room decoration. We have this season succeeded in sowing six distinct colours, which greatly increases the value of this beautiful Astrer for bedding purposes.

Price per Packet, mixed, 2s. 6d.

Six varieties, separate, 6s.

**SUTTON'S
COLLECTIONS of CHOICE FLOWER
SEEDS,**

To produce a beautiful and continuous display during Summer and Autumn.

Free by Post or Rail. *L. s. d.*

No. 1 Collection of Flower Seeds	..	..	2	0	0
No. 2 Collection Ditto	..	..	1	1	0
No. 3 Collection Ditto	..	..	1	1	0
No. 4 Collection Ditto	..	..	0	15	0
No. 5 Collection Ditto	..	..	0	10	0

Small and useful Collections can also be had, from 2s. 6d. to 7s. 6d., free by post.

Full particulars may be had, gratis and post-free, on application.

TO OBTAIN THE

Best Garden Lawns and Croquet Grounds

SOW

**SUTTON'S
LAWN GRASS MIXTURE,**

Which forms a close velvety turf in a very short time.

For making New Lawns or Croquet Grounds 5 bushels, or 60 lb., is required per acre, or 1 gallon to every six rods (or perches) of ground.

For improving those already in turf, 20 lb. should be sown per acre.

March, April, and May are the best months for sowing.

Price, 1s. 3d. per lb., 22s. 6d. per bushel, cartage free.

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds
Gratis and post-free.

Sutton Sons

THE QUEEN'S SEEDSMEN,
READING, BERKS.



SATURDAY, APRIL 7, 1877.

THE IVY.

"In days when Arthur ruled the land,
As ancient legends tell,
The Ivy was a gardener lad,
And loved a lady well."

THE Ivy may be regarded as a classical as well as a decorative plant; poets in all ages, and in various moods, have sung of it: and as illustrating its early adaptation to decorative purposes, it is said that—

"The Roman on his battle plains,
Where kings before his eagles bent,
Entwined it with exulting strains
Around the victor's tent."

Another writer, in strains less complimentary, says that—

"No flower can bear the Ivy's shade,
No tree support its cold embrace.
The Oak which rears it from the ground,
And bears its tendrils to the skies,
Feels in his heart the rankling wound,
Till in its poisonous arms he dies."

Another, in writing about this plant, has said truly enough—

"Thou that will climb the loftiest height
Or deck the lowliest grave."

Among the various genera, however, of perfectly hardy ornamental plants, there are few more useful than the Hedera. The genus does not contain many species, but there are now many varieties, many of them being possessed of variegated and exceedingly ornamental foliage. One of the best known sorts, however, and one of the most useful, is the Hedera canariensis, better known as the Irish Ivy, although I am unable to say why it receives the latter appellation, as, according to Loudon, it is, as its specific name implies, a native of the Canary Isles. It is, however, perfectly hardy, and under favourable circumstances is of very rapid development, and has been known to clothe or cover a wall 12 feet high in the short space of three seasons.

Wherever it is desired to speedily cover an unsightly wall or other object with this plant, a preparation of tolerably rich soil should be made in which to plant the roots, and the shoots should at the same time be pegged to the surface of the soil (close to the object intended to be covered), into which they will very quickly root, and the young shoots as they are produced will at once adhere to the surface of the wall or other object without the assistance of nails, or any other attempt to secure its adherence. Where abundance of rooted portions of the plant can be had they may be planted pretty close together, and the shoots may be cut off to within an inch or two of the surface of the soil, and the young shoots as produced will at once cling to the object intended to be covered.

As regards the after-treatment of the plants, much will, of course, depend upon the nature or character of the objects they are intended to clothe. If this should be a ruin, artificial or otherwise, a dead or decaying tree or any similar object, it is then advisable to allow the plants to assume their natural character, modified to whatever extent may be found desirable. The power of adaptation possessed by this plant is one of its most striking peculiarities, and the aerial roots by which it adheres so tenaciously to walls or other objects, cease to be

produced as soon as the plant has outgrown the same, or whenever there is no longer any object to which it can cling. And it then assumes a tree or bush-like form, and generally flowers and bears fruits or berries in abundance, which add very considerably to its ornamental appearance.

In preparing a site for planting a collection of hardy Ferns many years since it was found necessary to uproot many shrubs and trees, and the roots of these were piled up in rough pyramidal forms, in some instances to a considerable height, surrounding and to some extent enclosing the prepared space. Around these rather unsightly piles of tree-roots, plants of some of the various kinds of strong-growing Ivies were planted, and in the course of a very few years the piles were entirely hidden, being densely clothed by the luxuriant and rich dark green foliage of the plants, which soon commenced to flower and fruit freely, presenting a very remarkable appearance, but they are nevertheless well suited to the situation they occupy.

It is found that when cuttings are taken from those parts of the plants which have assumed the tree or bush-like form, they continue to retain that habit when they become rooted, and are found to make useful decorative plants for pot culture or otherwise in the form of dwarf bushes, pyramids, or standards.

Most of the varieties of the Ivy are also very suitable for the purpose of forming margins to flower-beds of considerable dimensions, and as edgings to walks in shrubberies, to coach roads, &c.

The surface of the ground under large and ornamental trees in pleasure-grounds, when grass as well as most other plants will refuse to grow, may be carpeted with the common Irish Ivy, and margined with a band of some of the variegated kinds, so as to produce a very pleasing effect, and the beauty of the trees may by this means be very considerably enhanced by being made to stand in the centre of a circle of the richest verdure.

In cases where it is merely desired to clothe the surface of a wall or a portion of a building, so as to present the more cheerful aspect of rich green foliage, in preference to the dreary appearance of bare brick or stone walls, if the common Irish ivy, or any of the strong-growing, green-leaved kinds be used for the purpose, as soon as the plants have fairly covered the surface of the wall, they should be annually clipped or cut in as closely as possible. The best time to perform this operation is early during the month of April, when danger from injury by severe frost may be supposed to have passed; for although the several varieties are all perfectly hardy, still injury from frost is not unlikely to be sustained when the plants are in a somewhat mutilated condition, yet after this period no danger from this cause need be apprehended. It will be found that the plants will, in a very short space of time after cutting, put forth abundance of fresh green leaves, all of which they will retain throughout the season; so that there will be no litter from the gradual shedding of leaves during the summer, which would be the case if the old leaves were allowed to remain upon the plants. I have now in view a high wall which has been treated in this manner for more than twenty years, and the plants are still perfectly healthy. This annual clipping in as closely as possible to the wall is absolutely necessary where the strong-growing sorts are used, otherwise the increasing weight of the plants, acted upon by strong wind, would be almost sure to cause them to separate from the comparatively smooth surface of a wall. But in cases where the more delicate and slower growing sorts, with very beautifully variegated foliage, are used, they will generally be found to cling more closely to the surface of

walls or other objects, and less clipping will in their case be required.

By the judicious use of a selection of Ivies, what may be very unsightly or an eyesore may be easily and quickly converted into an object of considerable beauty and interest, considerable diversity existing in the form as well as in the shade of colour in the foliage of some of the varieties, which varies also to some extent at different periods of the year. But in making a selection care should be taken to avoid mixing the delicate growing kinds with those of more rapid and vigorous growth. If this should not be done, the former will be speedily smothered or overgrown by the latter. Considerable taste may, however, be displayed and pleasing effects produced upon the surface of walls, and on buildings which it may be desired to clothe with this plant, by using the variegated and more ornamental-leaved kinds to form fringes or borders to archways, doors, windows, &c.; panels or other appropriate

large-leaved kinds well worthy of cultivation; and among the best of the smaller green-leaved kinds, which as a rule cling closer to the wall or other object they may be placed in contact with, and are consequently less likely to be torn off by the action of the wind, are *H. caenwoodiana*, *H. conglomerata*, *H. digitata*, *H. chrysocarpa*, bearing yellow berries; *H. Glymci*, *H. palmata*, &c.

The best of the variegated kinds belong to the small-leaved section, and all of them are very beautiful, the variegation being permanent, very neat, and effective, such as—*H. aurea elegantissima*, *H. alba lutescens*, *H. marmorata* elegans, the old and new silver-striped varieties, and *H. tricolor*, with small, white-margined foliage, beautifully tinged with pink during its young condition. *P. Grieve*.

EASTER FLOWERS.

THESE are now almost as much in demand as Christmas decorations. Every season the demand for both increases, until one begins to fear that the Holly



FIG. 66.—STAFELIA BAYFIELDII.

designs may also be formed upon the surface of walls, &c., and a little occasional care is only required to keep such designs properly defined by preventing the sorts used from mixing with each other, and by confining each variety to its place in the design.

As regards the different varieties of this plant, among the strong-growing kinds *Hedera canariensis*, or the common Irish Ivy, is, as has already been said, one of the best; but there are at the same time several other varieties which are exceedingly useful and ornamental as decorative plants, such as *H. Rœngneriana*, or heart-leaved, a very fine, free-growing, hardy, and distinct variety; *H. dentata*, with large dentate leaves, distinct and fine; *H. algeriensis*, with large foliage of a light green colour, with its variegated variety, *H. algeriensis variegata*, together with the gold-striped and maculated varieties of *H. canariensis*. The variegation, however, of the three last-named sorts is somewhat irregular, and the plants frequently run into the green condition. In addition to those mentioned, there are several other free-growing,

will be cut down and all the Mistletoe gathered every Christmas, and all the flowers used up at Easter. But the more of either used one year the more come again to the front the next, and so on and "for ever," for it is not likely that either decorations or flowers for the winter or vernal festival will ever be wanting. It is perhaps one of the most pleasing signs of the times, horticulturally considered, that flowers are daily becoming more indispensable to the enjoyment of all our secular feasts and even our religious observances. Who can calculate the tons of flowers that have been used in the decoration of churches along this Easter-tide? And society seems to catch the flower decorating mania with their prayers; for hardly have the services of Easter Sunday closed when the season of the fashionable decorators opens, and runs on until the partridge arises on the brown heath and the peasant in his shaggy wood, and puts an end to the season—to open up an infinity of "little goes" in private families throughout the country.

Primroses, Lilies of the Valley, Camellias, Azaleas, Deutzias, Spiræas, Hollies, Roses, Narcissus, Hyacinths, Tulips, Cyclamens, Arums, Eucharis, Gardenias, &c., have all played a very important part in the Easter decorations of the year, and these and many more are sweet, beautiful, and suitable—a trio of

adjectives not found in all flowers, such, for instance, as the golden Broom-like *Cytisus*. But there is a class of plants, cheap, easily grown, and most effective, that are second to none in Eastern or other decorations, and yet they are seldom or ever seen in London or other large towns, and are, in fact, almost as rare in the provinces. These are the different varieties of Thorn—pink, scarlet, white, red, single and double. These are chaste, simple, sweet, freshness itself, as if bathed in the very spirit of spring or early summer; and dripping with the dew of a lovely May morning, I know no flowers that can speak in more persuasive tone of the certainty of a resurrection to a newer and better life than those of *Meibomia*, forming the most exquisite rosettes, set round with their own tender and delicate leaves. They are a perfect symbol of spring or early summer, set free for good from the binding influence of wintry frosts, and blasting, biting winds.

Every one also loves the blossom of the May—old and young rich and poor—high and low, delight in its pleasing fragrance, and rejoice in its simple beauty. The plants are so cheap and so plentiful as to bring them within reach of all. Plants of flowering size of most varieties of the Thorns may be purchased for a few pence, and the plants of *Meibomia* for more than twice the price only asked for; the May may also be readily moulded into any desired size or shape. The most striking shape for flowering-pots is that of dwarf, medium, or tall standards or pyramids. It is either of these forms that may be made to keep them with ease. The plants need little training, and almost less pruning, and enjoy under fair treatment an entire immunity from insect pests; they will grow in any soil, and force will be almost raised, provided attention be given to heat them by an excess of heat. From 55° to 60°, or at the most 65°, is the utmost degree of forcing that Thorns should be subjected to. The plants, however, enjoy a moist atmosphere, and frequent overhead sprinklings, even when in flower, taking care, however, that the water used is at once soft and clean.

Neither does the May like early forcing. I once tried to have it flower at Christmas, and it almost ruined the plants, and the flowers produced were small and puny. But from the Festus corner, the May is easily forced or brought on with, in fact, but little forcing. The first batches of plants take nearly two months to come fully into flower, the second may be forced in about one month, the six weeks, and the last under a month. It does well either with or without bottom-heat in excess of the top, so long as the heat is not excessive. After flowering the plants will stand for a month or six weeks in the conservatory fresh at the softest, and in the open air, provided they are occasionally soured overhead with clean soft water. As soon as the flowers fade the plants should be removed to an open place in the open air, and plunged 2 inches below the rims of the pots. Next season they may be forced again, and so on for many years, flowering more freely every year; in fact, unless they are potted carefully, as well as rather early the first season, they will flower more sparsely that year than any other. They should be potted up as early in October as possible, to force fairly well or flower freely the first season from the open air.

May plants covered with bloom form some of the richest and most spring-like decorations we have for church and roomy. They are good for corridors, halls, staircases, and conservatories at Easter. The cut flowers, especially of the double varieties, are also invaluable for bouquets, wreaths, dwarf designs on dinner-tables, letters, &c. The flowers are of the same shades, and the plants are of their simple beauty, fragrance, and freshness; they are also distinguished by a great richness and diversity of colouring. Double and single whites without flaw or spot, the brightest scarlets, reds, and the palest pinks, all delicate and a finish to May decorations that few other flowers can equal—none rival. *D. T. Fish.*

New Garden Plants.

STAPELIA BAYFIELDII, *N. E. Br.* (Fig. 66)

Stems erect, branching at the base, 6–8 inches high, 7–9 lines thick, puberulous, four-angled, with the angles and toetee rather short, stout caudex, nearly horizontal. Peduncle from near the base of young branches, 2 lines long, stout, 3–5 flowered. Pedicels short, 8–10 lines long, puberulous. Calyx lobes 4-angled, 2 lines long, pubescent. Corolla tubular, 2½–3 inches in diameter, with the lobes expanded; back puberulous, green tinged with purplish, the nerves darker; face glabrous, with a few short scattered hairs inside the very short tube. Corolla immediately around the corolla smooth, or nearly so, purple-red, darker towards the tips, the centre to half way up the lobes marked with numerous, narrow, undulated, pale yellow transverse lines; the lobes 1–1¼ inch long, 9–10 lines broad,

ovate-acuminate, revolute, fringed with rather short, simple, pale purple hairs. Ligula directly spreading, apex a little recurved, 2 lines long, slightly concave in the upper part, linear, truncate, with a central projecting tooth, dull brownish red or dark purple-brown, the edges minutely mottled with dirty yellowish. *Rostia subulata*, erect, with diverging apices, 3 lines long, dark purple-brown, minutely mottled with dirty yellowish. *Als deltoide*, subulate, obtuse, entire, 1 line long, coloured like the rostr.

This species has been in cultivation for several years under the name I have adopted, but has hitherto remained undescribed. The stems have a considerable resemblance to those of *S. matulibis*; and indeed, I have seen in other collections, and grown in my own, the latter species as *S. Bayfieldii*, and at one time I thought that *S. Bayfieldii* was simply *S. matulibis* under another name; but *Justus Cordroy*, of Blewbury, was the first to send me the true plant, and from his specimen my drawing was made. I have since seen it elsewhere. Besides the very distinct flowers, the present species may always be distinguished from *S. matulibis* by its puberulous stems (in *S. matulibis* they are glabrous), and more erect habit. The woodcut (fig. 66) represents but a small portion of the plant. *N. E. Brown.*

PULTENEA ROSEA, *F. Muell.**

This very distinct and pretty greenhouse plant (fig. 67) will be quite an acquisition on account of its neat and novel habit of growth, and its bright and cheerful coloured blossoms. It comes from Moon's William in the Grampians of Victoria, where it grows



FIG. 67.—PULTENEA ROSEA.

at an elevation of 5000 feet, and has quite the aspect of the small *Pea*-flowered shrubs which used formerly to abound in collections, but which have now generally been allowed to run out amongst us. The flowers are produced at the tip of all the numerous twiggy branchlets, and impart quite a gay appearance to the plant; they are of a bright rosylilac colour, and grow in small roundish heads. The following is Mr. Bentham's description:—

"An erect herb-like shrub, the branches virgate, glabrous, or sprinkled with a few hairs. Leaves linear-terete, obtuse, or with short calulate points, under 1 inch long, channelled above by the involute margins, slightly scabrous. Stipules subulate-pointed. Flowers pink, in terminal heads, sessile within the last leaves. Bracts few, narrow, trifid. Bracteoles inserted under the calyx, linear-lanceolate. Calyx silky pubescent, 2½ lines long, lobes lanceolate, as long as the tube, the two upper ones more united. Petals nearly of equal length, not twice as long as the calyx. Ovary villous; style subulate. Pod two lines long, acuminate."

Mr. Bentham remarks that this species is chiefly distinguished from *P. hibertioides* by the unusual colour of the flowers—the very feature which will give it especial interest for our plant-growers and exhibitors of hard-wooded plants, since it will in some degree, though not in the present instance, represent the *Burtonias* which used to be so effectively exhibited some quarter of a century ago. It has been exhibited lately both at Regent's Park and South Kensington, by Messrs. William Robinson & Sons, to whom we are indebted for the opportunity of illustrating it.

* *P. rosea*, F. Mueller, Fragm. II. 12; Bentham, *Flora Australasica*, t. 28. *Burtonia subuliflora*, in Trans. Phil. Inst. Vict. 1. 39; Id. Hook. New. Musciv. 41.

HOLLAND.

(Continued from p. 400.)

For we have passed the frontier station of Rozendaal, and have had no misunderstanding with the Customs' gentlemen; but, before proceeding further, the geographically-inclined tourist ought to be informed that this is not the only, nor the most noteworthy, Rozendaal in Holland. Close to Danckerke there is also a Rozendaal, famous for Asparagus and nightingales, where the rich Danckerkepoels have their country villas, and where there are quite as many *Fotostas* as *Roses*. That, however, does not concern us now. What does it that a portion of Gelderland (whence *Guelder Roses*) is called "the Dutch Switzerland"—an ambitious title not wholly unjustified. There are tall woods and broken ground, fresh springs and waterfalls, which attracted the patricians of the neighbouring provinces, causing the erection first of large hosteries, and then of *Adlonas*, with their surrounding gardens and parks, amongst them of Rozendaal, which was a favourite residence of our William III. They still show a *sovereign* of his last visit, or rather of Queen Mary's—namely, an embroidered screen presented to the Mistress of Rozendaal by the ladies in waiting of the Queen of England. Due note being taken of this we proceed.

Immediately the eye lights on black and white coes—the race which takes the lead of all others in Holland. We are rolling across an interminable hoo-green, divided only by rows of trees, marking lines of roads which serve also as dykes. What a charming landscape, were it not always the same—an endless plain. Everything is so neat, so fresh, so green, so well-kept. Even the sky-to-day is swept clean by the good old woman who clears it of cobwebs on the happy occasion of our visit. One would like to guess what lies beyond that level horizon. Is it still fat pasture, with more and more bowing-green of rich meadow-land?

Fully to appreciate Holland, I fancy that one ought to look down upon it from a balloon, thence we should see what might appear like a desert of green prairies, without trees, bushes, or hedges to break their wearisome sameness, in which towns and villages are the welcome oases; Holland, in fact, was once a country of deserts, which have been inhabited in spite of their natural peculiarities and resistance—deserts of water, deserts of marsh, deserts of sand, deserts of tangled weeds and bushes. The swellers therein are bold intruders, who keep up a constant fight with the nature of the land, which would repel them, but cannot. It may draw them now and then by hundreds and thousands, but can neither make them lose their hold nor break their spirit. Truly, the old dogrel is right—the Dutch have taken Holland.

But what is that in the distance, like a row of grey beehives? We near it, and find at Moerdijk, or Moerdijk, an arm of the sea called Hollandisch Diep, which, till recently, was crossed in ferry-boats, weather and ice permitting; but is now spanned unbroken by those grey arches which help to sustain the line of railway. There is a waste of waters, a wilderness of swamps, seeming to deny all further progress, yet conquered by Dutch enterprise; an admirable work. This is the only way, if any, in which I would consent to cross the English Channel by rail. In the tunnel, if ever finished, there will be a choice of death—suffocation, drowning, collision, caving in, besides others which will be revealed by experience.

Gliding past Dordrecht, with its tall and solid steeples—what big substantial churches and steeples they do build in Holland!—and its busy much-frequented canal or river—here it is hard to say which is which, often they are both in one—you reach without change the left or south bank of the Meuse, where a steamer takes you across to Rotterdam. The bridge over the Meuse being not yet finished, there is a break in the railway.

ROTTERDAM.

Rotterdam at first sight makes a favourable impression, which closer inspection does not weaken. Trees, shipping, buildings, and water combine together in admirable groups. Streets, canals, quays, and sailing vessels or barges form an inexhaustible kaleidoscope of picturesque views. The place is wealthy, and makes no secret of its wealth. Plate-glass windows in abundance, gay streets, party of promenades, well-dressed ladies and children, working-women with gold screws or vine tendrils in their caps, are symptoms sufficiently significant. The conformation of the city,

through its intersection by canals, puts a check on inland driving about; consequently no trucks for merchandise—merchandise is drawn by dogs—both private carriages are seen in the streets. Dogs, indeed, are much used as beasts of draught both in Holland and in Belgium.

Strangers who are not over hard to please may safely go to the Hotel St. Lucas, in the Hoog Straat, or High Street, which is excellent as well as central. The new Bath Hotel, on the Quai des Boompjes (the little trees), facing the river, is perhaps more pretentious and may be first-rate, but is less certain. No apology is made for offering this advice, because it is disinterested and may prove useful. On arriving in a strange town one is often thankful to know to what inn one may betake one's self in confidence. Hotels in Holland are somewhat more expensive than those of the corresponding class in France; but then they are good and comfortable. Wise throughout is an imported article; its quality is satisfactory, and its price not excessive; and in towns, as Rotterdam, where the drinking water has got a bad name, everybody takes Schor or other aerated water at meals. The hills of France are sometimes tied with local colouring. A sweet tooth is one inheritance of northern nations. Accordingly they give you red currant jam with roast chicken, and stewed pears with wild fruit. Smoke-dried eels, like brown wallop-sticks that have lost their handles, hang in shops awaiting purchasers. They might reward their discoverer and prove worth a trial, but I had no opportunity of testing their merits.

Amongst Rotterdam's most striking objects are its colossal mills, not the small shadowy phantoms of Rembrandt's pictures, but Towers of Babel built with solid brick. Mills, however, are a specially Dutch institution, and are almost the only things in Holland that make a fuss. They intrude their whirrlings everywhere. A landscape without a mill, or a concourse of mills, would not be a Dutch landscape. They serve all sorts of purposes, from the high function of rendering the country habitable by draining it, and grinding bread for those who venture to eat it, to the humble offices of extracting oil and making stuff. Water-power being very limited, in consequence of the almost uniform level of the land, the Dutch wisely turn air-power to the best account. When insufficient, they help it with steam. The living forces of the atmosphere are made the most of—a breath of air can hardly stir without putting some useful machine in motion.

In taking a drive round and about Rotterdam, the difficulties which its founders and embellishers have had to contend with must not be forgotten. The park is laid out with the street and the shrubbery and copsewood, purposely preventing distant views—which they have only too much in the open country—and giving the shade and shelter of a natural wood. A labyrinth of winding waters is only a matter of course in Holland. Suburban country boxes, although not small, give the idea of toy houses stuck into bouquets of flowers and foliage. Each is the pet of some wealthy bourgeois, "who in trim gardens seeks his pleasure." Here, as in Ghent, the eye rests with approval on balconies and iron festoons, with Tropæolums, Virginian Creepers, Petunias, and other common things, showing how much may be done by good taste aided by regular tendings and waterings, and affording a pleasing instance of workmanship surpassing the materials.

In the Zoological Gardens (whose tigers and white bears are unsurpassed), and elsewhere, there is a good deal of carpet bedding, public and private, as befits rich individuals and well-to-do societies, some specimens of which we may presume to be experimental merely. Contingent and pyramidal, as at plants-embroidery, a sugar-loaf of Pelargoniums, in sorts stretching from top to bottom, surmounted by a Yucca, and bordered at foot by starlike rays of Alternanthera and the rest, may be praiseworthy as effects, but are failures as results. The Zoological presents the apparent miracle of a basket filled with heavy flowering plants pretending to float in the middle of a piece of water—doubtfully pretty, and certainly incongruous. But every effort after novelty cannot be in excess, and to rail at the changes of fashion is useless, if indeed it be not absurd. "Something new" is no fresh object of human wishes. We accept the unchanging forms of oriental costume simply because, to us, they are new. Some fashions last longer than others; some are laid aside, and then re-adopted; but

in every case there is continued change. Now, if there are variations in the style of dress or personal decoration, of furniture or house decoration, why should there not be changes in the style of planting and bedding-out, i.e., of garden decoration?

Instead of smiling too critically, let us listen to the chimes of those sweet-voiced bells; although, as to any tune they may be singing, being unable to catch the accent or the measure, it may be as unintelligible to us as spoken Dutch itself. That, however, is often as much the fault of the chimes themselves as of the listener's ear. And, look! the storks in the garden are pinioned, and cannot perform their autumnal migration. Nevertheless, the free domesticated and protected storks of the neighbourhood have come hovering and circling round them, clattering their long bills—for the stork is absolutely voiceless; the most he can utter is a faint sigh—to tell them that the time for starting is drawing near. †

THE SPECIES OF HELLEBORUS.

I HAVE had so many inquiries lately about the genus Helleborus, and so many specimens sent to me, that I am led to think that a brief account of the known species and forms would be useful, especially as the best recent information about them is scattered in publications that are accessible but to few. The genus consists of four well-marked and little-variable species; and, in addition to these, of two that may be called either groups of closely allied species, or single species which have several strongly-marked varieties. Treating these latter as single species, the following key will give an idea of the characters in which the principal differences which exist in the genus are to be found:—

Group I. CAULESCENS.—Flower-stems furnished with leaves below the inflorescence.

- | | |
|--|---------------------------|
| Leaves thin and deciduous. Foliolae flat, 2-2½ inches long. | 1. <i>H. VESICARATUS.</i> |
| Leaves coriaceous and persistent. Foliolae thick, rigid, under an inch long. | 2. <i>H. LIVIDUS.</i> |
| Leaves many, narrow, arranged pedately. | 3. <i>H. FORTIUS.</i> |

Group II. ACAULES.—Flower-stems without any leaves below the inflorescence.

- | | |
|--|--------------------------|
| Flowers 1-2. Bracts pale green. | 4. <i>H. NIGER.</i> |
| Flowers usually many. Bracts leaf-like, connate. | 5. <i>H. VIROIDEUS.</i> |
| Leaves thin, deciduous; segments ½-1½ inch long. Root-leaves very rarely more than one to a flower-stem. | 6. <i>H. ORIENTALIS.</i> |

H. vesicarius, Aucher-Eloy, MSS.; Boiss. in Ann. Sci. Nat., ser. 2, vol. xvi. (1841), p. 547; Fl. Orient., vol. 1, p. 60.—Stem annual, erect, reaching a height of a couple of feet, bearing one or two leaves below the inflorescence, the radical rosette faded by the time it flowers. Petiole reaching a length of nearly 1 foot; blade membranous, glabrous, composed of three distinct divisions, the upper furnished with short stalks and palmately cut into very numerous linear segments ¼-1 inch broad. Petioles of the reduced stem-leaves broad and channelled. Flower-stem forked about half a foot from the top, with about three branches, bearing each 1-2 copiously flowers, the bracts leafy in texture and generally furnished with leafy segments, oblong, 1-1½ inch long, cuneate, conniving in a cup. Stamens as long as the sepals; anthers oblong, 1 line long. Follicles 3-4, hemispherical, united by their inner suture in the lower half, 2-2½ inches long, 1-1½ inch broad, flattened laterally, with fine cross anatomising veins. Style incurved horizontally, 1-1½ inch long.

A native of mountain woods in Syria at Mount Cassius near Antioch and Aintaly, in the upper part of the Euphrates valley. The leaves resemble those of a Trollius in cutting and texture, and it differs totally from all the other species in its enormously large laterally-flattened fruit-carpsels. It flowers in January and February, and has not yet been introduced into cultivation.

2. *H. lividus*, Soland. in Alt. Hort. Kew., vol. ii, p. 272; Bot. Mag., tab. 72; Bot. Reg., vol. xxiv., t. 54; Sweet, Flower Gard., ser. 2, t. 150; Gren. Fl. France, vol. 1, p. 42; *H. argutifolius*, Visiani, Fl. Cors., p. 8; *H. virgatus*, Miller, Gard. Dict., edit. vi.; *H. viridis*, Lamour., p. 27; *H. cordata*, Willd., Coroll. Suppl., p. 40.—Stems erect, perennial, 1-1½ foot high, bearing eight or ten leaves crowded near the base below

the inflorescence. Petioles 1-1 foot long, blade glabrous, coriaceous in texture, persistent, always trifid, the segments oblong-lanceolate, acute, sharply toothed to a depth of ½-1 inch, the central one 6-9 inches long, 1-2 inches broad at the middle, the side ones oblique at the base, broadly rounded on the lower side. Flowers 10-20 in a deltid corolla, bracts copious, simple, oblong, acute, pale green, sharply toothed. Sepals pale green, nearly flat and spreading, round, ½-1 inch long and broad. Petals ½ inch long, cylindrical, stipitate. Stamens about half as long as the sepals; anthers pale yellow, oblong, 1 line long. Follicles 4-5, oblong, as long as the sepals, with an incurved style 1 inch long.

A native of Corsica, Sardinia, and the Balearic Isles. A very old inhabitant of our gardens, introduced at the beginning of the 18th century. It resembles best of all a good deal in habit, texture and inflorescence, but the leaves are extremely different. This is the only Helleborus with a trifoliate leaf. There is a variety integrifolius, D.C., in which the characteristic sharp toothing nearly or quite disappears.

3. *H. fortius*, Linn. Sp. Plant., p. 724; Engl. Bot., t. 613; 3 edit., t. 45; Reich. Fl. Germ., tab. 178; Hayne, Arzng., t. 10; Woodw. Med. Bot., vol. iii., t. 10.—Flower-stem perennial, about 1 foot high, naked near the base, marked with the scars of fallen leaves, bearing two or a dozen leaves below the inflorescence. Petioles 1-1 foot long; blade glabrous, coriaceous, persistent, very distinctly pectate; segments linear, shallowly incised-errate, 4-5 inches long when fully developed, 3-½ inch broad at the middle, one centrally and 4-5 lateral on each side on a recurved axis about ½ inch long. Flowering stem branched low down; inflorescence an ample deltid corolla, simple, like that of the preceding, but with copious simple pale green bracts, which, like the branches, are furnished with the fine glands which yield the odour from which the plant takes its name. Sepals obovate-oblong, green or sometimes bordered with bright purple, under 1 inch long and broad, connivent permanently in a cup, stamens nearly or quite as long as the sepals; anthers oblong, pale yellow, 1 line long. Follicles 3-4, oblong, about as long as the sepals, strongly ribbed transversely, terminated by a persistent stout rather incurved style ¾-1 inch long.

Spread through the western half of Europe from England to Austria, Italy, Spain, and Portugal. Flowers from February to May. An extremely little-variable species, well marked by its caulescent habit, strongly pectate leaves, and copious cup-shaped green flowers.

4. *H. niger*, Linn. Sp. Plant., p. 723; Jacq. Fl. Austr., t. 204; Woodw. Med. Bot., vol. iii., t. 159; Bot. Mag., t. 8; Reich. Fl. Germ., t. 111; Gren. Fl. France, vol. 1, p. 41; Boiss. Fl. Orient., vol. 1, p. 61.—Acaulescent, producing a single leaf and a simple or once-forked peduncle in a tuft, the tufts crowded on a short rootstock. Petiole in the typical form about ½ foot long; blade coriaceous, persistent, very distinctly pectate, the segments obovate-oblong, 3-6 inches long, 1-2 inches broad above the middle, shallowly incised in the upper half or third, entire and narrowly gradually in the rest, the central one distinctly stalked, with three or four leaflets on each side of it springing from a recurved axis nearly 1 inch long. Scape rather shorter than the petiole, rarely forked; bracts small, simple, ovate, pale green. Sepals the largest in the genus, nearly round, white flushed with purple, spreading, 15-18 lines long and broad. Stamens less than half as long as the sepals; anthers pale yellow, oblong, producing a single leaf, shorter than the stamens. Follicles 6 or 8, much shorter than the sepals; style stout, suberect, ½ inch long.

Spread through Central and Southern Europe, from France to Greece, Turkey, and the South of Russia. It is the earliest to flower of any of the species, and well known in the East. The stem is cylindrical, coriaceous leaf, and usually single flower, with only a small bract on the short peduncle, mark it at a glance from all the forms of viridis and orientalis. *H. altifolius*, Reich. Fl. excurs. No. 4727; Fl. Germ., tab. 112, is a large-flowered variety, with a petiole reaching 1 foot in length, and mottled with green and purple. It is often grown in gardens as *H. niger* var. major, and is figured as a variety of *niger* by Hayne, Arzng., vol. 1, tab. 8. *F. G. Baker.*

(To be continued.)

NOVELTIES.

PRINTING ON WOOD.—We have on one or two previous occasions alluded to a new process showing the connection between economic botany and art, devised by Whitman and his associates, and now in a position to illustrate it by the accompanying illustrations (fig. 68). The process is, as we have said, nothing more in essential than printing on wood. A design is drawn on the wood, as in the ordinary process of wood engraving; the block is then cut away, leaving the

design in relief. A cast is taken in metal from the wood-block, and from this cast impressions are taken, as in an ordinary printing-press, but on soft wood, instead of on paper, in one or more colours, as may be desired. The process is thus exceedingly well adapted for the decoration of houses, panels, skirting-boards, dados, cabinets, and thousands of other articles. Cheapness, cleanliness, durability, and effectiveness are thus secured. Given a good and artistic design suitable

JAPANESE HOUSE GARDENS.

SOME time since you figured two specimens of these from a work brought home by Mr. Moseley. It so happens that I have a Japanese pupil attending my lectures, and who has been a frequent visitor at my house for the last five years. With the help of this gentleman—Mr. Nagai—I have inspected two of the volumes which Mr. Moseley has been so good as to

curiously-shaped limestone or slag, under water, or with only the upper part above the surface, and they are placed under a glass frame or in a large glass jar; but in Japan a hard stone in rock-form is used and placed in an earthen vessel full of sand. We use delicate water plants, lizards, molluscs, &c., which live in the water, while other people plant gay leaves, Begonias, &c., on the top of the rock above water. The Japanese use, as already said, dry rocks; on the



FIG. 68.—EXAMPLES OF MR. WHITBURN'S WOOD-PRINTING AS APPLIED TO HOUSE DECORATION, ETC.

for the purpose intended, to begin with, and all the rest is a matter of mechanical detail, and as such is inexpensive in proportion to the quantity required. Mr. Whitburn is well known as a master of design in his particular style, but the process, of course, admits of any design being employed consistent with the nature of the material. Our illustrations are taken direct from the blocks designed and drawn by Mr. Whitburn, but printed on paper, instead of on wood. Those who are interested in this ready and inexpensive mode of embellishing a house should pay a visit to the show-room of Messrs. Whitburn & Young, at 4, Ludgate Circus-Buildings, E.C.

send me. These books were described as a *Treatise on Miniature Gardens*, but they are descriptive of aquaria which are introduced from China. According to Mr. Nagai, the Japanese (at least at this time) are inferior in their art to the Chinese. Peking is to the Japanese what Paris is to the Germans, and, indeed, to the other nations of Europe. As we look to Paris for the height of good taste and fashion, so the ladies of Japan dress themselves after the fashion of the Chinese nobility.

These Japanese aquaria differ from ours in many particulars. Ours are for the most part formed of

sand around the rocks lie cleverly made boats, as the sand is intended to represent water. The miniature plants which are placed in various parts of the rocks are planted by the Japanese very skilfully. Many Conifers, especially *Sciadopitys verticillata*, *Pinus Massoniana*, and certain *Thuja*s, play a prominent part. The rocks, which are scarcely 1-1½ foot high, are often like large barren rocks, for they are generally formed according to one regular rule, pierced with holes, and filled up with water, as if they were mountain lakes. In the large aquaria rocks are used, and water also flows at their feet, as the rocks repre-

sent lands. Little ships sail on the water, and various tall plants, such as Bamboos, Palms, and the like, or small plants are planted at the water's edge. Sometimes the rock is done away with, and an old rugged tree, often a Conifer, occupies most of the space, or the aquarium represents a whole landscape, with rocks, trees, and little houses. The rock may also represent a landscape, with houses and little villages placed at the foot or at a certain height on it, and planted with groves or single large trees. It will also be understood that all things being on a small scale, little figures of men are also used. A great variety is to be seen on these rockworks, as the form of natural rocks is exactly imitated. As we recognise in Nature the form of the rocks, so also is it in these clever miniatures. The various limestones, slates, stones are easily recognised as tufa, stalactites, and rocks full of water.

In the beginning of one of these books I find a plate with Chinese in various attitudes, stags, &c., to be imitated in clay. This shows that not only the Japanese but the Chinese are introduced in these aquariums. The next plate gives various designs of buildings and temples, bridges with men on them, boats and ships in the distance. These also are Chinese, not Japanese, so that the Chinese origin may be easily observed.

Finally, I must state that I have given the name of aquaria to these rockworks only in consequence of the custom of placing them in rooms; they are not aquaria, according to the generally recognised sense of the word. The Japanese term is untranslatable, the nearest approach to it is "miniature rock gardens for rooms." They are just at present so much the fashion in Japan that they are to be found in the dwellings even of the poorest classes. *Karl Koch, Berlin, March 15.*

FLORISTS & FLOWERS

THE NATIONAL AURICULA SOCIETY'S SOUTHERN SHOW.—Will you kindly permit me to say to all interested, that in addition to the legible naming of exhibits, as required by the fifth condition of the schedule of prizes, it has been determined that the name of the exhibitor shall be attached to each of the respective specimens. By this requirement necessary information will be supplied to the public, the secretarial work will be simplified, and confusion, and possibly loss, at the close of the exhibition obviated.

Exhibitors from the North will find the earliest morning trains to the Crystal Palace by the high level route convenient, and Mr. Thompson, the garden superintendent, has kindly promised to have men in readiness to aid in the removal of the cherished specimens to the exhibition tables.

At an early day I shall be glad to hear from those who may propose to partake of the cold collation which will be provided for the judges, in order that suitable arrangements may be made.

This is, I believe, all I have necessity to say, and I should not have occasion to ask your permission to say it in your pages, but that my long exile from floriculture, and the ravages wrought by death in the ranks of old and valued friends, have so broken my concentration, that I can only address privately all known to me, or of whom I ought to obtain account, I am persuaded there are many to whom otherwise I could not have access.

But, having the pen in hand, I should like to say a word as to the paragraph in the fifth condition of the schedule of prizes, in which the committee "recommend that the trusses be supported with a neat stick." This paragraph has so far been misunderstood apparently by my valued friend Mr. Horner, and possibly some other friends in the North, as to lead to the supposition that here in the South we approve "faecid attitudes and stiffnesses" to the elegance and grace properly belonging to a plant able by its "possession of a firm, elastic, self-supporting stem" to carry its head erect. And "D., Deal," who takes care to inform us he was not present when this, to him, objectionable recommendation was adopted, suggests a very grave latitude indeed, when he tells us he has been "brought up in the straightest sect of the old school," and this is a "practice" he has "invariably condemned." Really I must take the liberty to

say, much has been assumed of a very small matter. The delinquents involved are: Mr. C. Turner, Mr. James Douglas, and myself; and I humbly presume to think either of us can afford to smile at the assumption that we favour stiffnesses or forced attitudes. But we have had some experience in the management of exhibitions, and what is effective as a display; and with this recommendation we hope to do what the drill-sergeant does for the country, to get him out a smart man, and diminish the numbers of the "awkward squad." Let it be borne in mind, it is a "recommendation" only; that no plant possessed "of a firm, elastic, self-supporting stem" will be compelled to be crutched or forced into stiffnesses or ungraceful attitudes; only it will go hard with any specimens, if with this concession on the part of the committee they be shown with dependent, I had almost said despondent, drooping heads. But I augur we shall find neither dependent drooping heads nor despondent hearts on the 24th.

One parting word with "D." of Deal. It is quite true he was not at the meeting, at which this recommendation was adopted—that he has attended no meeting since the first, but it is equally true that he was furnished with a draft proof of the recommendation, and that he favoured his colleagues with no expression of his opinion: a fact surely somewhat suggestive of a lack of candour, or of courage, since now he tells us it involved a "practice" he has "invariably condemned." As to the "straightest sect" of the old school, in which he claims to have been brought up, "D." of Deal, memory has betrayed him; and, as I turn to a discussion which may be found in the volume of *Gossip of the Garden* for 1859, in which "D." was sharply castigated by the late Revs. George Jeans and J. Bramhall for his proposal to drop the classification, greens, greys, or whites, then, as now existing, I cannot but feel surprised at his delusion. But "D.'s" fault then was passed over, almost condoned, because of a suggestion of a meeting of Northern and Southern Auricula growers he made, and the good to be derived from it, as Mr. Jeans explained. And now we are to have another meeting of North and South, and I have little doubt, whatever may be our assumed differences, they will vanish into thin air on the eventual 24th. And, so, thanking you in advance for your consideration, and wishing the meeting may have the attention and success I believe it deserves, I remain, &c., *E. S. Dodwell, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W.*

Apiary.

HOW AND WHEN TO BECOME A BEE-KEEPER.—So many inquiries come to me for the information the above heading indicates that I am led to believe the reply would be useful to many besides my correspondents. Taking it for granted that the would-be bee-keeper is quite a novice, I would advise that he commences with a swarm as early in May as he can get it, although to the middle of June will be in very good time. Two momentous questions now arise: English or Ligurian bees?—straw skep or frame hive? As to the bees let the pocket decide; Ligurian bees cost twice as much as English. I believe them to be the superior variety, but I do not go so far as to say one hive of Liguian will be as profitable as two of the English; therefore, unless the cost is of no consequence, it is better to culture the English. For the hive let it at all events be new, nothing old, stout, or it may perhaps harbor a nefarious germ of the bee plague, "foul brood," which defies the skilled bee-master to eradicate it from his apiary, and to the novice could bring nothing but trouble, expense, and disappointment.

Bee-keeping is not all sunshine, and we must be content to accept losses as well as profits. But to return to our hives: the choice should mainly depend on the kind of attention the bees are destined to receive. If their owner is likely to be too busy or too faint-hearted to make intimate acquaintance with his little labourers, does not wish to investigate their domestic matters, cannot be troubled to watch for all their wants and ailments, but simply desires some honey, and is not particular as to the appearance of the same dainty article, then adopt a large flat-topped straw skep, having a 2-inch hole in the centre of the crown—such a hive as is known as "the Pettigrew skep," well made and roomy, say 16 inches or 18 inches in diameter. The common hives of the South of England

are far too small, and do not give the bees a fair chance to do their duty to their master. To the hive add a stout floor-board, a transverse section of a log of timber makes a very serviceable floor. Surmount with a good watertight roof. The common country covering is an inverted milk-pan, such as is used to set the cream in, but a well-made straw huckle is perhaps better. Remember, a straw hive, being porous, requires shelter from drifting storms, as well as ordinary shelter. Nothing is more injurious than damp, and with a cold, leaking domicile in winter, no stock can thrive.

To those who intend to devote a greater share of attention to the bees, by all means let me recommend a frame hive—it need not be costly. In the summer of 1875, in the columns of the *Gardener's Chronicle*, I gave full instructions how to make a serviceable hive at a cost of about 6s. Moreover, a drawing was given of every piece of wood required, which has enabled many men to set up bee-keeping in frame hives. The British Bee-keepers' Association, at their annual shows, by their offer of medals and money prizes, stimulated the hive-makers to work for the poor man as well as the rich, and now frame hives may be bought at any price, indeed quite as cheaply as well-made skeps with their floor-boards and covers. The adoption of a frame hive gives numerous facilities of observing the bees as a scientific study, as well as a means of obtaining a honey harvest in the best possible condition, and when it is hoped to send the surplus to market the difference in value will be found as great as the produce of a hothouse Vine, gathered, packed and delivered by a skilful gardener, and the same Grapes sent to market by an ignorant labourer. There is no best hive; the man who often obtains an abundant honey harvest has the best hive for him, alter his system and probably his gains would diminish.

The hive, therefore, being procured, next requires stocking. If the straw skep should be the hive of our choice, should be ready and furnished to the bee-keeper who is to supply the swarm, which will doubtless be delivered hived in it, only requiring to be taken home, set down on the stand they are to occupy, and left to their own devices; but if the frame-hive is to be adopted, let the bees be first hived in an ordinary skep, and so brought home to the hive, which, before being ready for its inhabitants, requires some preparation. The object of having frames in the hive is, that the bees should build straight combs within the prescribed space, and that the bees, when in the hive without some guidance, they would be quite as likely to build their combs across the frames as along them: this may be obviated by giving them a straight wax foundation to start their building on. Where the comb cannot be had, a straight line of melted wax poured from a spoon on the same place will answer every purpose—the bees will adopt the guide, and build straight.

The Americans take much more trouble than we do in this particular, for they use a wooden board for the whole frame with a thin sheet of wax beautifully impressed with the foundations of worker cells, thus insuring a minimum of drone comb being built in the hive. The skilful bee-keeper could insure that every cell in his hives should be of worker construction, and would do well, for he may rest satisfied his more careless neighbour will rear drones in their hives to answer all the purposes of his bees. The absence of drones may be induced to a commonwealth—all workers and no idlers. The worker bees, when they make a lot of honey, which would otherwise go to fill the cells. Having safely housed the bees in their hive one thing should never be lost sight of—that is, to feed them if bad weather should immediately ensue, for remember the bees have no stores, and are therefore unable to gather any they must starve. *John Hunter, Eaton Rise, Ealing.*

Garden Operations.

PLANT STOVES.

Since fine-leaved plants became fashionable they are grown more or less by all who have the means. With some few exceptions they are very much more easily managed than flowering subjects, nevertheless there is very great difference in their appearance, and the use that can be made of them for decorative purposes, and when they require the treatment they require from that which they present when indifferently managed. Especially is this the case amongst the softer-growing kinds, such as Calce-

THE
Gardeners' Chronicle.

SATURDAY, APRIL 7, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

THURSDAY, April 12. ^(American International Horticultural Exhibition opens.)
Sale of Fine Ferns, Orchids, Plants, &c., at
FIDAY, April 13. ^(Sale of Seeds, Lilium auratum, Orchid, Arancius, &c., at Stevens' Rooms.)

WE have before us a pamphlet which we believe would be read with interest by Vine growers were it readily attainable in this country. It is a brief account of various EXPERIMENTS undertaken for the purpose of obtaining new and desirable GRAPES in the Eastern States of North America. Mr. HASKELL, of Ipswich, Massachusetts, the experimenter in question, set before him as the object to be attained, Vines hardy enough to bear the severe winters of the New England States, which should not be subject to mildew, and which should produce good fruit.

Mr. HASKELL began by selecting various wild species and cultivating them, but without good results. He then tried seeds of the best natives, and selected the offspring for three generations without obtaining a single fruit worth propagating; he grafted native varieties on foreign stocks, and planted the seeds of the native Vines, but without improvement. Inarching in various ways was tried, white Grapes were grown under the foliage of black Grapes, and black under the foliage of white, but the fruits retained each its proper colour, though the texture and quality of the fruit seemed to be changed by the alien foliage. Seeds of Grapes so treated were sown, but yielded no good results.

Cross-fertilisation was then adopted, and more than a thousand varieties were thus raised, the history and parentage of each being recorded. The results from cross-breeding have been much more encouraging than those obtained by other methods, so much so that the American Pomological Society considered several of them to be of excellent quality. Dr. HOGG, who examined some sent over to this country, reports on them as "very excellent." Mr. HASKELL is desirous of making these Vines better known, and to have them tried in various situations, as no doubt some would be much better suited for some situations than for others. It is further hoped that some of them may be of value in resisting the Phylloxera. "It will be observed," writes Mr. HASKELL, "that most of the Vines described are from crosses with what is popularly called the Fox Grape, but accurately it is *Vitis riparia*, a species which is found generally in a wild state only in swamps and on the banks of streams. The *V. vulpina* and *V. Labrusca* are only other names for varieties of the same species, and they do not accurately describe any species, as the pungency on the lips and the foxy odour are not uniformly found in the fruit of either of them. Recent experiments in France (first undertaken in Ireland) have shown that the most effectual eradication of the Phylloxera was by flooding the ground, and thus drowning the insects. As the *V. riparia* flourishes and does best in wet bogs and meadows, even when the roots are immersed in water all the winter, and the soil is saturated all the summer, may we not expect that this trait will prevail in some of these hybrids and make them almost proof against the Phylloxera, especially if planted in wet soil?"

Mr. HASKELL'S perseverance, even though it may not have brought him the results he wished, is by no means thrown away. The general result of his experiments goes to illustrate once

more the advantage of endeavouring to improve what we may call old-established varieties by cross-breeding and otherwise, rather than by attempting to educate wild forms *de novo*. Time and the gradual accumulation of inherited characteristics are thus all gained, though, on the contrary, it must not be overlooked that degeneracy of constitution may be induced by over-cultivation when a little infusion of the original stock may serve to restore vigour. The negative results of the various modes of grafting and inarching tried, are also by no means without value, however discouraging they may have been to Mr. HASKELL.

WE suppose, if there was not a "good deal to be said on the other side," that no one would venture to suggest that the ALBERT MEMORIAL in Hyde Park should be covered with glass. Still no one who has seen what effect London smoke has had upon the statuary portion in the comparatively short time it has been erected, will doubt the desirability of protection. Mr. WILLS has had the boldness of conception to devise, in association with Mr. BEDBROUGH, the architect of the Westminster Aquarium, a plan for constructing a casket in iron, copper, and glass, to enclose the Memorial. As may be seen from our illustration (fig. 69), the design is strictly in harmony with the general architectural design of the Memorial. It consists of an octagonal dome, raised on the central intersection of a four-armed cross—300 feet in diameter, and surmounted by a spire or lantern, the summit of which is 350 feet from the ground.

The principal entrance, which is 25 feet wide, is from Kensington Gore. The archway of this entrance, richly decorated, is carried into the gable, which is filled with elaborate Gothic tracery. The other principal faces of the octagon are similarly treated. Clusters of columns, forming the piers at the intersecting angles of the octagon, are carried up in stages to the springing of the dome, terminating in pinnacles and open-traceried spires. From these piers, at the base of the dome, spring the gables which terminate the faces of the octagon. These are also filled in with floriated Gothic tracery.

East and west of the central building it is proposed to erect wings 350 feet in length by 125 in width, to be devoted to the illustration of the vegetation of the various regions of the world, and of such plants as are specially serviceable to humanity, not only for decorative purposes, but also as supplying articles of food, timber, and the like. THE PRINCE CONSORT'S idea of diffusing knowledge, and of binding different nationalities into one league by the bonds of peace and reciprocal interest, would thus be fittingly illustrated, while Horticulture, as the sister of Art, the handmaid of Science, and of ever-increasing commercial importance, would appropriately play its part. These are the ideas which prompted Mr. WILLS' letter on the subject to HER MAJESTY, who has, as have other members of the Royal Family, expressed satisfaction with the plan advocated by Mr. WILLS, and admiration of the manner in which it is proposed to be carried out. Whether the whole or any portion of the design be carried out or no, is a question of finance to a large extent. In any case the design is so novel and so striking that we have thought it desirable to bring it before the eyes of our readers interested in horticultural structures.

WE are requested to announce that the Council of the Royal Horticultural Society have decided to change the days of meeting from Wednesdays to Tuesdays, on and after the 1st of May next. This step was taken by the Council, in accordance with a numerous signed requisition presented on Wednesday last, and a copy of which we annex—

"To the Council of the Royal Horticultural Society. We, the undersigned exhibitors at the meetings of the Royal Horticultural Society, respectfully call the

attention of the Council to the great inconvenience arising from the meetings of the Society being held on the same day as those of the Royal Botanic Society. This inconvenience has existed more or less ever since the Council altered the meetings from Tuesday to Wednesday; but this year the recurrence of simultaneous meetings and shows of the two Societies is so frequent that we suggest to the Council whether it would not be better for the interests of both the Societies and Exhibitors, that the Council of the Royal Horticultural Society were to revert to the former arrangements. So far as the exhibitors are concerned the earlier day in the week would best suit them, as it would interfere less with the ordinary routine of their establishments."

WE heard at South Kensington on Wednesday that over 4600 persons visited the Royal Horticultural Society's gardens on Easter Monday. The price of admission was 2s., and the amount taken at the gates was £38 18s. 2d.

IT has now been definitely arranged that the exhibition of PLANTS, CUT FLOWERS, BOUQUETS, WREATHS, BASKETS, FRIGED VEGETABLES, and SALADS, by the growers and salesmen of Covent Garden Market, shall be held on Wednesday, April 18, in the gardens of the Royal Horticultural Society at South Kensington. We understand that gold, silver, and bronze medals, with Certificates of Commendation, will be awarded by the Society to the most meritorious exhibitors; and free tickets of admission will be given to all exhibitors. The exhibition will be a novel and interesting one, and it is believed that the whole of the growers and salesmen will accord to the Council their valuable assistance and co-operation; the determination being that, so far as Covent Garden is concerned, the show shall be a great success. Those who may be desirous of exhibiting should communicate with Mr. BARRON, Royal Horticultural Gardens, South Kensington, at once. We also hear that an attempt is being made to get the exhibitors to dine together the same evening at the "Criterion," when it is hoped that His Grace the Duke of Bedford will preside.

MESRS. DOWNIE & LAIRD, of Edinburgh, have lately taken on a long lease a piece of ground about 10 acres in extent, near to their Pinkhill nursery, which, instead of having trench-dug in the ordinary way, they have had very successfully cultivated by the Scottish Steam Cultivation Company. The steam plough was first run over the ground at the depth of 10 inches, this operation being followed by a grabber set at 15 inches, and again by the same implement set at 20 inches, the whole being subsequently harrowed by steam at the rate of 5 miles an hour. This, we believe, is the first time the steam plough has been used for nursery purposes in Scotland.

BARBOSA SERRATIFOLIA is flowering in the Economic-house at Kew, to which an interest attaches from its probably being the only plant of the *Buchu* species now cultivated in this country. It is an erect, thinly branched shrub, with linear-lanceolate leaves about 1 inch long, and pretty pure white flowers. *Buchu* leaves are used in medicine as a slight tonic and aromatic stimulant. Several other plants of interest are also in bloom. The flowers of *Omanthus fragrans*, used for scenting Tea, perfume the house with an exquisite fragrance. *Erythroxylon Coca* must be mentioned, from the great interest it has recently excited. Carefully conducted experiments on its medicinal action have given the most conflicting results, but a preparation is now advertised as "the greatest restorative in atrophical, blood, and exhaustive diseases!" Eight varieties of Tobacco are in bloom, and are considerably ornamental. Others in flower are *Aloe vulgaris*, *Chamerops humilis* (polygamus), and *Peumus Boldus* is about to open. *Drimys Winteri* is ripening fruit, which it rarely does.

As a useful, early, free flowering and handsome FUCHSIA we can strongly recommend Mr. JOHN LAING'S valuable hybrid, the EARL OF BEACONSFIELD. We saw in the Royal Horticultural Society's gardens at Chiswick, the other day, some plants which, after being cut back, broke into flower almost at once, while other varieties were, comparatively speaking, at a standstill. This is a valuable character, and should increase its popularity.

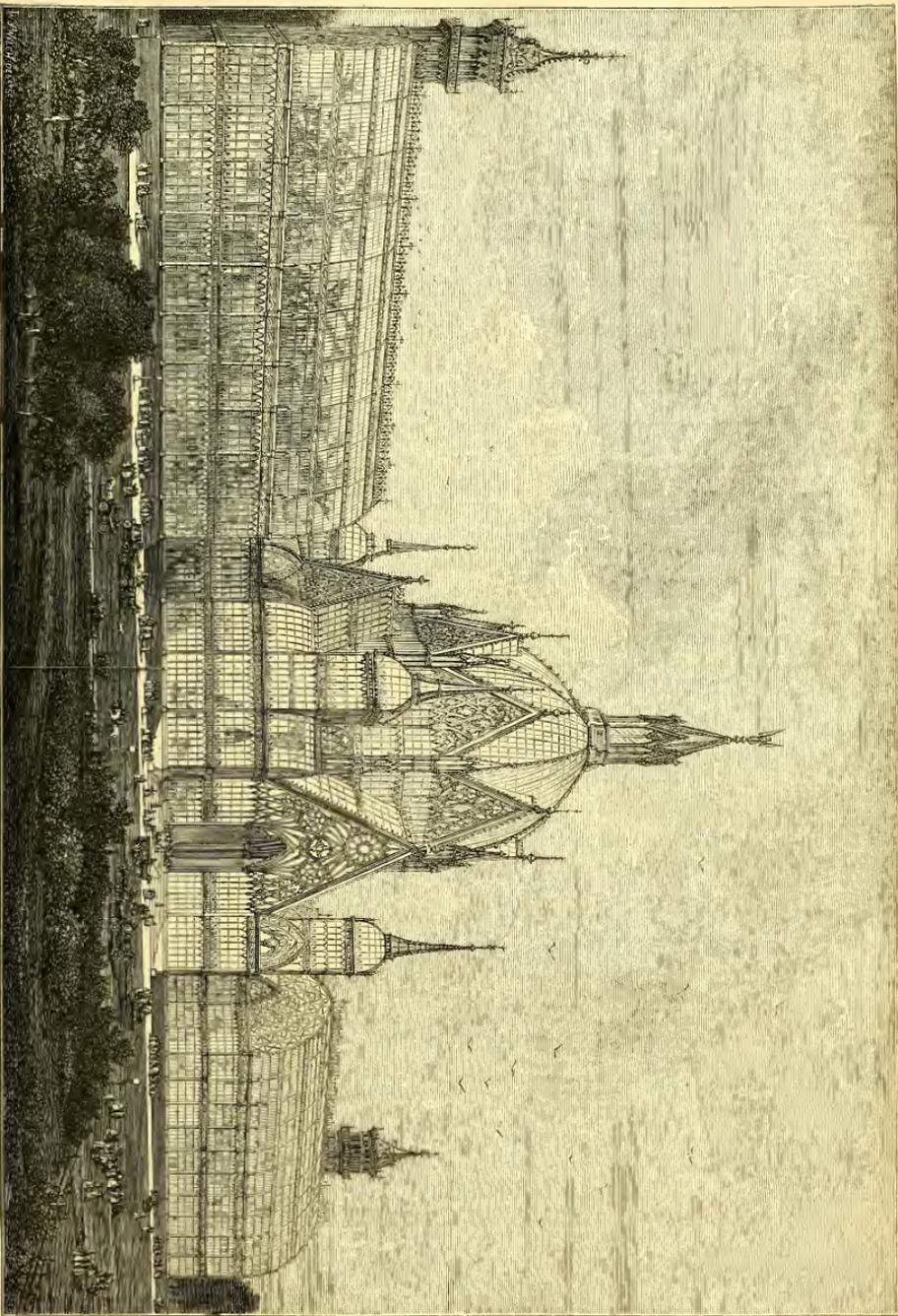


FIG. 69.—MR. WILLS' PROPOSED DESIGN FOR COVERING THE ALBERT MEMORIAL IN HYDE PARK.

— THE MONTH OF MARCH, through which we have just passed, must have been influenced by the prevalent axioms in diplomacy, for it has powerfully sustained the *status quo* in Nature. Literally, as we were at the beginning so we are at the end, and this has indeed proved a remarkable and successful effort in counteracting the possibly disastrous influences that might arise from a comparatively mild winter. As the end of February things bore an unpleasantly premature aspect, and wise people shook their heads when they thought of the storms and frosts that might yet come. Since then five weeks have elapsed, and we see but the most trifling advance in Nature. The prevalent cold winds and occasional frosts of the month have kept the forces in subjection, but yet have most favourably influenced the land, and permitted a vast amount of sowing and planting to be done, so that in spite of the previous excessive rainfall the earth has now largely received her portion of spring cultivation and cropping. The present backward condition of vegetation adds immensely to the chances of a good fruit season. We have the trees of all kinds covered with fruit-buds on well ripened and seasoned wood; we have the humbler bush-fruits promising great yields; we have, indeed, all the material out of which a great fruit crop can be got, and we only need the favourable season, with its temperate atmosphere and occasional softening showers, to bring all things to a glorious and profitable fruition. It has been often remarked that an early spring is by no means a natural result of a mild winter. To an ordinary observer such a result might invariably be anticipated to follow, but the present spring-time proves that the converse is not only possible but natural. The cold that will not come in severity at its expected time will come somewhat attenuated later on, and a late spring inevitably results.

— It is but a short time since we had occasion to announce the death of ADOLPHUS BRONGNIART, and now it is our sad duty to record the death, on the 29th ult., in his seventy-second year, of Dr. ALEXANDER BEAUN, Professor of Botany in the University of Berlin, one of the foremost botanists of his time, and a man of no common order of intellect. Professor BRAUN was perhaps better known as a morphologist than as a descriptive botanist, but his services to science have been of such importance, that it will be universally felt among botanists that a mighty leader has fallen. We shall hope shortly to be able to give some account of his career.

— The first portion of Mr. ELWES' superb MONOGRAPH of the GENUS *LILIUM* has just been issued. To begin at the beginning, we may say that the titlepage, designed by FITCH and executed by WORTHINGTON SMITH, is very elegant and striking, giving good promise of what is to be found within. The work is in folio size, and contains eight coloured plates representing the following species and varieties: *L. philippinense*, Hance's *syn. svenicum*, pomponium, *s. Parkmannii*, *s. Wittii*, *pyrenicum*, *testaceum*, David's—the latter a new species of M. DUCHARTRE, founded on an East Tibetan plant, discovered by the Abbé DAVID, and polyphyllum. Lastly, one of BOURNE'S beautiful Himalayan photographs is given, illustrating the locality where the last-mentioned plant is found. We shall speak more at length of this publication on another occasion, but we cannot delay thus briefly adverting to one of the finest botanical works of recent years. We are glad to learn that there is every probability of a speedy publication of the remaining parts, the drawings being all completed, with one or two exceptions only. As a small matter of detail, it is to be wished that the plates were numbered.

— We learn from ANTWERP that the horticultural and agricultural society known by the name VAN MONS, intend to organise during the RUBENS' *jeûtes* in August next, an horticultural exhibition on a large scale. The exhibition will be open alike to Belgian and foreign exhibitors. The general secretary is M. CHARLES DE BOSSCHER, 57, Rue St. Thomas, Antvers.

— THE HEREFORD SOCIETY FOR AIDING THE INDUSTRIOUS has become the champion of a manure which it calls the MOULE and WITH compound. Mr. MOULE is well-known for his zealous advocacy of the dry-earth system, and Mr. WITH is a chemist who has devised a compound to be added to

the dry earth to increase the manurial value of the earth used in closets, pig-styes, &c. The pamphlet before us details the method of employment of the compound, and speaks in high terms of its efficacy, but is silent as to the nature and composition of the "WITH" addition. The object of the Hereford Society seems to be a philanthropic one, and it carries out its object by supplying to the working classes manure, seeds, Potatoes, &c., of the best quality at moderate prices.

— The following notice is, says the *Bulletin d'Agriculture*, conspicuously set up in the State forests of France, and it is to be desired that a similar plan were followed here also:—

"HEDGEHOG.

Feeds on mice, small rodents (*vongeurs*), slugs, and grubs.

Do not kill a hedgehog.

TOAD.

A farmer's friend; destroys twenty to thirty insects per hour.

Do not kill a toad.

MOLE.

Destroys insectary grubs, mole-crickets, and insects injurious to agriculture. No trace of vegetable matter is ever found in its stomach. Does more good than harm.

Do not kill a mole.

COCKCHAFER (*Hanneton*) and its GRUB (*var. blanc*). Mortal enemy to the farmer. Each insect kills seventy to one hundred eggs.

Kill the cockchafers.

BIRDS.

Each department of France loses annually many thousands of francs by the injuries of insects. Birds are the only enemies capable of contending with them.

Children, do not rob birds' nests.

A reward of twenty-five centimes will be given to every child who brings 500 cockchafers to the *Garde Champêtre* (parish constable).

— A fine specimen of *TESTUDINARIA ELPHANTINE* is flowering in the Succulent-house at Kew. Its strange roostock, combined with twining stems and graceful foliage of the most lively green, give it a most unique appearance. Bomarea Caldasii, growing against the end of the house, is extremely showy. It has about ten umbels, some having as many as thirty open flowers, similar to those of *Alströméria*, and of bright orange colour.

— Dr. TRAILL has been elected Professor of Botany in the University of Aberdeen, in the room of Professor DICKIE, resigned.

— One of the most useful greenhouse plants is *GERANIUM ANEMONIFOLIUM*, a species which is in flower nearly all the year round. It has a caulescent stem a foot or so in height, from the top of which radiate several stalked palmately divided leaves, the divisions themselves twice pinnately cut. The flowers are of a reddish yellow colour.

— In spite of its abominably long name, *ORYCHOPHRAGMUS SONCHIFOLIUS* is a desirable plant for greenhouse decoration. It is a low-growing annual Crucifer, with large pale yellow flowers. It is closely allied to *Moricandia*. Plants of it may now be seen in the cool greenhouse at Kew.

— The business carried on by the late Mr. C. PFERSDORFF, of Paris, at 73, South Row, Kensal New Town, has passed into the hands of Messrs. CROUCHER & BOLLER, the former of whom is the well-known gardener to J. T. PEACOCK, Esq., Sudbury House, Hammersmith. Mr. BOLLER being an employé of the late proprietor.

Home Correspondence.

Lime for Chalk Soils.—On p. 413 a correspondent asks whether soils in which chalk is already present in considerable quantities are ever benefited by applications of lime. Under certain circumstances such soils may decidedly derive considerable advantage from dressings of quicklime, since the benefits arising from the liming of soils may be classed under two distinct heads. The first of these is the supply of the element calcium itself, which while absolutely essential to ordinary vegetation, is frequently deficient in land, the sterility of which may be traced by

analysis to its poverty in this constituent. Chalky soils, it is scarcely necessary to say, abound in calcium, chalk being simply the carbonate of that metal. The benefits conferred by lime on such soils, therefore, are not due to the supply of calcium, but to the chemical action of caustic lime upon the substance of the soil, this chemical action being the second head above referred to. Quicklime, when slaked, produces a substance of a granular condition, ultimately absorbing carbonic acid from the air and becoming transformed into carbonate of lime, identical in composition with the chalk already in the soil, but in a much finer state of division and more readily soluble for the supply of plant food. It is, however, before assuming the carbonated state that the lime does the better part of its work, by aiding the destruction of organic matters in the soil and rendering part of their nitrogen available to the plants, reacting upon the silicates present in the form of clay, and setting free alkalies previously locked up from the roots by their peculiarly insoluble forms of combination. It may be added, that the mere fact that a soil is situated on a subsoil of chalk is no guarantee that the soil itself should contain even a fair proportion of lime. Lime, as farmers well know, shows a peculiar disposition to "settle," unless frequently brought up to the surface, and it thus not uncommonly happens that a soil gradually becomes sterile, without any obvious cause, its situation on the surface, perhaps, of a chalk hill being sufficient to avert from an inexperienced mind the idea of its being deficient in lime. In such cases a chemical examination in the laboratory will often show that to settle 6 or 7 inches, or more, of the surface soil of a chalky soil having gradually caused that substance to settle in or on the subsoil. Such cases, of course, occur more frequently on pasture than on arable land, as the disturbing influences of the plough are absent. Such pasture land has fallen into this condition may be frequently restored to fertility by ploughing a couple of inches deeper than usual, without any fresh application of lime. *Bernard Dyer, F.R.S., Laboratory, 17, Great Tower Street, London, E.C.3.*

Bananas.—It is said that Bananas are usually cut and hung up to ripen, or even in some cases buried for that purpose, but the fruit of *Musa Cavendishii* gets the better of this, and will ripen on the stalk with the gentlest twist. When the central fruit stem is cut across, it is a strong odour resembling that of a Cucumber. *T. T., Culmpton.*

Lilium giganteum.—Having seen a few remarks on the growing of this Lily, I beg to say that the bulbs I have raised on January 3, 1877, in turf loam, and in 12-inch pots, four bulbs in one each, and they have flowering spikes now 18 or 20 inches long. They will flower in pots as well as where planted out, and make a fine show for a conservatory or greenhouse. *F. May, Gr., Duddell's, Bangor.*

Mandragora microcarpa.—I enclose an abnormal blossom (two united) from the plant of *Mandragora microcarpa* in my garden here, which still continues freely flowering, uninjured by any of the severe weather we have had since I sent you the notice of it printed in the *Gardener's Chronicle* of February 17, p. 212, in which I find that by a misprint it is named "*macrocarpa*." I enclose also a blossom of *M. officinalis*, which did not come into flower until some weeks later than the other. Its leaves seem to be more numerous than those of *M. microcarpa*. The plants are larger than in *microcarpa*, and the flower and leaves have a light yellowish tint, very different to the darker purplish tint of that species. *W. C. Trevelyan, Wallington, Newcastle-on-Tyne, March 3.*

Watering Plants.—We hear a deal now-a-days about the "cold-water" system for watering hot-houses, Vines, &c. I shall deem it a favour, and I think the horticultural community will be greatly benefited, if some of your numerous correspondents who are plant and Grape growers will kindly give their views and experience about the matter. It is said that our best nursery propagators use cold water for their most tender cuttings and plants. The late Mr. J. K. Pearson, Chilwell, one of the best Grape and Vine growers we ever had, and who well understood the subject, told me he used quite cold water for his Vines and choice plants. Every one who saw the Grapes produced at Chilwell some eight or ten years since can testify to their excellence; also the pot Vines of late years. On the other hand, we read from the *Gardener's Chronicle* of March 24 that Mr. Hunter, the grower and producer of the most prodigious and best Grapes of the day, waters his Vine borders with warm water. The system of cultivation pursued by Mr. Hunter, with respect to the roots, shoots, laterals, &c., is a counterpart of Mr. Pearson's, but one used cold water, the other uses warm water. Are we to say that one system is as good as the other? We know that if we boil water it is deprived of the

gases essential to sustain animal life, and that if live fish are put into it they soon die. Would Mr. Hunter be able to increase the weight of his fine productions by using cold water instead of warm? *B. Wadley, Gr. to Lord Mildred, Birdslow House, York.*

Hybrid Agaves.—Mr. J. G. Baker's interesting papers on the large and intricate genus *Agave*, like all his other monographic papers, must be read with service alike to botanist and cultivator. Observations on the seedling variations of the different species are, however, most desirable, as in some cases they are very variable. In *A. (Littrea) geminiflora*, for example, we get smooth and ridged forms, and also large-growing and dense-growing variations. *A. perbella* is said to be a hybrid raised by M. Kerchove, its parents being *A. xylinoantha* and *A. univittata*. A. Taylor is an English hybrid, its parents being *A. densiflora* and *A. geminiflora*. Appended is a list of hybrid varieties offered in the catalogue (1877) of MM. Nardy et Cie., Establishment Horticole de Salvador, Hyères, and these gentlemen very wisely add the percentage of their numerous insects which struggle among their plants, in their eagerness to obtain the honey-like fluid so copiously furnished by these plants when in flower. Even if no insects be present cross-fertilisation must be the rule in this genus, seeing that all the species have yet examined are protandrous, the pollen being shed, and the anthers hanging down limp and lifeless, before the stigma is fully developed and receptive. I pointed out this fact in these columns in January, 1870; and Dr. Engelmann, of St. Louis, who has just superintended the raising of their native habitats, also alludes to the subject. —>

A. chilipensis x *xylinoantha* *A. Verschaffeltii* heterodon
A. latifolia *A. heterocarpa* *Tonielliana*.
A. chilipensis x *Dasyllaria* *A. Verschaffeltii* x *micrantha*.
A. chilipensis x *Tonielliana* *A. Verschaffeltii* x *schiligeri*.
A. Verschaffeltii x *A. Verschaffeltii* x *xylinoantha*.
A. micrantha x *Sataris*. *A. Verschaffeltii* x *longifolia*.
A. xylinoantha x *xylinoantha* *A. xylinoantha* x *densiflora*.
micrantha.

In a state of Nature *Agaves* must nearly always be cross-fertilised and very often hybridised by the numerous insects which struggle among their plants, in their eagerness to obtain the honey-like fluid so copiously furnished by these plants when in flower. Even if no insects be present cross-fertilisation must be the rule in this genus, seeing that all the species have yet examined are protandrous, the pollen being shed, and the anthers hanging down limp and lifeless, before the stigma is fully developed and receptive. I pointed out this fact in these columns in January, 1870; and Dr. Engelmann, of St. Louis, who has just superintended the raising of their native habitats, also alludes to the subject. —>

Stautonia hexaphylla.—Mr. Bland, gr. to Graham Smith, Esq., Cranbourn Court, Windsor Forest, called my attention a few days ago to a plant of *Stautonia hexaphylla*, which was blooming very freely. The habit was that of a *Stautonia*, and it much resembles in its form of flowering *Clematis Flammula*, only that the flowers are larger. I think it would be very useful for bouquet work used in the bud, and an excellent conservatory climber, being a very rapid grower and free bloomer. *S. Johnson, Royal Nurseries, Ascot.*

The Lilies at Heatherbank, Weybridge Heath.—As some of my gardening friends forboded all manner of evil to Lily bulbs from the continued rain of autumn and winter, and as the shoots of most Lilies are now above-ground to speak for themselves, will you allow me to say that in the gardens here they are more than usually strong and healthy, and that blank spots are few and far between. Owing to a pressure of correspondence at the time, I could not superintend the raising of their native habitats, also alludes to the subject. —>

The Staying Qualities of the Flowers of the Poinsettia pulcherrima plenissima.—I have much pleasure in confirming your correspondent of last week on this matter. It is one of those valuable specimens that impressed me from the first. Most cultivators know that the fine specimen *P. pulcherrima* is somewhat evanescent at the best. No doubt the durability of all *Poinsettias* bracts turns a good deal on treatment, but finding under identical treatment a difference of months in the duration of this new variety, shows that it has far better staying powers than the old one; in fact, this flower is a gradual development, and building up, on, or over, of bract after bract. From this it is peculiarly alone, it must not continue longer in flower than a variety which makes one spreading of bracts only. But independently of the addition of new parts the individual bracts last much longer. In addition to our strong plant which lasted several months, all the other specimens I saw while some of them were under 6 inches high. Observing the tenacity with which the single rows of bracts adhered to these small plants, I was called to order by a contemporary for venturing the assertion that, with a succession of plants, we might readily have *Poinsettias* from November to May. I confess that when that was written, I did not expect to be able to chronicle the fact that we have still a small

plant of *P. p. plenissima* in flower (April 2), that was in bloom last November, and the bracts look as if they might continue fresh for some time longer. With such a fact before us, *Poinsettias* even all the year round hardly seem an impossibility. For these plants are so tenacious that they have been long exercised as yet. If instead of cutting them back the bracts merely are cut off and the plants are subjected to a brisk heat (I am now writing of the old varieties) they will break into one or more secondary coloured forms, assuming that *P. pulcherrima plenissima* also has this quality, it might and will surely be possible, by taking advantage of the power of second flowering, and also by keeping up a brisk supply of succession plants, to have it in flower all the year round. I would earnestly recommend that without any special treatment a vision of *Poinsettias* may now be enjoyed from foggy November to balmy May, thanks to *P. p. plenissima*. *D. T. Fish.*

Dendrobium Pierardii.—I was much pleased on reading the account given in your paper about the above old-fashioned plant, which, like many other good things, are neglected and disregarded, not because they are unworthy of special care and attention, but because they never claim it. I have been long glowing characters that we forget the real merits of many of our old favourites. It is only now and then, when unusual care has been bestowed upon them, and that they attain such a size as will afford plenty of space to every collector of flowers, that we see them take a commanding position, and win honours and draw forth the admiration and praise of the floral connoisseurs who appreciate the beautiful wherever found. Like many others, *D. Pierardii* is not very common in our gardens, and I have never flowered individually would not compare favourably with such lovely forms as *D. Devonianum* or *D. Wardianum*, or many others among the new or old, nor could *Pierardii* compare with plants of other orders, but it is every way worthy of our notice, taking size and number of blooms into account, but there is a distinctness of colour, a lightness of texture, an unobtrusive beauty in *Pierardii* which has been simply fascinating to me and to others, and so well adapted for either stove or intermediate-house. Many years ago I grew a very large plant of this variety, which made growths quite 4 feet in length, and which produced a wonderful profusion of bloom. I had many plants of it, some in pots, some in the open air, and I have never seen any other variety which grew more than was required to grow any little stove plant, but the large plant alluded to, and which surpassed all the others, was grown upon a very large scale, and produced half a dozen feet (I suppose) in length, and three in living state. I fastened six nice pieces with roots to four leads, covering the roots in the usual way; whether the Fern afforded nourishment to the Orchid roots, I do not know, but I never saw anything grow as it did, or flower like it. I have many some charming effects by placing a large pan of *Gesnera cinnabarina*, or *G. refulgens*, or *G. ignea*, full of their bright glowing colours, for a centre, and hanging some logs of *Pierardii* in bloom round them, which indication the friends of *Maidenhead* would recommend my brother gardeners to try. I once had a variety of *Pierardii* from Chatsworth—we called it *latifolia*; this I have grown 7 feet in length; and another miniature one called *cauculatum*, neither of which I have seen for some time; and there is yet one more lovely little Orchid, *Dendrobium pulchellum*, which when well done is a perfect beauty. *William Payne, Covent Garden House, Tarrant.*

The Potato Fungus.—Mr. Smith's proposal to microscopically examine guano to look for germs of the Potato fungus will create much diversion, and excite not a little scepticism. It will probably be said that guano has been analysed and examined so many times by analytical chemists, that it is hardly more feasible than the notion still so strongly entertained by some of our legislators that the Colorado Potato-disease might be imported either in a cargo of Potatoes: indeed the one is as probable as the other is unlikely. It may be that when the first importers of guano to replace the article was manually of a much purer character than it now is, and did not undergo so much mixing or manipulation. Of course that would greatly favour the introduction of the pest, and assure that

the guano was the agent of introduction, its use had already become sufficiently common in 1844 for the rainfall of that summer to bring about the great calamity which startled the entire community. Now supposing that Mr. Smith should succeed in finding in any samples of imported guano sent him evidences of the fungus spores it will afford most conclusive proof that the disease might have been introduced in that way. That further, it might also be so long as the importation of Peruvian guano continues in its present form the disease can never be stamped out. It is doubtless in some such mysterious fashion as this that we have introduced the Hollyhock and other apparently exotic fungi. It will then remain for Mr. Smith to discover first whether the fungus-spores can be destroyed by heat, and at how low a temperature, and also to test whether, if such is the case, the guano can be exposed to the same degree of heat without losing any of its natural properties. In this way only does it seem to me that imported guano can be rendered innocuous as far as this particular disease is concerned. Assuming that these spores are found—further, that it is deemed necessary to take some drastic measures to prevent the introduction of guano in its raw state, and that it can be shown that a subjection to a high temperature at once destroys the fungus germs and does not detract from the quality of the guano, it will be important to import the guano subjected to a great heat as saving cost in transit and for storage. It would be best perhaps in the long-run if Mr. Smith's surmises should be found baseless, as if shown otherwise an unfortunate pest would be introduced into our gardens. It is a good or bad, it is best to know the truth, and in his efforts to find it in relation to this destructive disease Mr. Smith merits our heartiest thanks. *A. D.*

RELATIONS BETWEEN PLANTS AND INSECTS.

(Concluded from page 408.)

STARIS.

The genus *Staris* (a small beetle allied to *Cantharis*, the blister-fly, and to the oil-beetle) is parasitic to a kind of bee (*Anthophora*) which excavates subterranean galleries, each leading to a cell. The eggs of the *Staris*, which are deposited at the entrance of the galleries, are hatched at the end of September or beginning of October, and M. Fabre not unreasonably expected that the young larvae, which are active little creatures with six serviceable legs, would at once enter their way into the cells, and fasten upon their victim: till the month of April following they remain without leaving their birthplace, and consequently without food; nor do they in this long time change either in form or size. M. Fabre ascertained this, not only by examining the burrow of the *Anthophora* but also by direct observations of some young larvae kept in captivity. In April, however, his captives at last awoke from their long lethargy, and hurried anxiously about their prisons. Naturally inferring that they were in search of food, M. Fabre supposed that this would consist either of the larvae or pupae of the *Anthophora*, or of the honey with which it stores its cell. All three were tried without success. The first two were neglected, and the larvae, when placed on the latter, either hurried away or perished in the attempt, being evidently unable to deal with the sticky substance. M. Fabre was in despair: "Jamais experience," he says, "m'a éprouvé pareille déconforte. Larves, nymphes, cellules, moi, je vous ai tout offert; que voulez-vous, bon? Je n'ai pas manqué à moi-même, car la lumière est venue de mon paysan, Newport, qui ascertained that a small parasite found by Léon Dufour on one of the wild bees was in fact, the larva of the oil-beetle. The larvae of *Staris* much resembled Dufour's larvae; acting on this hint M. Fabre examined many specimens of *Anthophora*, and found on them at last the larvae of his *Staris*. The males of *Anthophora* emerge from the pupae sooner than the females, and M. Fabre ascertained that, as they come out of their galleries, the little *Staris* larvae fasten upon them. Not, however, for long; instinct teaches them that they are not yet in the straight paths of development; and, watching their opportunity, they pass from the male to the female bee. Guided by these indications M. Fabre examined several cells of the *Anthophora*; in some, the egg of the *Anthophora* floated by itself on the surface of the honey, in others on the egg so on a mit sat the still more minute larvae of the *Staris*. The mystery was solved. At the moment when the egg is laid the *Staris* larva springs upon it. Even while the poor mother is carefully fastening up her

cell her mortal enemy is beginning to devour her offspring; for the egg of the Anthophora serves not only as a raft, but as a repast. The honey which is enough for either, would be too little for both; and the Sitaris, therefore, at its first meal, relieves itself from its only rival. After eight days the egg is consumed, and on the empty shell the Sitaris undergoes its first transformation, and makes its appearance in a very different form.

The honey, which was fatal before, is now necessary; the activity, which before was necessary, is now useless; consequently, with the change of skin, the active, slim larvæ changes into a white fleshy grub, so organised as to float on the surface of the honey, with the mouth beneath and the spiracles above the surface: "à gâche à l'enfoncement du ventre," says M. Fabre, "la larve est à l'abri de l'oxygène"; in this state it remains until the honey is consumed; and then the animal contracts, and detaches itself from its skin within which the further transformations take place. In the next stage, which M. Fabre calls the pseudo-chrysalis, the larva has a solid corneous envelope and an oval shape, and in its colour, consistency, and immobility reminds one of a dipterous pupa. The time passed in this condition varies much. When it has elapsed the animal moults again, again changes its form; after this it becomes a pupa, without any remarkable peculiarities. Finally, after these wonderful changes and adventures, in the month of August the perfect Sitaris makes its appearance.

In fact, whenever in any group we find differences in form or colour, we shall always find them associated with differences in habit.

To return, however, to my principal subject, the sphinx caterpillars. For such an inquiry as this, the larvæ of Lepidoptera are particularly suitable, because they live an exposed life; the different species even of the same genus often feed on different plants, and are therefore exposed to different conditions; and last, not least, because we know more about the larvæ of the Lepidoptera than of any other insects. The larvæ of ants all live in the wet; they are fed by the perfect ants, and being therefore all subject to very similar conditions are all very much alike. It would puzzle one to find good naturalists to determine the species of an ant larva, while, as we all know, the caterpillars of butterflies and moths are as easy to distinguish as the butterflies and moths; they differ from one another as much as, sometimes more than, the perfect insect.

There are five principal types of colouring among caterpillars. Those which live inside wood, or leaves, or underground, are generally of a uniform pale hue; the small leaf-eating caterpillars are green, like the leaves on which they feed. The other three types may, *si parva licet conferre magna*, be compared with the three types of colouring among cats. There are three ground cats, such as the lion or puma, which are brownish or sand colour, like the open places they frequent. So also caterpillars which conceal themselves by day at the roots of their food-plant tend, as we have seen, even if originally green, to assume the colour of earth. The spotted or eyed cats, such as the leopard, live among trees; and their peculiar colouring renders them less conspicuous by mimicking spots of light which penetrate through foliage. Lastly, there are the jungle cats, of which the tiger is the typical species, and which have stripes, rendering them very difficult to see among the tall grass which they frequent. It may, perhaps, be said that this comparison fails, because the stripes of tigers are perpendicular, while those of caterpillars are either longitudinal or oblique. This, however, so far from constituting a real difference, confirms the explanation, because in each case the direction of the lines follows those of the foliage. The tiger, that walks horizontally on the ground, has transverse bars; the caterpillar which clings to the grass in a vertical position, has longitudinal lines, while those which live on large veined leaves have oblique lines like the oblique ribs of the leaves.

Thus then, I think, we see reasons for many at any rate of the variations of colour and markings in caterpillars, which at first sight seem so fantastic and inexplicable. I should, however, produce an impression very different from that which I wish to convey, were I to lead you to suppose that all these varieties have been explained or are understood. Far from it, they still offer a large field for study; nevertheless I venture to think the evidence brought before you to-day, however imperfectly, is at least sufficient to justify the conclusion that there is not a hair, or a

line, not a spot or a colour, for which there is not a reason, which has not a purpose and a function in the economy of Nature. *Sir J. Lubbock, in the Society of Arts Journal.*

AGRICULTURE AND GARDENING IN COSTA RICA.

Dr. POLAKOWSKY contributes the first of some articles on these subjects to the *Monatsschrift des Vereins zur Beförderung des Gartenbauers* for February, from which we extract the following notes. The mineral wealth for which the country was formerly celebrated lies undeveloped, but the country fully deserved the name of "rice-land," from the fertility of its soil and the great productiveness of cultivated plants. In the value of the Coffee exports it surpasses the "Queen of the Antilles," the beautiful Cuba, where it amounts to 21 dollars annually per head of the population. In 1875 the amount for Costa Rica, with a population of 180,000, was 4,295,333 dollars, or 23 6 dollars per head. No other part of Spanish America can show such statistics, which furnish good evidence of the fertility of the soil and the industry of the people. The number of cultivated plants in the country is limited, only a few of the most profitable being grown on a large scale. Even Beans and Maize raised are not sufficient to supply the demand. Gardening proper cannot be said to exist, and the gorgeous Orchids and other floral treasures of the country scarcely receive a glance. Very rarely some of the Indian women bring wreaths of them to the market of Cartago. But if one exhibits any interest in such things, and employs a person to collect some, and bring them to the house, one must pay enormous prices, although they cost the collector absolutely nothing. On the other hand, the most varied and exquisitely flavoured wild fruits may be had for ridiculously small sums. The hedges enclosing the haciendas were found to be the richest in plant life, and furnished the collector with a large proportion of his treasures.

There is usually a ditch running parallel to it, and the weeds are allowed to grow undisturbed. The common hedge plant near San José is a species of *Erythrina*. Stout branches are stuck in the ground, and they quickly root, and form a dense fence. Another occasionally used are the stems of the genera *Agave*, *Carex*, *Datura*, *Yucca*, *Lantana*, *Amorpha*, *Euphorbia*, of the *Croton* group, and very commonly a Rubiaceous shrub with small leaves, inconspicuous flowers, and large thorns. A few things are carefully cultivated in the gardens, such as various species of Capsicum, Tomatos, and, more rarely, the Egg plant. The former, under the name of Chile, is used as a condiment in nearly all dishes. Our common Watercress is very highly esteemed, and frequently cultivated. There are two German gardeners in the country, one of whom, Mr. J. Carmigol, has been in the country twenty-three years, and is well acquainted with the vegetable productions of this little-known country. He has a beautiful large garden near the capital, well stocked with various indigenous and exotic fruits and vegetables, as well as some ornamental plants. Varieties of the Cabbage tribe degenerate in a few years, and it is necessary to procure fresh seed from Europe.

The method of cultivating the Coffee tree here differs from that practised in any other country, and the result produced is a rational method. The ground consists of the great central mountain plains, the only regularly cultivated and inhabited part of the Republic; and the soil consists of the decomposed volcanic rock forming a clayey loam mixed with a large portion of decayed vegetable matter. The climate is the most regular and agreeable in the world; and the greatest difference between the temperature of the hottest and coldest day at San José, based upon ten years' observations, is less than 20° Fahr. The mean temperature for 1875 was 70° Fahr. From the beginning of May until the end of October it rains almost daily, and from the middle of December to the middle of April only occasionally.

It is the practice to raise the Coffee trees from seed, because the tap-root of the seedling penetrates the soil to a considerable depth, and enables the tree to withstand the dry season without injury. They are planted in rows, interspersed with Bananas for shade during the first two years' growth. Between the rows are shallow ditches, and the greatest care is

exercised in keeping the weeds under, and the removal of epiphytical and parasitical plants. Labour is very dear, and, therefore, the cost of production is rather high. Nevertheless, the clear profit, after all expenses have been paid, including tending the plants during the first three years, fluctuates between 25 and 25 per cent. This is in the most favourable localities, on the plateaus at an elevation of between 3000 and 4000 feet. The quality of the Coffee leaves nothing to be desired, and it is greatly in request in England and America for its fine aromatic flavour.

NORTH AMERICAN OAKS.

SOME months ago I contributed to the *Gardener's Chronicle* some notes on hardy shrubs and trees at Kew, under the title of "Half-hours at Kew." By some mischance those relating to North American Oaks were lost, and not having time then to replace them the article on Oaks appeared short of this part. Quite recently the lost notes turned up. Perhaps they may still be worth publishing. Doubtless much more might be said about the west coast ornamental trees, but I prefer leaving the notes as they were originally written. In the spring I shall probably visit all the plantations again, for some additional notes on the same subject.

The next group bears the name of Willow Oaks in American books, and comprises three or four species and several hybrids or varieties. *Q. Phellos* has lanceolate smooth leaves, tapering towards both ends, and very much like those of a Willow, but in habit of growth this species more resembles our native Oaks, having very crooked branches and short shoots, with the leaves clustered near the ends. Introduced in 1723. A large tree of this species may be seen about midway on the left-hand side of the walk leading from the south end of the Succulent-house to the lake and No. 1 museum. *Q. aquatica* is an allied species, with ovate lanceolate leaves. There are several small trees of this species in various parts of the grounds, one near the Temple of the Sun. *Q. laurifolia*, regarded as a variety of *A. aquatica*, has ovate leaves, 4 to 6 inches or more in length, rather thin in texture. It is a handsome and very distinct form. *Q. nigra* and *Q. imbricaria* belong to this group of species, which are not remarkable for ornamental character. *Q. heterophylla*, of which there are several large bushes in the plantation, is supposed to be a hybrid, with ovate lanceolate leaves. It has almost coriaceous shining leaves of very irregular shape, being linear lanceolate or variously lobed; sometimes there is a single odd lobe on one side, sometimes one on each side, sometimes two on one side, and only one on the other, and so on. *Q. falcata* belongs to a small group in which the mature leaves are clothed with a short dense grey pubescence on the under surface. The leaves of *Q. falcata* taper towards the base, and are deeply three or five-lobed in the upper half, the lobes bristle-toothed, and more or less curved. This grows in dry or sandy soil, as also *Q. Phellos*; *Q. palustris* and *Q. aquatica* in wet places, bordering streams and ponds; *Q. coccinea* inhabits rich woods; and *Q. rubra* is found in rocky woods. Another group is called the Chestnut Oaks, but although there is a general resemblance in their leaves to those of the Sweet Chestnut, it is not so marked as in the case mentioned above, and in some others not in cultivation. *Q. Prinus* and *Q. Prinus discolor* (bicolor) belong here. There are several trees in the low plantations. Among the latter the names and the same form I believe, is also called *Q. alba*. Whatever may be its proper application, it is readily distinguished from all others. In the first place the trunk and tufts of short, dead twigs on the main branches bear a wonderful resemblance to old Hazel trees; but the leaves are very different, and larger than those of any other Oak in the plantations, being a foot long by 9 inches broad in some specimens. They are somewhat ovate in outline, and clothed with soft, white down on the under side. Passing by a group which forms deserving of comment I must conclude with a mention of the hardiest of the North American evergreen species, *Q. virns*. This is the Live Oak of the Americans inhabiting the coast of Virginia and the States southward. It has oblong, coriaceous leaves, hoary beneath, and is one of the most valuable timber trees in the South, dwindling down to a shrub in its northern habitats. Though not so ornamental as many evergreens we have, it might be planted for variety on the south and west coasts. There is yet

lanes but attractive group of plants, which included, besides various Orchids and Palms, some nice flowered plants of the useful *Erica ovata*, and the newly discovered white *Azalea imbricata*.
 First-class Certificates were awarded to Messrs. Veitch & Sons for *Anthurium Scherzerianum* Wardii, the magnificent variety which was formerly in the possession of the late F. G. Wilkins, Esq., and which now bears a new name, as its name has been changed by the late Mr. Nephrolepis DuRoi. To Messrs. Ross & Son for the beautiful *Pultenea rosea*, more fully noticed in another column. To Mr. R. Clarke, Twickenham, for *Cyclamen rotundum* var. *Brilliant*, an intense deep red crimson flower of great beauty. To Sir Trevor Lawrence, Bart., M.P. (Mr. Spyers, gr.), for *Dendrobium sculatum*, a very fine white-flowered species, with broad petals and sepals, and a distinct orange blotch on the lip. To Mr. R. Dean, Ramsgate, Kent, for *Primrose* named *Brilliant*, a large finely-formed flower of a rich deep maroon-crimson colour; and to Mr. C. Noble, Bagshot, for *Clematis Aurora*, a seedling semi-double-flowered variety of quite a new colour—pink shaded with purple. Second-class Certificate was awarded to Sir Trevor Lawrence for a fine variety of the sweet-scented *Dendrobium barbatulum*, named *grandiflorum*; and Botanical Certificates were voted to Messrs. Veitch & Sons for *Sarcocolla* var. *Golden Betty*, but diminutive Orchid from Australia, believed to be flowering now for the first time in England; and for *Panax laciniatum*, a beautifully cut-leaved plant.

Lady Dorothy Neville sent up from Kingston a fine flowering plant of *Strobilium*, and received a Cultural Commendation. Mr. C. Green, the Botanical Nursery, Reigate, showed *Prenanthes dissecta elegans*, an elegant, narrow, cut-leaved form, raised from a cross between *P. pinnata* and *Scandus arvensis*. From the Society's Garden Catalogue came a flowering plant of *Wigandia caracasana*, whose flowers are of a pretty purple colour. Sir C. W. Strickland, Bart., Hidenley, Malton, exhibited *Cattleya intermedia*, to show how it will grow on a piece of Oak wood. G. F. Wilson, Esq., rec'd. a vote of thanks for *Cucumis himalayensis*, which has very large deep-yellow flowers. A vote of thanks was also accorded to W. H. Michael, Esq., Cholmeley Park, Hightgate, for fine varieties of the *Angelicum* of Andrews and Anderson's series, a fine well-grown specimen of *Imantophyllum minimum* came from G. W. Chaplin, Esq., Roundfield House, Broxbourne; and Mr. Bennett, the Manor Farm Nursery, Stapleford, sent several large specimens of the new pink H.P. Rose *Duchesse de Vallombrosa*, and of an English H.P. variety named *Mabel Morrison*, a very distinct white flower, which the committee requested to see again. Hardy spring flowers were much noticed, and the following were named:—*Primrose*, F. & A. Smith, Dulwich, sent a fine variety of *Imantophyllum* called *Dulwich Beauty*.

FRUIT COMMITTEE.—H. Webb, Esq., in the chair. Mr. J. Jones, the Gardens, Bentley Priory, Stanmore, showed forced samples of the common *Seakale*, and of a variety which proved to be the same as one named *Lilywhite*, shown some time ago by Messrs. Stuart & Mein, of Kelso. The latter is of a pale yellow colour, and shows no trace of the purple tints peculiar to the common form; it was awarded a First-class Certificate. A Cultural Commendation was awarded to Mr. Rapley, gr. to R. Hudson, Esq., Clapham Common, for a fine brace of *Onosmodium* plants, one of which was a new variety, which measured about 30 inches in length. A box of Mushrooms was contributed by Mr. J. Hudson, gr. to J. Atkinson, Esq., Gunnersbury House, Acton.

Glasgow and West of Scotland Horticultural: *March 28*.—The first exhibition of the season took place in the City Hall, but the wet weather marred the prospects of the show, which was in most respects an excellent one, an abundance of material being at hand in the shape of plants, and a large number of selected foliated-plants, from the rich collections at Rawcliffe Lodge, and the Great Western Nurseries, and afforded an agreeable relief to what would otherwise have been an excessive display of colour. The Hyacinths were shown with numbers and good effect, and the collection of Bellied Nursery, Paisley, took first honours in the nurserymen's classes. Apart from the large collection of miscellaneous bulbous plants which contained some grand Hyacinths, those shown by him in the class of eighteen Hyacinths (distinct varieties) were an exceedingly good and well-balanced lot, well diversified as regards colour, and well-grown; Mr. John Sutherland, Victoria Nursery, Lenzie, being 2d with a collection scarcely less commendable as regards cultivation, but lacking brilliancy of colour, and which lent such a charm to the first lot. The 1st prize in the class for twelve Hyacinths was gained by Mr. George Irvine, of Port Glasgow; the 2d by Mr. Neil Glass, of Carbrook, Larbert; both collections being very good. The same remark also applies to the other

entries in this class, as also to the smaller collections of Hyacinths. Mr. Mathew Miller, of Bothwell, took the leading position in the class for six single and six double Hyacinths. Mr. Irvine, who carried off the prize for five Hyacinths, also secured the silver medal for the best single Hyacinth, with a fine specimen of Von Schiller. The classes for Tulips, Narcissus, Crocuses, &c., though well filled, were, as regards quality, decidedly below the level of the previous years. Those for Chinese Primulas, Cinerarias, Spiraes, *Deutzia gracilis*, *Cyclamen*, &c., were good; the Primulas from Mr. M'Lachlan, of Greenock, were remarkably well grown, as were also the Spiraes from Mr. A. B. Hutchinson, of Glasgow, and the Cinerarias from Mr. Dougall M'Dougall, gr., Craighead, Blyntyre. The Rhododendron collections contained a remarkably well-grown plant of the beautiful *R. Edutum*, from the gardens of Mr. Thomas Hill, Cathcart. The prize for six hardy spring flowering plants was easily won by Mr. Robert Todd, gr. to A. B. Stewart, Esq., Rawcliffe Lodge, with large masses of *Sibilla scirica*, Dog's-tooth Violet, double-flowering Cherry, Lilacs, Forsythia, and Charles X., &c. The other collections, and though much smaller, contained some good clumps of *Sibilla biliosa*, *Syrinchium grandiflorum*, *Triteilia uniflora*, various *Hepaticas*, &c.

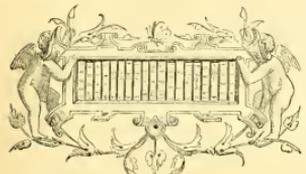
The plants for the most decorated attracted considerable notice. In the class open to gentlemen's gardeners and amateurs the 1st prize was gained by Mr. Todd, with *Calamus ciliaris*, *Aralia Veitchii*, *Croton undulatum*, *Dracaena Cooperi*, *Kentia Balmoreana*, and *Thrinax elegans*. Mr. George Irvine's collection of 2d, was also a pretty group, but his best plants being *Cocos Weddelliana*, *Aralias Veitchii* and *elegantissima*, and *Geonoma gracilis*. The other entries in this class were also very good. The nurserymen's class for selected plants attracted a very large number of entries, the 1st prize being awarded to Mr. Peter McKenzie, the 2d to Mr. John Sutherland. The *Abutilon Sellowianum* variegatum from Mr. McKenzie was exceedingly good. The collections of specimen stores and cuttings plants were also very fine, including some good Orchids which are here admissible amongst the collections of specimen plants, having no special class provided for them in the schedule, which is a very desirable arrangement. The 1st prize in this class was won by Mr. Stewart, Esq., these were not wanting, for we counted about one and a-half dozen distinct species amongst his collections on the various tables, his gardener (Mr. Todd) being 1st for the six specimen plants, and the 2d for the plant of *Rhododendron* both large and well-bloomed, the former being one of the finest specimens in the country; *Geoytis fuchsoides* was also very fine, as also two *Azaleas*, one red and one white. Mr. Beveridge, gr. to James Findlay, Esq., Glasgow, was 2d with a plant of *Rhododendron*. Countess of Haddington being a gigantic specimen, well grown and bloomed; *Epacris Eclipse* was also very fine, also his *Croton interruptum* and *Gleichenia Spenceana*. The same exhibitor carried off the chief prizes for single specimen plants, and also in the class for the three large specimens. Mr. D. McDougall, who came 2d for three, had a grand plant of *Rhododendron Princess Alice*. The *Azaleas* confined to 8-inch pots were also very good, the 1st prize being won by Mr. James Keppard, gr. of Beechwood, New Kilpatrick. One of the finest pot specimens of *Mignonette* that we have seen for a long time came from Mr. James Hutchinson. A finely coloured form of *Imantophyllum minimum* called *maximum* was the property of Mr. J. H. Bennet, of Kilmuir, which was highly commented by the judges, as was also a large box of cut *Rhododendrons* from Mr. James Graham, gr., Garscube, Maryhill; also some Cinerarias from Mr. Neil Glass, and a collection of plants from Messrs. Smith & Simons.

The fruit and vegetable collections were few but good in quality. The amateurs' collections were confined to the lesser hall, and, as a rule, were very creditable, but few in number. One gentleman, Mr. Peter Fox, being worthy of special mention, having gained a number of prizes. Mr. Mathew Miller, gr. to James Mann, Esq., of Bothwell, materially assisted the display here with a fine collection of Hyacinths, not for exhibition. Mr. A. B. Hutchinson, of Glasgow, & T. G. and Messrs. Austin & McAslan sent large and fine collections for exhibition, and were greatly admired, but space precludes us from entering more into detail at this time. A fine truss of the rare scarlet-flowered and white-grained variety of *Strawberry* with some cut blooms of Orchids from the Botanic Garden. A complete list of awards is published in the Glasgow daily papers of March 29. Robert Bullen.

Royal Caledonian Horticultural: *March 28*.—This exhibition, the following notice of which we condense from the *Sectarian*, was held as usual in the Music Hall, and was visited by a large number of spectators. A considerable amount of state was manifested in the arrangement of the brilliant and beautiful exhibits, the foliage plants intermingled

with the flowers affording an agreeable relief to what might otherwise have been an excessive blaze of colour; while they at the same time threw into admirable relief the beauty of a few specimens of a handsome. Apart from the bank of tropical foliage presented by the contributions of the Lawson Nursery Company, which filled the background of the orchestra, the eye rested with pleasure, on first entering the hall, upon the marvellous effect of the set of *Adiantum* plants, whose stately crowns, gemmed with the rich and rare blossoms, rose with perfect grace in front of the platform. The brilliant shades of the Indian *Azaleas* were no less attractive, their formal lines being well contrasted by the soft and graceful Palms and Dracaenas. Naturally one of the chief features of a spring show is the bulbous flowers; and it was admitted on all hands that a finer display of Hyacinths, Tulips, Narcissus, and *Cyclamen* has not been seen in Edinburgh. The Hyacinths were especially noteworthy for their general and uniform excellence. There was keen competition for the silver cup offered for the best eighteen Hyacinths, and the coveted prize fell to Mr. A. Kerr, Chapel, Leander. His spikes were superb in size and form. Mr. G. Maclure's 2d prize lot were very fine, but the size of the spikes was unequal—a remark which also applies to Mr. H. Sime's third dozen lot, which were of good quality, but not so good as those past their best. Mr. W. Young, an enthusiastic Hyacinth admirer, secured the premium for the best nine with spikes perfect both in size and form, and Mr. J. Martin's prize half-dozen were neat, but wanted a little more of the edge, Mr. G. Maclure being 1st for the lower half colour, and so on to Mr. J. Bald, whose plants were no better grown, but the colours of the cups were more delicate. Mr. J. Bald also exhibited his cultural skill with bulbs in the fine, well-grown Narcissus and *Cyclamen*. In the variegated plants, Messrs. Downie & Laird carried the palm for Hyacinths with eighteen splendid spikes—the most notable being *Lida*, Prince Albert, and Grand Lila. The same firm also secured the prize for a fine collection of *Cyclamen*; and among the bouquets the beauty of whose component flowers was only equalled by the taste with which they were made up; and for *Camellia* blooms of velvety texture and brilliancy. The 1st prize for table bouquets fell to Mr. J. Martin, who was also 1st for the 12-inch bouquets and the superb quality of the flowers of which it was made, it was rather formal in character. There was an artistic grace and freedom about Mr. G. Maclure's unmentioned bouquet that was absent from the others. Mr. G. Maclure's 2d prize lot were large and fine. Mr. McGregor was 1st for the pair, with a delicate *Phalaenopsis* and *Dendrobium crassinode*; and Mr. J. Paterson, Millbank, coming 2d with a fine *Dendrobium* noble and *Cattleya Trianae*, whose exquisite white and yellow colours were softened by the delicate fringe round the perianth. Mr. H. Rintoul's dozen cut blooms of *Marchal Neil*—the prince of yellow Roses—were deservedly admired, and no less so were the four pots of *Platydium* and *Phalaenopsis* which were also carried off by Mr. Paterson. Turning to the *Azaleas*, it is difficult to speak without exaggeration of their quality and beauty. Unquestionably there seems a friendly rivalry from year to year between Mr. J. Paterson and Mr. A. East in the cultivation of this showy class of plants, and the public receive the benefit in the increasing loveliness of the display furnished every spring. On this occasion Mr. Paterson seems to have devoted his recognised skill to the front rank, and his plants, and in particular his account in being first in every class. Mr. Paul, on the other hand, in the "four" class, has two plants not excelled in the show—a superb pyramid of the exquisite white *Marchal Neil*, and a fine specimen of *Marchal Stella*. In greenhouse plants Mr. Paterson was 1st in the "six" class—the plants comprising several beautiful Indian *Azaleas*, a fine *Acacia*, &c. Mr. H. Robinson was unexcelled for his splendid *Dracaena*; and among his table plants, which were awarded the 1st prize, were *Aralia elegans*, *Croton undulatus*, and *C. Disraeli*. For three greenhouse plants, Mr. D. Cameron was 1st. *Deutzia gracilis* was represented by many well-grown specimens, and the 1st prize was carried off by *Cyclamen*, Spiraes, and Lily of the Valley. The Ferns were quite up to the mark, including magnificent specimens of *Adiantums*. A competition of much interest, from the friendly rivalry involved in the matter, was the class of *Adiantum* plants by nurserymen. For many years past Messrs. I. Methven & Sons have deservedly carried off this prize, but on this occasion they were forced to give place in the front rank to Messrs. Downie & Laird, whose plants were rather more numerous than their team, and R. Camille de Kohan, than which finer have scarcely ever been seen in a show hall. Messrs. Methven's lot comprised a good Queen, the finest of hybridised whites; Lord Clyde, a rich dark crimson; and the *Adiantum* of the *Adiantum* class. It is but fair to notice that the latter are all hardy, while the Himalayan varieties in the 1st prize lot are greenhouse

plants. There was but little fruit. Of Grapes there were three exhibits—the Gros Colman bearing of Mr. M. Brodie, Glenmayne, placed 1st, were admirably kept; while the others had shrunk a good deal. Mr. J. Anderson's fresh Strawberries from Oxenford Castle were most tempting; and the Apples were good, and of fine quality.



Voices of Books.

Forests and Moisture: or Effects of Forests on Humidity of Climate. By J. C. Brown, LL.D. Oliver & Boyd, Edinburgh, 1877.

This volume is one of a series compiled by Dr. Brown primarily with a view to the requirements of South Africa, but applicable *mutatis mutandis* to other countries. The author starts by alluding to the quantity of moisture evaporated from the surfaces of leaves, in connection with which subject we are surprised to find no reference to the exact and accurate experiments of Laves and Gilbert, and others. From that subject the passage to the effect of forests on the humidity of the atmosphere and of the soil is natural, and this part of the subject is treated at considerable length, and will be found servicable for reference, the more so as a full analytical table of contents is prefixed to the work. For the most part the facts cited are familiar to those interested in this department of inquiry, but the author's personal experience has supplied him with other information which he has turned to good account. Alluding to a tree, presumably *Milletia Cafer*, in the trunk of which is found a reservoir of water, the author tells us that Mr. Chapman, the well known South African traveller, from whom he derived his information, "first saw the tree when he and his companions were suffering from thirst. Observing one of his native servants placing forked boughs against the tree and preparing to climb, he asked what he was going to do. 'Look for water,' was the reply. The man having mounted, cried: 'Here it is!' The hard wood had decayed, leaving a very deep hole, which was almost closed at the top, apparently by the spreading arch of subsequently formed bark. One of the companions of the man cutting then a twig or shoot from the root, cut through the bark of this at two places, 2 feet or 30 inches apart, treated this as boys in Europe treat branches of Alder of which they wish to make whistles: beating and pressing it, and drawing out the wood like drawing a sword from its sheath, he handed up the bark to the man aloft, who, using this as a suction pipe, soon quenched his thirst, and made way for the others in succession to do the same."

The author culls from various sources a large body of evidence, amply supporting his conclusions "that there are cases in which an extensive destruction of forests has been followed by a marked desiccation of soil and aridity of climate, and some cases in which the replanting of trees has been followed by a more or less complete restoration of humidity, or the planting of trees where there was none has been followed by a degree of humidity greatly in excess of what had previously been observed. That there are cases in which the rainfall within forests or in their immediate vicinity has been perceptibly greater than in the open country beyond, but that there are also cases in which it is alleged that the desiccation of some lands once clothed with forests and fertile, now treeless and barren and dry, may be attributable in part, if not in whole, to other causes besides the destruction of the forests, and cases in which the extensive destruction of forests does not appear to have extensively affected the quantity of the rainfall over a wide expanse of country." It is only by collecting all the evidence *pro* and *con*, and balancing it fairly, that we can hope to arrive at the truth in this matter, and although the statements in the latter part of the paragraph just cited appear opposed to those in the first part, yet

it is clear that the balance of evidence is in favour of the proposition which Dr. Brown lays down, and that the exceptions depend on local conditions yet to be discovered. Actuated by similar views the Forest Conference of Vienna in 1873 adopted the following resolutions, which were sent to the various Governments:—

"1. We recognise the fact that in order effectually to check the continually increasing devastation of forests which is being carried on international agreements are needed, especially in relation to the preservation and proper cultivation (for the end in view) of those forests lying at the sources and along the courses of the great rivers, since it is known that through the reckless destruction of them there results a great decrease of the volume of water, causing detriment to trade and commerce, the filling up of the river's bed with sand, caving in of the banks, and inundations of agricultural lands along the river courses."

"2. We further recognise it to be the mutual duty of all civilised nations to preserve and to cultivate all such forests as are of vital importance to the well-being (agricultural and otherwise) of the whole land, such as those on sandy coasts, on the sides and crowns, as well as on the steep declivities of mountains, and on the sea-coasts and other exposed places, and that international principles should be laid down, to which the owners of such protecting or 'guardian forests' should submit in order to preserve the land from damage."

"3. We recognise further that it is the case that we have at our disposal a sufficient knowledge of the evils (disasters in Nature) which are caused by the devastation of the forests, and therefore that the efforts of legislators should be directed to causing exact data to be gathered relating thereto."

— Another of Messrs. Macmillan's very useful primers is that devoted to *Philology*, and drawn up by Mr. John Peile. From the nature of the subject this work is so of elementary a character as some of its predecessors, but it is clearly written and full of interest. Students of natural history will be surprised to find how closely similar are the methods followed by philologists in their researches into the history and the inter-relationships of various languages, and of the words composing them, to those with which the naturalist is familiar. In speaking of the changes which have taken and are taking place in our own language, the author shows that these are not capricious or accidental, but are capable of explanation, at least in some cases, and we may therefore "expect that there are reasons for the other changes which are still obscure or unexplained, and so we must propose provisional hypotheses to account for these latter changes—hypotheses which we must surrender if a fuller knowledge shows that they are untenable." Again, it is shown how the peculiarities of the construction of words and sentences in certain languages point "to one common speech, and can be explained in no other way but as the daughters of a single parent language, precisely as the inter-relationships of plants point to a common stock or stocks from which existing forms have been derived. Considerations of this nature lead up to the final inquiries whether speech proceeds from thought, or thought from speech, and as to the origin of language." The author, in treating these matters in two short pages, unites boldness with caution when he tells us—"We may speculate, only let us remember how weak is the basis for our results." That such a book should be within the reach of every schoolboy sufficiently advanced to appreciate it, or of any young gardener desirous of self-improvement, is assuredly one of the signs of the times. Fifty—say, twenty years ago, even professed scholars would have found it difficult, if not impossible, to procure any work conveying so much general information on the comparative study of languages as is now compressed into 160 pages, at the cost of one shilling.

— Under the title *Reminiscences of Animals, Birds, Fishes, and Meteorology*, Mr. Kingsford has jotted down a number of isolated notes with reference to the natural history of the neighbourhood of Canterbury, and which will be of the more service as a record from the changed conditions of the localities. The very idea of an otter in the Stour now-a-days would be treated with the utmost scepticism, yet in 1827 the author of this volume tells us he killed one. Three bitterns in the Vauxhall Nurseries would, indeed, be *rare* *aver* now-a-days, though a lampry 3 feet long and 4 lb. in weight is recorded as having been lately captured. We entirely sympathise with the

author's tenderness for animals, and his reprehension of the cruel and useless tortures inflicted from mere wantonness, or so-called sport. We could wish that our anti-vivisection friends would take to heart this saying—"There is more honour due to the men who perform it (vivisection) purely for science than to keep foxes for the purpose of hunting and tearing them to death." The book, we presume, is chiefly intended for private circulation. Should it be thought desirable to give it wider circulation, a table of contents and index should be added, and the text carefully edited. It is much to be wished that other observers in various localities would jot down their observations as Mr. Kingsford has done.

— The last issued part of the *Compendio di flora Italiana* contains the description of the *Eriaceae*, *Campanulaceae*, and other orders, while the plates, 67–69, represent various genera of *Borragiaceae* and *Gentianeae*. In all the diagrams of the *Borragiaceae* that are given the scales in the mouth of the corolla are figured as forming part of the same cycle with the stamens, which is clearly an error.

— Messrs. Cassell have published the first part of a serial publication entitled *Familiar Wild Flowers*, figured and described by Mr. F. E. Hulme. It bids fair to be a pretty publication. We must await further instalments before we can say much as to its utility.

The Weather.

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

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.		HYGROMETRIC DEVIATIONS FROM GIBBS'S TABLES 4th Edition.	WIND.	RAIN-FALL.
	Mean Reading for Day.	Minimum for Day.	Maximum for Day.	Minimum for Day.			
March 29	30.05	29.85	30.15	48.3	85	S. E.	1.0
30	30.05	29.85	30.15	48.3	85	S. W.	0.47
31	30.05	29.85	30.15	48.3	85	S. W.	0.00
April 1	30.05	29.85	30.15	48.3	85	S. W.	0.00
2	30.05	29.85	30.15	48.3	85	N. W.	0.24
3	30.05	29.85	30.15	48.3	85	S. E.	0.41
4	30.05	29.85	30.15	48.3	85	S. W.	0.41
Mean	30.05	29.85	30.15	48.3	85	S. W.	sum 1.12

March 29.—Overcast, dull, and wet till 11 A.M. Fine but cloudy afterwards. Very dark, with heavy showers at 7 P.M.
 — 30.—Fine, but dull and cloudy day. Cloudless at night.
 31.—A fine day, very cloudy at times. Cool breeze.
 April 1.—Overcast, dull, and wet throughout.
 2.—Fine, but dull and cloudy. Rain fell in early morning.
 3.—Fine, but very cloudy. Little rain fell in afternoon and evening.
 4.—Generally fine, but very cloudy. Thunderstorm in afternoon, accompanied with heavy rain and very large hailstones. Vivid lightning. Cloudless at night.

LONDON: *Barometer*.—During the week ending Saturday, March 31, in the vicinity of London, the reading of the barometer at the level of the sea decreased from 29.01 inches at the beginning of the week to 28.98 inches by the morning of the 25th, increased to 29.57 inches by the night of the 28th, decreased to 29.84 inches by the afternoon of the 29th, increased to 30.14 inches by the morning of the 31st, and was 30.07 inches at the end of the week. The mean reading for the week at sea level was 29.61 inches, being 0.11 inch above that of the preceding week, and 0.33 inch below the average.

Temperature.—The highest temperatures of the air varied from 61° on the 29th to 48° on the 26th; the mean for the week was 53°. The lowest temperatures of the air ranged from 38° on the 28th to 43° on the 30th; the mean value for the week was 40°. The mean daily range of temperature in the week was 15°, the greatest range in any day being 20° on the 29th, and the least 9° on the 26th.

The mean daily temperatures of the air were as follows:—25th, 47°; 26th, 43°; 27th, 45°; 28th, 45°; 29th, 48°; 30th, 46°; 31st, 45°; 4th, and the

departures in excess of their respective averages were 1.4°, 4.7°, 0.7°, 2.3°, 3.3°, 5.5°, 3.2°, and 1.4°. The mean temperature of the air for the week was 46° 1, being 3° above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 117° on the 25th, 114° on the 27th, 111° on the 29th; on the 26th, 67° was the highest reading. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 34° on the 28th and 36° on the 31st; on the 30th the lowest reading was 48°.

Wind.—The direction of the wind was S.W. and S., and gentle in motion. The weather during the week was generally fine and mild, with frequent showers of rain. A lunar halo was seen on the 25th inst.

Rain fell on five days during the week; the amount collected was 0.98 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 61° at Blackheath and 59° at Leicester; at Hull 52° was the highest temperature in the week. The mean value from all stations was 53°. The lowest temperatures of the air observed by night were 31° at Leicester, 32° at Hull; at Brighton and Norwich 30° was the lowest temperature. The general mean from all stations was 35½°. The range of temperature in the week was the least at Brighton, 16°, and the greatest at Bristol and Eccles, both 23½°. The mean range of temperature from all stations was 21°.

The mean of the seven high day temperatures was the highest at Blackheath and Leicester, both 55½, and the lowest at Bradford, 47; the mean value from all stations was 52½°. The mean of the seven low-night temperatures was the lowest at Eccles, 35°, and the highest at Brighton and Portsmouth, both 42; the mean from all stations was 38½°. The mean daily range of temperature was the greatest at Upton, 18°, and the least at Bradford, 8½; the mean daily range from all stations was 13½°.

The mean temperature of the air for the week from all stations was 44½, being 1½ higher than the value for the corresponding week in 1876. The highest was 46½ at Blackheath, Leicester, Brighton, and Portsmouth, and the lowest was 41½ at Bradford.

Rain fell on every day in the week at Manchester and Eccles, and on five days at most other stations. The amounts measured varied from 1 inch (nearly) at Bristol to a quarter of an inch at Leicester, Wolverhampton, and Liverpool; the average fall over the country was eight-tenths of an inch. The weather during the week was generally fine and mild, but showery. **Lunar halos** were seen on the 25th at Blackheath, and on the 27th at 28th at Cambridge. **Thunderstorms** occurred at Bristol and Birmingham on the 29th.

SCOTLAND: Temperature.—The highest temperatures of the air varied from 56° at Dundee to 50° at both Greenock and Perth; the mean value from all stations was 52½°. The lowest temperatures of the air ranged from 41° at Dundee to 35° at Greenock; the general mean from all stations was 33°. The mean range of temperature in the week from all stations was 19½°.

The mean temperature of the air for the week from all stations was 40°, being 1° lower than the value for the corresponding week in 1876. The highest occurred at Aberdeen and Leith, both 41°, and the lowest at Greenock and Perth, both 39°.

Rain fell to the amount of 1½ inch at Dundee and 1½ inch at Perth, at Aberdeen 3 quarters of an inch was measured. The average fall over the country was 1½ inch.

JAMES GLAISHER.



Law Notes.

WHAT CONSTITUTES DELIVERY OF GOODS?—*Reddyffe and Others v. Turner.*—At the Bloomsbury County Court recently the plaintiff in this action (a horticulturist of London) sued the defendant (a florist carrying on business in Sheffield) to recover the sum of £15 odd for artificial and other flowers supplied.

Mr. Charles Williams, solicitor for the plaintiff, said the goods in question were ordered from his client by the defendant for his customers at Sheffield, and were directed to be sent through Chaplin & Horne in December last, but when they arrived at Sheffield the defendant refused to receive them, and returned them to the railway company. The defendant had been repeatedly applied to for payment, and

as he denied his liability the matter was now brought before his Honour to decide.

The plaintiff corroborated the statement made by his solicitor.

It was urged on the part of the defendant that he was informed by the plaintiff when the goods were ordered that he had them in stock, and could be supplied at any time at a moment's notice. But notwithstanding this, they did not arrive at Sheffield within the stipulated time, and were too late for the purpose for which they were ordered. They were refused, and returned to the plaintiff, accompanied by a letter stating the reasons for their being sent back.

The plaintiff said the flowers had been sold, and sent as directed by the defendant, and therefore he refused to receive them back, or make any allowance, as they were much deteriorated in value.

At this stage of the case the learned Judge asked Mr. Williams how he could get over the Statute of Frauds in the present instance, as delivery to a common carrier is not a delivery to, or an acceptance by, a consignee? Having called Mr. Williams' attention to the *Eschewer Law Reports* in support of this view, Mr. Williams said that as the matter at present stood he must rule in favour of the defendant. But after hearing Mr. Williams the learned Judge consented to nonsuit the plaintiff under the old law, by which means he was entitled to sue again if he deemed it expedient to do so.

A COUNTY COURT ACTION BY A SOLICITOR AGAINST A SALESMAN FOR ONE SHILLING.—*Ashwell v. J. B. Thomas.*—This was an action brought in the Westminster County Court, in which the plaintiff, a solicitor, residing at St. Albans, sued the defendant, a Potato salesman of King's Cross and Covent Garden, to recover the sum of 1s. under the following circumstances.

The plaintiff stated that he ordered from the defendant in December last a sack of Potatoes, to be sent to his residence. He paid for the Potatos, but was charged 1s. on the sack, which was to be returned to him when he sent the sack back. He had returned the sack, and on demanding his shilling it was refused, on the ground that he had no ticket, and in consequence of which he brought the present action solely on principle. The return of the bag having been proved by a person in the plaintiff's employment, and the plaintiff's case closed, when J. Lewis said he was in the employment of the defendant as clerk, and would willingly have paid the plaintiff the shilling if he could prove that his sack returned was the defendant's, and would even now pay it if the plaintiff could produce his ticket.

In reply to the learned Judge, the witness said that the ticket was one which was always given to customers who had their sacks, and when they produced their tickets the deposit left on the bags would be returned to them.

The learned Judge wished to know whether this was the usual custom of the trade, and witness replied it was universally so, and that if the case was adjourned he could produce many salesmen from Covent Garden to prove it. Were the case otherwise it would offer a premium for stealing sacks, as any person by whom a sack was returned would be able to claim a shilling whether the sack belonged to him or not.

The learned Judge considered the custom a very reasonable one.

The plaintiff said the defendant's name was stamped on the sack upon which his Honour remarked that might be so, but it did not follow but that some other person might have returned the sack. Judgment must therefore be given in favour of the defendant.

Mr. Lewis applied for costs, which his Honour granted.

A DISPUTED TRANSACTION BETWEEN SALEMEN.—At the Westminster County Court the case of *Joel v. Cohen* was recently heard before Mr. Justice Bayley. Both plaintiff and defendant were salesmen in Covent Garden market, and the former sued the latter to recover the sum of £3 12s. for money alleged to have been lent to him.

The plaintiff stated that on July 26 last the defendant asked him for the loan in question in order to pay a bill, and he at once accommodated him, on the promise that he would be repaid on the following day, instead of which the defendant repudiated the debt.

Henry Edwards, a porter in the plaintiff's service, said he was present when the money was lent; and

John Defries, a salesman, gave corroborative evidence.

The plaintiff, in cross-examination, denied ever buying and selling goods in connection with the defendant, or that any implied partnership ever existed between them.

The defendant being called said, the plaintiff had not on July 26, or at any other time lent him a shilling, but they frequently bought goods together and sold them to retail dealers. On July 26 they bought a box of Melons, which was sold to a fruiterer for £3 12s., but as he had not yet been paid for them, and as the person to whom he had sold them had gone away and could not be found, he (the defendant) had sent it off as a bad debt, and never thought the plaintiff would sue him for it.

The learned Judge considered the plaintiff entitled to recover the sum sued for, together with the costs of his witnesses.

The defendant asked time for payment, which plaintiff would not consent to, as the defendant bought about £10 or £20 worth of goods in the market daily, and was well able to pay a small amount like this at once.

Judgment was accordingly entered for the plaintiff, with an order for immediate payment.

Obituary.

THE LATE MR. THOMAS DICKSON, OF CHESTER.

—Those who knew Mr. Thomas Dickson, and were brought into personal contact with him, will regret the comparatively early death of this estimable gentleman. He was a partner in the firm of Messrs. Francis & Arthur Dickson & Sons, and was the responsible head of the nursery department at Upton. The whole of his business life was passed at the Upton Nursery; it was there he gained his first knowledge of its practical duties. He was admitted a partner in the business in the lifetime of his father, the late Mr. Francis Dickson, and did much to develop the extensive nursery trade done by this well-known Chester firm. Until recently, when his illness assumed a more serious nature, he took a very active part in the management of the nursery, and was well known among horticulturists in Lancashire, Cheshire, and North Wales, where he made an annual business journey. He won local respect and esteem by his genial manner and gentlemanly bearing; he was a true friend to many gardeners whom he knew, and whom he was always ready to assist to the best of his ability. Many of these will bear of his death with lively regret. If, horticulturally speaking, his life was an uneventful one, it was nevertheless characterized by great activity; he had a high sense of the value of system and order, doing his work thoroughly and well. Among those who will most regret his decease will be the heads of departments at the Upton Nursery and a wide circle of private friends. He died in his forty-second year, and was buried in the cemetery at Chester.

—We regret to have record the death of **JOSEPH HUNT, ESQ.**, which took place at High Wycombe, on the 23rd ult. Mr. Hunt, who was 71 years of age, was well known amongst the older florists as a successful grower of Tulips and Pansies, and as having effected very great improvements in the quality of the Sweet William from the florist's point of view. Indeed some years since Mr. Hunt's strain of Sweet Williams enjoyed a particularly high reputation amongst growers, on account of the advance made towards the production of smooth-edged flowers.

Enquiries.

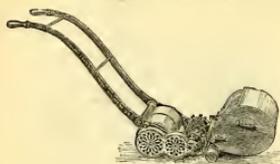
Has that questionable much shall learn much.—BACON.

180. CORCHORUS OLIORITUS.—Will anyone be kind enough to inform me what is *Corchorus olioritus*—an excellent *Corolla potageris* by French and Belgian gardeners—and how it is cultivated and sent to table? *E. S. D.*

Answers to Correspondents.

BAMBOOS FLOWERING: Y. The statement in one of the daily papers is based upon truth. Many of the Bamboos flower only after several years, and then die down. When, as this case happens, as a successful grower of Bamboos occurs in times of scarcity, the natives very naturally look on the bountiful supply of nutritious seed as specially providential. The subject has frequently been adverted to in our columns, especially

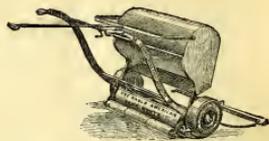
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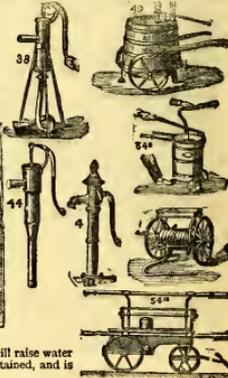
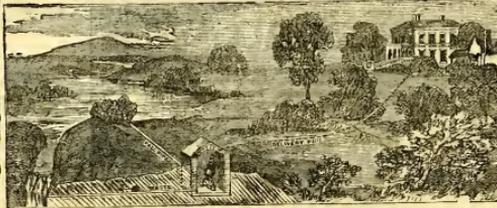
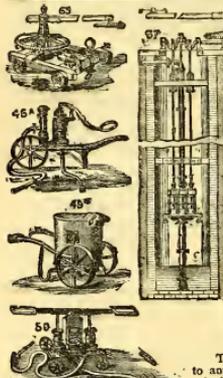
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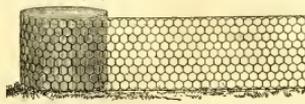
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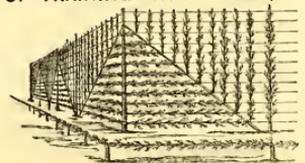
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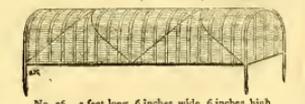
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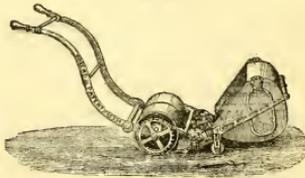
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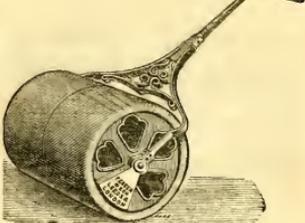
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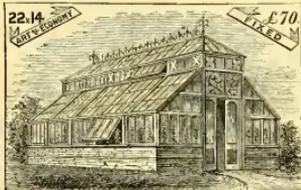
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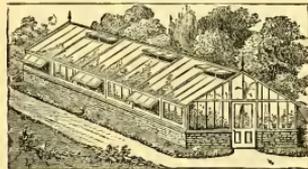
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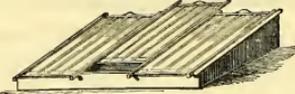
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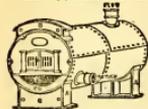
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oz., 6090 oz., 6096 oz., 6102 oz., 6108 oz., 6114 oz., 6120 oz., 6126 oz., 6132 oz., 6138 oz., 6144 oz., 6150 oz., 6156 oz., 6162 oz., 6168 oz., 6174 oz., 6180 oz., 6186 oz., 6192 oz., 6198 oz., 6204 oz., 6210 oz., 6216 oz., 6222 oz., 6228 oz., 6234 oz., 6240 oz., 6246 oz., 6252 oz., 6258 oz., 6264 oz., 6270 oz., 6276 oz., 6282 oz., 6288 oz., 6294 oz., 6300 oz., 6306 oz., 6312 oz., 6318 oz., 6324 oz., 6330 oz., 6336 oz., 6342 oz., 6348 oz., 6354 oz., 6360 oz., 6366 oz., 6372 oz., 6378 oz., 6384 oz., 6390 oz., 6396 oz., 6402 oz., 6408 oz., 6414 oz., 6420 oz., 6426 oz., 6432 oz., 6438 oz., 6444 oz., 6450 oz., 6456 oz., 6462 oz., 6468 oz., 6474 oz., 6480 oz., 6486 oz., 6492 oz., 6498 oz., 6504 oz., 6510 oz., 6516 oz., 6522 oz., 6528 oz., 6534 oz., 6540 oz., 6546 oz., 6552 oz., 6558 oz., 6564 oz., 6570 oz., 6576 oz., 6582 oz., 6588 oz., 6594 oz., 6600 oz., 6606 oz., 6612 oz., 6618 oz., 6624 oz., 6630 oz., 6636 oz., 6642 oz., 6648 oz., 6654 oz., 6660 oz., 6666 oz., 6672 oz., 6678 oz., 6684 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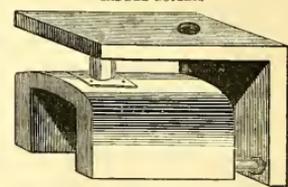
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30 in.	18 in.	18 in.	300	7 0 0	
20 "	18 "	24 "	400	8 0 0	
20 "	18 "	30 "	500	9 0 0	
24 "	24 "	24 "	700	12 0 0	
24 "	24 "	30 "	800	14 0 0	
24 "	24 "	36 "	1,000	16 0 0	
28 "	28 "	42 "	1,200	20 0 0	
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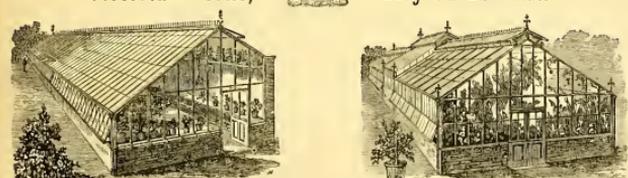
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A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 172. VOL. VII. { NEW SERIES }

SATURDAY, APRIL 14, 1877.

Registered at the General Post Office as a Newspaper. Price 5d. POST FREE, 5 1/2d.

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Splendid Novelty.
HARRISON'S NEW MUSK.—For full description and particulars, see p. 46 of *Gardener's Chronicle*, or apply to **HARRISON AND SONS, Leicester.**

NURSERMEN COMING TO HOLLAND during the International Horticultural Show at Amsterdam, in April, 1877, are kindly requested to visit My Nursery, A. M. C. JOEKINDI CONINCK, Tottenham Nurseries, Deddenhagen near Zwole, Netherlands.

Exhibition of Spring Flowers, &c
DOWNIE AND LAIRD, Royal Winter Gardens, Edinburgh, will hold during the month of April, in the above Gardens, an EXHIBITION OF RHODODENDRONS, HYACINTHS, and other Spring Flowers. Inspection invited. Admission free.

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ROYAL HORTICULTURAL SOCIETY,
South Kensington, S.W.
In consequence of the intended VISIT of HER MAJESTY THE QUEEN to the Gardens of the Royal Horticultural Society on Wednesday, May 2, the FLOWER SHOW, which was intended to have been held on the 1st, will take place on that day.

ROYAL HORTICULTURAL SOCIETY,
South Kensington, S.W.
NOTICE.—SCIENTIFIC, FRUIT, and FLORAL COMMITTEE MEETINGS.—The meetings of the COMMITTEE will be held on Wednesday, April 25, at 10 o'clock, GENERAL MEETING at 10 o'clock. For the location of FELLOWS, &c. Admission 2s. Band from 10 o'clock to 12.

N.B.—On this occasion the Fruit and Floral Committees will meet in the CONSERVATORY, where Exhibits will also be shown.

ROYAL HORTICULTURAL SOCIETY,
South Kensington, S.W.
EXHIBITION OF PLANTS, FLOWERS, BOUQUETS, FRUITS, FORCED VEGETABLES, and SALADS.—The Growers and Salesmen of Covent Garden Market, on WEDNESDAY, April 11, GOLD, SILVER, and BRONZE MEDALS, awarded in the following Classes, according to Merit:—

1. GROUPS OF PLANTS.
2. WINDOW DECORATIONS.
3. TABLE DECORATIONS.
4. BOUQUETS.
5. FRUIT CASES.
6. FRUITS, collection.
7. VEGETABLES.—SALADS.

In Class 1 and 2 the Exhibits must be grown by the Exhibitor. Intending Exhibitors to inform Mr. BARRON, Royal Horticultural Gardens, South Kensington, S.W., not later than Monday, April 16, 1877.

ROYAL HORTICULTURAL SOCIETY,
South Kensington, S.W.
NOTICE.—The Council of the Royal Horticultural Society, in accordance with a Memorial from the Exhibitors, have ALTERED THE DATES OF MEETINGS from WEDNESDAYS to TUESDAYS, and therefore announce that on and after May 1 next the MEETINGS of the FRUIT, FLOWERS, and SCIENTIFIC COMMITTEES will be held on TUESDAYS instead of Wednesdays. The dates in future will therefore be:—for Fruit and Floral Committees, Tuesdays, May 1 and 8, June 5 and 12, July 3 and 10, August 7 and 14, September 4, October 2, November 6, and December 4.

The Scientific Committee will meet on days as above, except during the months of August, September, and October.

ROYAL BOTANIC SOCIETY.
Gardens, Regent's Park.
EXHIBITION OF SPRING FLOWERS WEDNESDAY next, April 15. Gates open at 10 o'clock. The Band will play from 2.30 to 3.30. Tickets to be obtained at the Gardens only, by vouchers from Fellows of the Society, price 2s. 6d. each.

CRYSTAL PALACE, AURICULA SHOW, APRIL 24. GREAT FLOWER SHOW, May 1; ROSE SHOW, June 23. Schedules for the two latter can be had on application to:—

GENERAL MANAGER, Crystal Palace.

NATIONAL AURICULA SOCIETY.—SOUTHERN EXHIBITION.—The Public are respectfully informed that this Exhibition will be held in the Crystal Palace on TUESDAY, the 24th inst., and will be awarded to upwards of FOUR HUNDRED SPECIMENS. These Prizes are open to all competitors, whether subscribers to the Society or not. Notice of Entry must be given to the Honorary Secretary, of whom Schedules and all necessary particulars may be obtained, not later than the 15th inst.

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Journal of Horticulture, &c., 1896.

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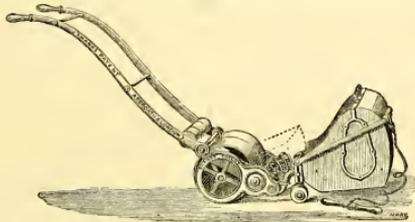
the best of the kind for the bedding Garden since 1859, against Red Spider, Midge, Thrip, Greeny, and other Blight, in solutions of from 2 to 3 ounces to the gallon of soft water, and 10 to 20 ounces to the bushel of dressing for trees and Fruit Trees.

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NEW HAND MACHINE.		NEW PONY and DONKEY MACHINE.	
10-inch Machine	£3 10 0	25-inch Machine	£13 10 0
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 40-inch Machine £8 0 0
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A Staff of experienced Workmen always kept in London, so that Repairs can be done there as well as at the Manufactory.

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Are warranted to give ample satisfaction, and if not approved of can be at once returned.

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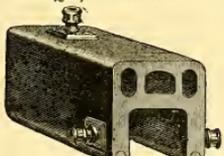
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Hot-water Apparatus erected Complete, or the Materials supplied at Wholesale Prices.
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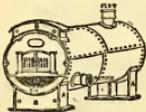


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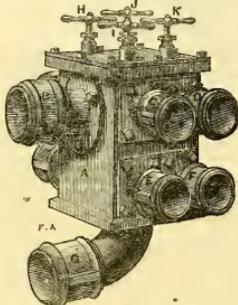
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AN APPARATUS FOR REGULATING THE HEAT IN HORTICULTURAL BUILDINGS.



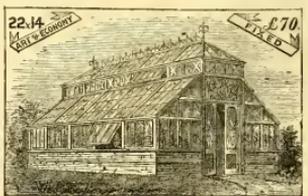
A. Iron Box fitted up water-tight, B. Pipe or Supply of Water from Boiler, C. Pipes for Circulating Hot Water, F. F. Pipes for Return of Water to Iron Box, G. Pipe for Returning Water to Boiler, H, I, J, K, Piston-Rods for Opening and Closing Valves.

The advantages of these Regulators are that houses may be kept at different degrees of heat, or the circulation of water and heat entirely stopped in one part and not in others. They have had ample opportunities of practically proving them, and unsubstantiated admit they are far superior to any other valve; in fact, I think it the greatest improvement that has come out for horticultural purposes.

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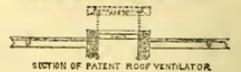


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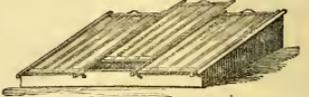
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The Greatest Novelty of the Season.

MIMULUS MOSCHATUS HARRISONI.

Awarded a First-class Certificate by the
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This exquisite plant is a Hybrid between the Large Spotted Mimulus and the Giant Musk. The flowers are as large as the former, with the rich golden-yellow colour of the latter, exquisitely spotted on the lower segments with rich brown. Its habit is recumbent and neat, blooming at every joint, thus producing an abundance of elegant flowers which are brilliant and interesting. A few plants will effectually brighten and scent a Conservatory or Greenhouse. It will succeed admirably in all situations where it can be freely supplied with moisture, although a cool shady place is the best. Being an excellent Bedding Plant, and especially adapted for Rockwork, it will be rapidly brought into requisition, and its universal cultivation will quickly be accomplished. Its easy culture and other qualities will secure for it a popular and extensive sale. It continues in bloom from March until December, and retains its scent throughout the year. As a free-growing odoriferous plant it is admirably adapted for Asylums, Hospitals, and other Public Institutions.



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OPINIONS:—

From THOMAS MOORE, Esq., *Chelsea Botanic Gardens*,
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"I was much pleased with your hybrid Musk as exhibited at South Kensington. I think it likely to make a useful decorative 'everybody's' plant, fit for the conservatory or the cottage."

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"Harrison's Musk is one of the most interesting of the novelties of the season, for the Musk in its old form is a universal favourite, and in this new variety we see it improved in all its attractive characters, so that it may rank with the finest flowers, while continuing to charm us with its refreshing odour."

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"MIMULUS MOSCHATUS HARRISONI.—This is a bold-growing perfumed Musk, with large yellow red-spotted flowers. In addition to the spotting, it may give us a race of scented-foliaged Mimulus with flowers as large and beautifully spotted as any now to be found on the improved varieties. This interesting hybrid was exhibited by Messrs. Harrison & Sons, Nurserymen, Leicester, and awarded a First-class Certificate of Merit—the highest award a new plant can receive."

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"I was much pleased with your new Mimulus Moschatus Harrisoni when I saw it exhibited some time since, and consider it a great acquisition, and shall be glad to have some plants of it as soon as it is in commerce."

This beautiful plant will be distributed on or before
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Plants 5s. each; Six for 25s.; Twelve for 48s.
Orders booked and executed in rotation, as received.

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Can also supply the Trade.



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MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,
Adapted for the decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

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MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 16, at half-past 12 o'clock precisely, a large importation of some hundreds of plants of CYMBIDIUM EBURNEUM, just arrived in splendid condition, several of the plants with flowers on them that have expanded in the cases while in transit; many of the plants are large and fine masses, with from six, eight, ten, to twelve growths each. At the same time will be sold immense quantities of many other choice ORCHIDS, such as VANDA STRIATA, CYMBIDIUM GIGANTEUM, VANDA CÆRULEA, V. CATHARTI; and some hundreds of good plants of AERIDES FIELDINGII (FOXBRUSH), DENDROBIUM FORMOSUM, D. NOBILE WALLICHII, hundreds of plants of the rare CÆLOGYNE BARBATA, various PLEIONES, and some good plants, just imported, of ONCIDIUM VARICOSUM varieties, O. ROGERSII type, and some healthy plants of ODONTOGLOSSUM VEXILLARIUM.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN,
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THE NEW ROSE, QUEEN OF BEDDERS (NOBLE).

Perhaps the Finest Rose for Bedding ever sent out.

COLOUR OF "CHARLES LEFEBVRE."

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that a plant 18 inches high had 84 Buds and expanded Roses upon it on the 6th September, 1876, and flowered continuously from June until November, on the 20th of which month (1876) it was still in bloom.

Good Plants will be sent out, in strict rotation, at 10s. 6d. each,
COMMENCING FIRST WEEK IN MAY.

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WM. CUTBUSH & SON
POSSESS MANY THOUSANDS OF
VARIEGATED AND OTHER CHOICE HOLLIES,
AT THEIR "BARNET NURSERIES,"

varying from 2 to 6 feet, bushy, all transplanted in 1874, and will move with splendid roots.
An Inspection invited, or Prices, &c., sent on application.

EXTRA STRONG IRISH and OTHER IVIES.

WM. CUTBUSH & SON have a very large Stock of IVIES in Pots, which they are offering at low prices, to be had on application—especially low to the Trade.

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CHOICE

FLOWER AND VEGETABLE SEEDS FOR 1877.

BALSAM, Williams' Superb Strain ..	per packet—s. d.	.. 2s. 6d. and 1s. 6d.
BEGONIA FROBELLII 2s. 6d.
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Packets of Flower Seeds, excepting heavy kinds, Free by Post.

SUTTON'S CHOICE FLOWER SEEDS,
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Sutton's Improved Miniature Aster.

A profuse flowering variety, of dwarf compact habit, remaining in bloom for a considerable period, hence it is invaluable for growing in pots for conservatory or drawing-room decoration. We have this season succeeded in saving six distinct colours, which greatly increases the value of this beautiful Aster for bedding purposes.

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Six varieties, separate, 5s.

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To produce a beautiful and continuous display during Summer and Autumn.

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Small and useful Collections can also be had, from 2s. 6d. to 7s. 6d., free by post. Full particulars may be had, gratis and post-free, on application.

TO OBTAIN THE Best Garden Lawns and Croquet Grounds

SUTTON'S LAWN GRASS MIXTURE,

Which forms a close velvety turf in a very short time.

For making New Lawns or Croquet Grounds 3 bushels, or 60 lb., is required per acre, or a gallon to every six rods (or perches) of ground. For improving those already in turf, 20 lb. should be sown per acre.

March, April, and May are the best months for sowing. Price, 1s. 3d. per lb., 23s. 6d. per bushel, carriage free.

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds. Gratis and post-free.

Sutton Sons
THE QUEEN'S SEEDSMEN,
READING, BERKS.



SATURDAY, APRIL 14, 1877.

WINE AND THE VINE.

FOR many centuries this country was satisfied with the wine of its own growth. Vines, we are told, overran the walls of churches, and there were vineyards attached to several of the monasteries and religious houses. The chief wine district was in Gloucestershire, which, according to William of Malmesbury, boasted better Grapes and more vineyards than any other part of England.

Among the names that linger like old legends, and reveal something of the history of particular spots, that of "Vineyard Holm," a sheltered and sunny hollow of the Hampshire Downs, tells his own story. The warm slopes of the "vineyard hills" at Godalming were once hung with Vines, and country people still point to the hill as a spot where labourers once worked for a penny a day, and were well off, as they would have been in the eleventh and twelfth centuries, when the silver penny weighed as much as our threepenny piece, and beef and mutton were a farthing a pound.

Petrarch was mistaken in saying that the English drank nothing but beer and cider; they drank the juice of the English Grape unfortified with spirit. Vineyards were common for several centuries after the Conquest. The Abbey of St. Augustine at Canterbury, and the Priory at the same place, each had its vineyard. The Battle of Hastings was fought near the great plantation of Vines at Sandac. Domesday Book contained thirty-eight entries of valuable vineyards—one in Essex consisted of 6 acres, and yielded 20 hogsheads of wine in a good year. There was another of the same extent at Ware. Wine was made at the Royal palace of Woodstock and at Windsor Park, and an old manuscript roll in the Castle showed the yearly accounts of the cost of planting Vines, and the quantity of wine produced in the Little Park in Richard 11's time. Part of the wine was used in the Royal household, and part was sold, "the tithes thereof were paid to the Abbot of Waltham, then the parson of New and Old Windsor."

There are sites called "The Vine" at Rochester, Sevenoaks, and other places. In Edward 11's reign the Bishop of Rochester sent the King "4s. present of his drink, and winalth both wine and Grapes of his own growth at his vineyard at Halling." The vineyard at Peterborough was planted by the Abbot in the time of Stephen; Prior John, of Spalding, an improver and builder, planted both vineyards and orchards; and others were planted by the Abbots of Denny Abbey in Cambridgeshire, of Dunstable, St. Edmund's Bury, and other abbays. The Isle of Ely was called by the Normans "L'Isle de Vignes." The Bishop's yearly tithes of wine was three or four tuns, besides whatever liquor accrued to him by leases and escheats.

The clergy of the Romish church drank, in their palmiest days, a wine called "Theologium," which was only found in their establishments; and woe to the merchant who sent them wine of an inferior quality. After the battle of Poitiers, which was fought in a French vineyard, French wine became the fashion; and Cressy being won, and Edward 111. king, wines were poured into this country from Bordeaux, and were relished as the produce of English



SPRING 1877

VEGETABLE SEEDS.

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BRUSSELS SPROUTS, Welch's Giant, one of the finest in cultivation 2s. 6d.
CUCUMBER, Walker's Hero (New) 2s. 6d.
.. Oxonian Marrow ..	..	.. 2s. 6d.
.. Endive, Williams' Gloria Mundi ..	..	.. 1s. 0d.
MELON, Osmaston Blanc Hybrid ..	..	.. 2s. 6d.
.. Laura's Beauty, (New) ..	..	.. 2s. 6d.
.. Surprise (New) ..	..	.. 2s. 6d.
ONION, Williams' Magnum Bonum ..	..	.. 1s. 6d.
PEA, Williams' Emperor of the Marrows ..	per quart 2 6	.. 2s. 6d.
TOMATO, The 100 Days ..	per packet 1 6	.. 1s. 6d.

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provinces in France. Then came a long series of misfortunes, and within a hundred years of Cressy all the recent conquests and the inherited domains in France were lost, except the seaport of Calais. During this disastrous period the supplies of foreign wine were interrupted. For a while France was ruined, and considerable progress was made towards her final conquest by the extirpation of the population. At Cressy 30,000 Frenchmen of the rank and file fell, besides 1200 knights, and the blind old king, who had his horse led into the *mêlée* that he might strike one good blow. At Poitiers, the Black Prince's victorious forces killed 11,000 or nearly 13 Frenchmen per English bill and bow. The peasant insurrections of "Jacques Bonhomme" increased the general misery, and Petrarch, a witness of the widespread desolation, writes, "I could not have believed that this was the same France which I had seen so rich and flourishing;" then he goes on to describe the land uncultivated, the houses in ruins, the people in poverty, Paris burnt, its streets deserted and overgrown with weeds, the country a solitude. "War," said Henry V. when he invested Rouen, which was defended by the new artillery, "war has three handmaids ever waiting on her, Fire, Blood, and Famine;" and at Agincourt, when his band of archers bared their arms to use "the crooked stick and the grey goose wing," they killed 11,000.

During this long, dark period of French history her vineyards suffered terribly by the actual loss of population; but the extirpation of a people in an extensive country has always proved a tedious operation. At every interval of war in the case of France the population spread again over the desolated tract like a flood of waters broken loose; and, in spite of their calamities, we presently find the French once more prosperous and victorious, sweeping the Channel with their fleet, and seizing the semi-sacred "Theologium" freighted specially for the Church. It was impossible such a state of things could continue long, but while it endured the unwonted cry was occasionally heard on our southern coast: "The French! Out, out!—the French are upon us!" Two Cinque Ports, side by side on the Sussex coast, were burnt during one of these landings, and the "Theologium" yet remaining in the famous vaults of our chief wine ports (Rye and Winchelsea) was destroyed.

The above recital shows how the fortunes and circumstances of nations entirely changed, even in that slow age, within the short period of fifty years. Quitting the vineyards of our neighbours, we may recall the fact of the utter ruin of the gardens and vineyards of England, which we are assured by the best authorities occurred during the Wars of the Roses. Passing on, however, to later times, we once more meet historically with English wines and Vines. Dr. Ralf Bathurst made claret at Oxford in 1685; "as good as one could wish to drink;" and Sir Henry Lyttelton subsequently made wine at Over-Arly—a warm nook in Staffordshire. We could mention the names of many individuals who drank wine of English growth 170 years ago, and pronounced it good. Sir John Hamner loved his country's wines, so did Stephen Hales, the founder in England of vegetable physiology, who thought Dr. Shaw's vintage at Kensington equalled the lighter wines of France. The sites of Dr. Shaw's vineyard and of another at Hammersmith were not very favourable, yet so long as care was taken good wines were sold from both of them.

At Walham Green a Mr. Roque planted a vineyard in a field, and made wine for thirty years equal to that of Orleans and Anverre. A better site was at Pains' Hill, near Cobham, on the south side of a gentle hill, where the soil was warm, gravelly, and dry; and here the

Hon. Charles Hamilton made excellent champagne. There was a noble vineyard at Arundel Park, and in 1763 there were sixty pipes of English Burgundy in the Duke's cellars there—better than a great deal that is imported, and very superior to what is generally drunk in France. There was a vineyard on the steep southern face of a hill at Deepdene, Dorking; but Daniel Defoe, who commenced a *Tour Through the Island of Great Britain*, mentioned that in his time the gardens and vineyards at Deepdene were neglected.

English Grapes which had previously yielded good vinous juice, ceased to do so for a period of about twenty-five years from 1799, when a cycle of wet, cold summers and bad harvests commenced. This was a great blow to our modern vineyards, and prejudice and the lost prestige of the wines have completed their ruin. It is hard to say whether the *prestige* or the art of making the wine was lost first; but it is not too much to assert that, if the home-made wines of France were as badly managed as those of England are at the present time, they would be equally indifferent.

In the southern counties the Vine has clung tenaciously to its old sites, and while legends, dim memories, and characteristic names still attach to certain spots, and dedicate them to the Vine, the Vine itself overruns and adorns the cottage walls, and its produce frequently pays the cottager's rent.

We conclude with a few statistics in favour of improving the art of English wine-making. A common price of thin claret is 12s. per dozen, or 6s. per gallon. A much stronger English wine can be made from Graves and sugar at half that price. We are, therefore, glad to hear of an experiment in wine growing on the estate of the Marquis of Dute in Glamorganshire. There are many dry and sunny slopes in the warmest parts of England which might be profitably covered with the Vine. Sugar would assist the modern wine-maker. It cannot be maintained for a moment that home-grown wine will acquire the nutty flavour of good old foreign wine, but we still think that the commonest sherry wines, the sophisticated and unwholesome liquors too often sold as foreign wines, and the vile mixtures sometimes miscalled port, sherry, and champagne, might be excelled by wines of English growth. *H. Evershad.*

ERICA CODONODES.

THE beautiful specimen from which the accompanying engraving (fig. 70) of this chaste and charming hardy Heath was prepared, was sent to us in January last from the garden of the Hon. and Rev. J. T. Boscawen, Lamoran, Cornwall, where, as will be seen from the profusely flowered condition indicated in our woodcut, which is by no means exaggerated, it grows in the highest degree of perfection. Under such favoured conditions of climate it is perfectly hardy, as indeed it is in most parts of England, but in low-lying damp situations we have known it cut down to the ground by winters of exceptional severity. It, however, springs again from the root.

Erica codonodes was figured by Dr. Lindley in the *Botanical Register* (t. 1698), where he remarks concerning it—

"This species of Heath has the general appearance of *E. arboræ*, a plant which is a great ornament to rocky places in the south of Europe, where it grows intermixed with different kinds of *Cistus* and the wild *Arbutus*. But it seems essentially distinct in its larger flowers, more slender leaves, less hoary branches, and truly bell-shaped corolla, which has by no means the globular form of that of *E. arboræ*; its stigma is, moreover, very small, and not at all dilated or lobed, either when dried or recent. *E. polytrichifolia*, which we presume is the *E. arboræ* stylosa of English gardens, is equally distinct in the same characters."

The specimen figured by Lindley was grown by Mr. Wood, of Maresfield, in Sussex, where the plant is reported to be quite hardy, and to form a bush 10 to 12 feet high. There "it begins to blossom in

February, and continues till the end of May, disregarding both frost and snow, being often covered with flowers from top to bottom, and forming a most beautiful object. It thrives in light sandy peat." *T. M.*

TO HAARLEM AND AMSTERDAM.

MOST people who have never been to Holland entertain a prejudice against its cities. They imagine dingy crowded houses, whose conglomerated mass is separated only by narrow lanes, called "canals," which are stagnant water instead of wholesome solid pavement. The fancy picture is finished off by the additional touches of a heavy breathless atmosphere, deficient light, suffocating smells, and a plague of mosquitos. These notions may have been suggested or confirmed by the unhappy idea of calling Amsterdam the Venice of the North. Never was comparison less applicable. Omitting other differences, the nuisances expected to be met with in the Northern, are much more rife and intense in the Southern city.

The drive from the Hotel St. Lucas to the railway which is to take you from Rotterdam northwards, suffices alone to clear away the misconception. Fancy a very broad street, and in the middle of the street a wide water-way sufficient for the passage to and fro of seagoing vessels, and of course of multitudinous freshwater craft graduating in size through large, less, and least. These vessels are sufficiently crowded to show that the town is engaged in serious business, instead of leading a life of *dolce far niente*, part of whose sweetness, in Italy, is made up for poor living, pride, and poverty. The Dutch canal, too, is bordered on each side with trees that are well taken care of. Between the trees and the lines of houses, along each side of the canal runs a quay, which often of itself would elsewhere make a fair street. It is not intended to be asserted that there are no quays and canals more modest and more picturesque.

But, in Amsterdam especially, there is one great desideratum—no seats or benches are provided under those trees for weary walkers to rest upon. Economy cannot have been the cause of the want, for expense is not spared on the marble of the doorsteps. It may be meant as an intimation not to loiter—a practical application of the blunt motto on the old church clock, "Go about your business." Nevertheless, after prolonged wanderings along the labyrinthine quays of Amsterdam, a few minutes' repose now and then would be welcome. And you have no foot pavement to walk upon either; the space where a footstep should be, is rilled off with chains or palisadings, inclosing a small paved area in front of each house, not unfrequently of costly workmanship and materials. Something of the kind, perhaps copied from the Dutch, may be seen at Great Yarmouth; only, there, there are excellent foot-pavements. As a slight concession to pedestrians, Amsterdam's street gutters, in front of those railings, have wooden covers, to prevent splashing and other offences against neatness.

As at Antwerp, the northgoing railway station is close to the Zoological Garden, at whose entrance an avenue of macaws scream invitations to enter, in case you have an hour to spare. There are stations and stations, and, therefore, we look closely at the first Dutch station of importance which we enter. As might be expected, its main characteristics are comfort combined with ornamentation. The waiting rooms are well supplied with tables and chairs, and a deal of mahogany is used in the furniture. That for first-class passengers is like a drawing-room, with carpet and other pleasant extras. As in Belgium, the waiting-room is also a refreshment room, the convenience of which needs no pointing out.

On taking your ticket, you find the price marked on it, to the great satisfaction of suspicious travellers. The journey northwards is still a repetition of gliding over seemingly endless green plains, with little other variety than that some pastures seem better kept, *i.e.*, freer from weeds and Thistles than others. Besides grazing sheep and cattle, few other living creatures are seen than flocks of lapwings wheeling about, showing now a white front and now a black one, and a stork or two dancing and fluttering along in search of the Dutchman's mortal enemies, field mice, and other rodents which burrow in the dams and by the sides of canals; for, in Holland, the lettings-in of waters are even worse than the beginnings of strife. With so vast a horizon spread out before you, how small even the nearest objects seem as glanced at

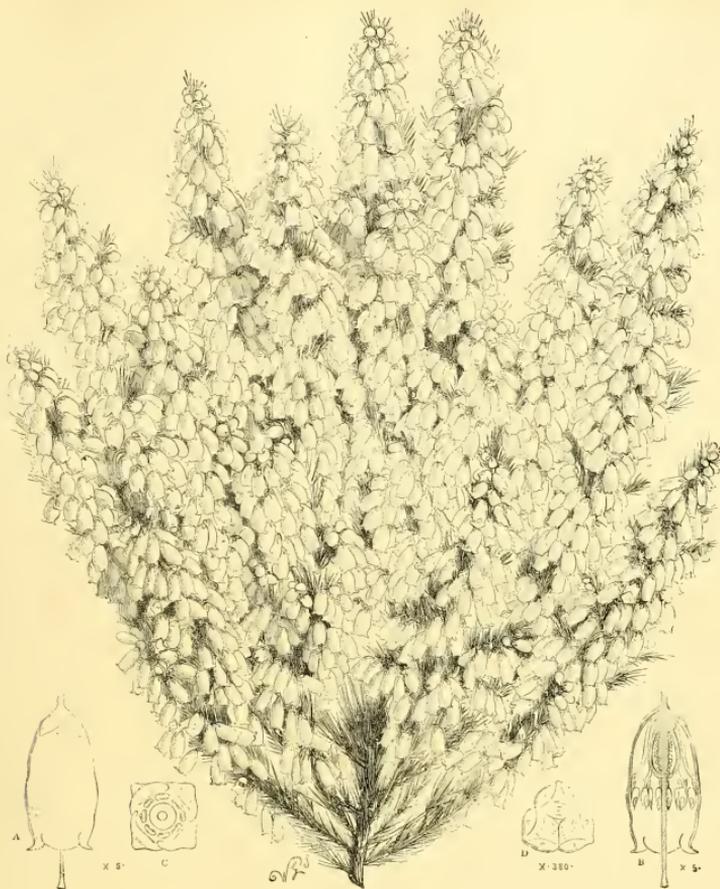


FIG. 70.—*ERICA CODONODES*, NAT. SIZE. A, FLOWER; B, SECTION; C, DITTO, SEEN FROM BELOW—ALL $\times 5$; D, POLLEN, $\times 380$.

from a railway carriage window. That yellow-flowered aquatic plant in the boundary ditch looks no bigger than a Daisy, although it is our common yellow Water Lily; a Naphar with no more than a Daisy's dimensions would be an acquisition to aquarium lovers. As we advance familiar names meet the eye and the ear—Schie-dam, calling up memories of long-drawn gossips over hot gin-and-water before going to bed on frosty nights; Delft, whose "old Blue" is now the rage; soon afterwards the Hague (*'sGravenhage*, in Dutch), where we have not time to stop to-day; Leyden, the learned, on which also we can only bestow a wistful look, being obliged, as the French say, to *brûler*, or burn it. From Leyden the railway skirts the chain of dunes or sandhills on the left that line the coast. On either side of the line are small fields or patches planted with garden bulbs and tubercules—Hyacinths, Tulips, Anemones, Ranunculuses—which, in the season of their flowering, break the monotony of the plain with charming bursts of bright colour. But the traveller will doubtless be aware that he is passing over ground of the highest interest on many other accounts besides floriculture.

You soon reach Haarlem, where you ought to stop awhile, there being every inducement to do so. Walking from the station along *Kruisstraat*, you find, close at hand to the right, *Funchler's Hotel*, which is excellent, with chambers like those of a private house, a dining-room almost too big and airy, looking as if it sometimes served for dancing and specchifying, but which the Amsterdam Exhibition will probably fill at times, and, far from least merit, capital cookery. *Artophagos Frenchmen* complain that, at Dutch hotels, the bits of bread beside your plate are absurdly small, and as light as sponge cake, but no penalty is incurred by asking for more.

Haarlem is a delightful town, which wears its Sunday clothes every day in the week. In spite of its 32,000 inhabitants and more it is so quiet, staid, and orderly, that you would say it was Sunday all the week long, did not its important markets and its vast horticultural and other produce prove that it must have working days. Everything about it is healthily neat and tidy, and kept in the most finished order. An air of perfect and unquestionable respectability and honourability pervades the whole place. The late police magistrate Walker, the author of *The*

Original (who was one of the first to be instrumental in reforming the overloaded profusion of English set dinners), believed that there were individuals so admirably constituted, that their personal cleanliness was always irreproachable, independent of washing operations. Haarlem looks as if rose from the earth a naturally bright and spotless town, like a fresh and immaculate meadow Mushroom, which no soil or speck was ever to touch without sharing its short-lived and fragile nature.

Moreover, the suburbs of Haarlem harmonise perfectly with its interior. They are simply delicious. True, there are no rocks nor brawling trout-streams; but there is a soft gradation through pleasant places, even though they bear such droll names as *Koekamp*, from the central great market-place to the *Wood of Haarlem*, which often make you ask yourself by the way whether you are traversing a *rus in urbe* or an *urbs in rus*. For besides restaurants, hotels, picture-galleries, and casinos interspersed, not too closely, you pass, one after another, inviting villas which, if ever to let, would not have long to wait for a tenant, each rivaling its neighbours in the finished order of its well-kept grounds, one favourite ornament of

a lawn being the trunk of a dead tree, whose hospitable top invites a pair of storks to rear their young upon it. Such invitations are accepted in confidence, without the slightest apprehension of being (as they would be in England) shot and stuffed immediately after their arrival from the South, by some accident lover of natural history. In the twilight of a summer's evening, the long-legged nestlings, standing up to walk or digest their supports, their forms being black against the glowing sky, look like metal birds stuck there for ornament.

Haarlem Wood and also the famous Hague Wood, are believed to be the remnants (with careful renovation) of an immense forest, once swarming with game, which stretched from one point to the other, and beyond them. At present, they show how the swampy desert may be made to uplift itself, flourish, and bloom. No wonder that many Amsterdam merchants make Haarlem and its environs their residence. N.B. Let not the agricultural tourist forget that close by is the marvellous drained Haarlem lake or sea, converted into fertile polders, which now produce abundant food for beast, and consequently for man.

One of Haarlem's lions is E. H. Krelage & Son's horticultural establishment, the most important in Holland, founded sixty-six years ago. You reach it by a pleasant five-and-twenty minutes' walk from the station or from Funckel's Canal, which shows you besides a couple of shady canals or "grachts"—you will find "grachts" in plenty at Amsterdam—the great High Street, so spruce and so plentifully bordered by Conifers, 150 metres long and 2 metres broad; besides the Lily grounds, containing lancifolium, longifolium, with more Lilies, and Lilies again; besides the auxiliary magazines, kept slightly warmed in winter, where Anemone and Ranunculus roots are dried on air stages, there are Strawberry plants to be prepared for exportation, many bound for America, while Spiræas and Lilies of the Valley are sent off by thousands of stooks. Queer old-fashioned names are not forgotten; you may have night-blooming Cereus in six or eight varieties; Elephants' Feet from 300 francs (£12) the pair to small petticoats to francs a-piece; the Old Man Cactus, Cereus senilis, values his venerable head of hair at from 40 to 150 francs.

It is wonderful to see what may be done on a very poor soil with the help of cow-dung and wooden walls, or boarded inclosures to break the wind, for the gusts from the North Sea must sometimes be furious. In spite of which it is found that Conifers and evergreen shrubs thrive well in the sandy soil; witness the healthy Pinusops and the collection of variegated Hollies. The Pinus Nordmanniana is valued to hold its own by its tardy growth. Abies Douglasii, however, proves more prosperous in England than here. Not to attempt a catalogue, I will merely mention Hyacinthus candicans, a colossal white late-flowering species from the Cape, with a stem a yard high, and Asclepias tuberosa, as plants requiring whose future fortunes little doubt can be entertained.

M. Krelage's general catalogue, *Hortus Krelageanus*, invites inspection of these interesting nursery catalogues, which gives the present writer the opportunity of thanking him for the great courtesy and patience with which his list was received, and, in return, it gives useful information respecting Haarlem itself and its environs, such as that the great organ plays from 1 to 2 on Tuesdays and Thursdays, entrance to the church gratuitous, on other days for a fixed honorarium; that pictures of the old and the new Dutch schools are to be seen at the Hôtel de Ville and elsewhere; that the house Johannes Eschsché on Zonen, type-foundry, are also the publishers of the *Haarlem-Weekblaad*, the oldest of the Dutch newspapers; and that there is a generally known, but desirable to know when you visit Haarlem.

With regret you take the ordinary train, which carries you to Amsterdam in half an hour. There is but one intervening station, Hilfweg, where on one side you have the old and the new (No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11), and on the other the pastures which replace the Haarlem Sea. It is through Dutch industry and courage alone that you are travelling on dry land. On

reaching Amsterdam, unless your topographical education is far advanced, you are advised to immediately engage either a guide and interpreter or a hackney carriage. As Prussian officers employ their leisure in the imaginary siege of foreign capitals, so intending travellers may profitably occupy their evening or two over the plan of that city just as well as with the last new game or puzzle, to see if they can discover the best way from one point to another, or contrive to find out any given address by means of its complete postal numbers, and names. Where, for instance, if you please, is J 563, Warmoesstraat J 564? †

ROSSIE PRIORY.

IN our number for November 1876 last we gave some particulars of the gardens at Rossie Priory, the seat of the Right Hon. Lord Kinnaird, and are now enabled to give a plan (fig. 71) of the kitchen garden and a portion of the pleasure-grounds, reduced to a scale of 100 feet to an inch. A reference to the plan on the opposite page will show that the houses which we have already described are situated on the left, with the kitchen garden quarters in front. This block includes eight vicinies, four Peach-houses, four orchard-houses, Pine-trees, and Pine-apple trees, plantations, greenhouses, Fig-house, Melon and Cucumber house, Mushroom-house, pits and frames for growing Melons and Cucumbers, and for protecting bedding plants, &c., propagating pit, two bathies, paint and glass shed, tool shed, fruit-room with cellar below, seed and store room, an open space for refuse (walled in), potting shed, and an open shed, &c. The gardener's house, B, is situated at the side of the kitchen garden, the quarters in which are lettered A, and from the kitchen garden the flower garden in the centre is reached by a path leading down some sloping bank of Laurels 3 feet high. The flower den is surrounded by Yew hedges 4 feet high and 2 feet broad, is tastefully designed, and was very effectively bedded-out when we saw it. Near by is a fountain, c. a fernery, e, a fine bank of Laurels, H, and a carriage drive, G. The Priory (which from the exigencies of space we cannot show) is reached by an almost direct line, the whole of the gardens and pleasure-grounds being situated on the southern slope of a high ridge of ground. We have already dealt in detail with the kitchen garden and it will therefore be unnecessary now to note a few of the leading Conifers with which the pleasure-grounds are so nobly ornamented.

Amongst the most notable specimens is one of Abies Douglasii, a very fine tree, but somewhat disfigured by the wind having broken some of the branches on the west side, where it is most exposed. It was planted in 1833, but has got good nursing in the shape of fresh soil or manure. Its height is 76 feet, girth at 3 feet from the ground 9 feet 2 inches, and the circumference of the branches, which lie on the ground, 56 yards. Taxodium sempervirens is represented by a beautiful plant in fine health, but which has had its leader broken several times by the wind: height, 47 feet; girth of stem, 6 feet 9 inches; and circumference of branches, which lie on the ground, 30 yards. It was planted in 1850. A specimen of Wellingtonia gigantea was introduced in 1856. It was grown from the first sent home by a son of the late Mr. Mathew of Goudiehill (a frequent contributor to our columns). Its height is 24 feet, girth of stem, 3 feet 3 inches; circumference of branches, 30 yards; and it is so vigorous and lush, though it has not received any particular attention.

Abies Menziesii is represented by a magnificent plant in the most robust health, growing on a dry gravelly subsoil, with not above 14 inches of light soil on the surface. Its height is 56 feet, girth of stem 7 feet 6 inches; circumference of branches, which lie on the ground, 38 yards. There are several younger plants of this in various parts of the grounds, all doing well. This tree ought to be more generally planted, as it is so useful, but as it is so much in demand for production of timber, which is spoken of as being hard and close-grained.

Anacaria imbricaria, planted about 1833. Height, 28 feet; girth of stem, 3 feet 3 inches; circumference of branches, 30 yards. In 1876 it was severely injured by frost. Cryptomeria japonica is a very handsome specimen: height, 34 feet; girth of stem, 3 feet 9 inches; circumference of branches, 18 yards. This plant has lost its leader several times with the winds, and has been another year without a leader. It was planted in 1837; its height, 36 feet 4 inches; girth, 4 feet 4, up to 5 feet 8 inches. The above are the measurements of 1871. Cedrus atlantica: height, 50 feet; girth of stem, 3 feet 7 inches; circumference of branches for 30 yards. When this tree was planted in 1833, it was found, in making some alterations, growing in a thicket of Laurels, which accounts for the stem being

so clear of branches. There are a few of the finest specimens of the new Conifer, but there are many other good plants scattered through the grounds, principally planted on the margins of the drives and walks, which Lord Kinnaird prefers to driving them altogether well walking through the grounds, which is always fresh interested in coming to a specimen when unexpected.

There are many fine trees of Silver Fir, upwards of 100 feet high and 4 feet in diameter. Most kinds of trees do well except Larch, which are subject to the disease. Although there are some remarkably fine specimens in sheltered situations, as a rule those planted within the last fifty years are not thriving.

THE SPECIES OF HELLEBORUS.

(Continued from p. 432.)

5. *H. viridis*, Linn. Sp. Plant., p. 784; Eng. Bot., t. 200; Hayne, Arzn., t. 9; Reich, Ic. Fl. Germ., t. 105; Gren. Fl. France, vol. 1, p. 41.—Aculeatis, bearing rounded annual tufts of one leaf and one flower-stem, with several flowers. Petals 6—8 inches long when fully developed; blades glabrous, not at all coriaceous, obscurely petate; segments crowded, oblanceolate, 5—6 inches long, 1—1½ inch broad above the middle, sharply irregularly cuneo-serrate in the upper half, acute, usually all simple, 3—5 on each side of the distal one, springing from a spreading axis about 1 inch long. Flowering stem about a foot high, bearing 3—6 distal flowers, and copious large leaf-like bracts deeply palmately cut, with incised linear segments. Sepals bright green, obovate or oblong, 1 inch long, spreading, and nearly flat. Petals ½ inch long, cuneate, with a short style. Stamens about half as long as the sepals; anthers narrow, oblong, ½ inch long. Follicles about four, as long as the sepals, strongly ribbed transversely; style persistent, erect, ½—1 inch long.

The typical form of viridis, as just described, is the only one that is known in the western half of Europe. It extends to Spain and Italy, and is said to reach Turkey. It is, I believe, truly wild in the woods of the limestone hills of the North of England, growing with such plants as *Actæa spicata* and *Aquilegia vulgaris*. Our west European plant is the *H. viridis* var. *Smithianus* of A. Braun, *Jour. Sem. Hort. Berol.* 1861, p. 4, and will be found figured satisfactorily in the works just cited. The principal forms which are distinguished from this by characters of slight importance are the following:—

Sepals green, as in typical viridis.	} A. DUMETORUM.
Sepals green, tinged with purple.	} B. RECCONI.
Sepals bright purple.	} F. INTERMEDIUS.
	{ H. PURPUREA.

(B.) *H. dumetorum*, Waldst. and Koch; Synops. Fl. Germ., p. 22; Reich, Ic. Fl. Germ., t. 105; Sweet, Brit. Flow. Gard., t. 109; *H. viridis* var. *dumetorum*, A. Braun, *Ind. Sem. Hort. Berol.* 1861, App., p. 14.—Habit of growth more slender. Leaf more distinctly pedate, the connecting axis of the lateral leaflets reaching a length of half an inch, the usually simple segments not so large, and more finely serrated; texture and veining of leaves and bracts as in typical viridis. Corymb 2—4 flowered; flowers smaller. Sepals green, ½—1 inch long.

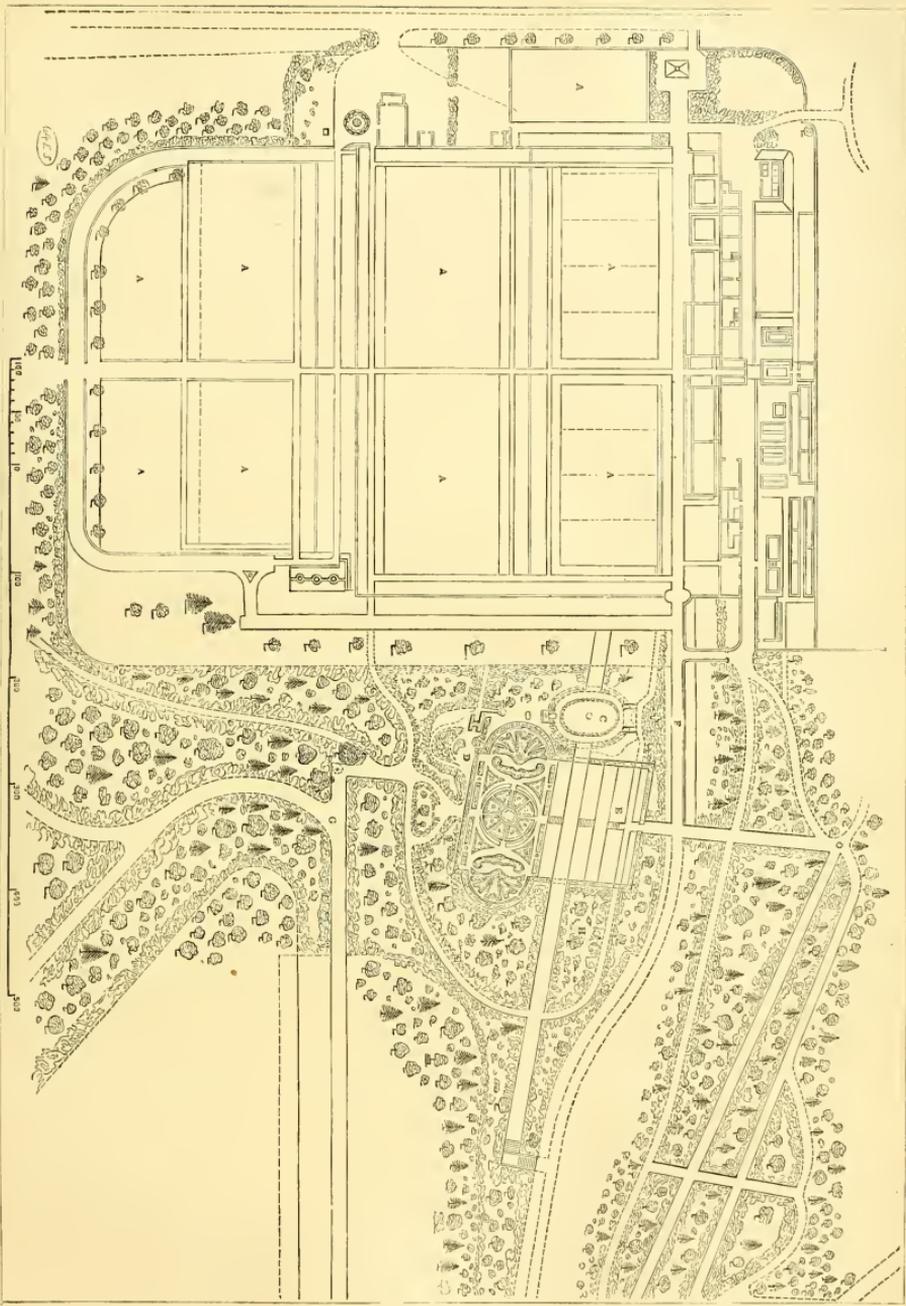
A native of Hungary, and other parts of Austria.

(C.) *H. laxus*, Host, Fl. Austr., vol. ii., p. 89; Reich, Ic. Fl. Germ., tab. 107; *H. viridis*, Jacq. Fl. Austr., tab. 105; *H. viridis* var. *jacquiniana* and *grandiflora*, A. Braun.—Habit of growth as robust as in typical viridis. Leaves more distinctly pedate, and the veining of the usually simple segments finer. Texture and veining of leaves and bracts as in typical viridis. Sepals broader in proportion than in typical viridis, and a paler green, 1½—2 lines long.

A native of Carinthia and other parts of Austria. This is connected with dumetorum by the form *H. pallidus*, Host, Fl. Austr., vol. ii., p. 90.

(D.) *H. Becconi*, Tenore, Fl. Nap., vol. iv., p. 254, tab. 150; Reich, Ic. Fl. Germ., tab. 103; *H. angustifolia*, Host, Fl. Austr., vol. ii., p. 90; *H. multifida*, Visiani, in Flora, vol. xii., part 3, p. 13; *H. intermedius*, Jacq. Fl. Austr., p. 224, t. 41, non Host.—Leaf more deeply pedate, and the segments of the usually obscurely pedate, with stronger veins, raised on the under surface, the main ones pubescent; segments 7—9, all deeply palmately cleft into linear lobes 2—3 inches long, ½—1 inch broad, sharply serrated and narrowed gradually to the tip. Flowering stems deeply forked, often 2 or 3 or 4 flowered. Leaves more like the leaves, much more compound than in typical viridis. Sepals green, roundish or obovate, finally about 1 inch long and broad.

FIG. 71.—PLAN OF THE KITCHEN GARDEN AND A PORTION OF THE FLEURISSE GARDENS AT ROSSIE PRIORY.



moved into larger pots, and the shoots kept well stopped back from time to time as required, these will succeed the early bloomed ones, and be found very agreeable to the season. Kalosantos may also have their flowering time retarded. If a few plants are now placed in a north house or a cool pit, with abundance of air and not much under the influence of the sun, they will bloom six weeks later than those which receive ordinary treatment. In the cultivation of pot Lilies one of the principal things to be secured is short vigorous growth; if ever they become at all drawn up the foliage is correspondingly weak, and their flowering abilities proportionally diminished. Watering tends so much to increase the continuance as exposure to the open air soon after they appear above the soil; this is best attained by placing them in cold frames, where the lights can be drawn completely off during the day. When the weather is too dry to admit of this, the pots are necessary so near the glass that there is no tendency to be drawn up, especially as the lights can be tilted high so as to give them almost as much air as if uncovered. As more head-room is required, the frames can be raised, and after this time there will be no danger from frost if the lights are shut down when there is an appearance of it: when there is not, the air is better left on. *T. Paines.*

ORCHIDS.—The great number of plants, the flowers of which are of fine form, rich colour, or in other respects showy and attractive, and also the numerous additions of choice varieties that are being continually made by the energy and enterprise of several of our artists, and the number of new plants which are being introduced to a new beginner as those the value of which may be reckoned by figures of a high amount. Among such are as fantastic in a pre-eminence degree may be named the *Brassias*, and though it may seem strange to speak of *Brassias* and *Brassias* as being new to a beginner, yet there are many who are in bloom, and out flowers are in demand, the singular and distinct appearance which a spike of *B. verrucosa* may exhibit amongst a number of other flowers will not be forgotten. There are many that will be grown and taken care of. This and *B. Lancana* and *Wraye* are interesting and deserving of culture, and though not by any means difficult to grow, are, however, often met with in a state which is not very pleasing and satisfactory. They should all be grown in pots, well drained, in a mixture of peat and moss, and when potted kept well above the rim of the pots, as the bulbs are liable through close contact with the soil to quickly turn black and rot. Place them in the Cattle-house, watering them sparingly until the roots are nicely pushed out towards the soil, when they may be treated to a good supply, and occasionally sprinkled overhead with a syringe; here they will grow freely, the foliage kept in a green and healthy state during the winter, and the spikes come up strong and freely. Another, in many respects similar to the above both in the style of growth, general appearance, and method of blooming, is *Cyrtocidium maculatum*; this is of a compact habit of growth, and grows in great abundance, succeeded on the bulbs of the previous season's growth bringing from six to a dozen flowers of a bright green and purple colour; it will succeed with similar treatment to the foregoing. *Aspidia lunata* is another that may be grown with ease. In appearance this much resembles some of the *Miltonias*—the foliage is of a pleasant green, the flowers are of good size, the sepals and petals being white spotted with brown, and the lip pale blue. This is a very pretty and interesting species. *Polypodium Lobbia* is again another that may be classed among the singular ones. This, however, requires to be grown in the East India-house. The flowers, which are of a distinct brownish yellow colour, appear in the autumn, and are of the peculiar formation of the labelium, which is so constructed that, with a very slight motion of the plant, the lip is thrown backwards and forwards as though it were set with a hinge. This will succeed very well in pots, kept in a cool house, and watered and supplied well with water, but when the growth is finished only a small quantity will be required, otherwise the flowers, instead of coming altogether, come up very irregularly. Small pieces may be freed from a block or grown in a pot, and should be allowed to come up very quickly and soon get established. *W. Swan, Fallowfield.*

FRUIT HOUSES.

VINES.—Look over Grapes in the fruit-gease once a week for decaying berries, and keep the bottles well filled up with soft water. Owing to the mildness of the weather, the fruit has been good, and well-ripened fruit is keeping fresh and plump. This is a busy month, as every house is now at work, and disbanding, tying, and thinning must have attention at a time when a thousand other things require a gardener's care. Late and early work making no progress must be disbanded, tied out, and well syringed until the bunches show. Close early with sun, and dispense with fire-heat as much as possible. If, through hard forcing, red-spider has made its way into the early house, no time must be lost in its removal, particularly in the early part of the season. Examine the borders, and if dry, a condition under which spider makes rapid progress, lose no time in thoroughly watering and mulching with well-rotted fresh cow-droppings. Perform this work early in the morning of a fine day, and keep a little air on the top sashes, to prevent injury from an overcharge of ammonia. Heavily cropped Vines do not always finish well; where this is the case they should not be hurried through the last stage, particularly at night, when the temperature should range low by means of extra ventilation combined with a liberal supply of dry, warm air by day. Where young Vines have to be planted this spring, the materials for the beds must be ready for use, and the soil must be protected from the weather. I prefer planting inside, with arrangements for taking the roots outwards when the first 6 feet of the inside border is well filled. A dry day should be selected for making the borders; let the soil be raised to 4 inches deep, and do not allow the soil to become warm before the Vines are planted, spread out the roots over the surface, having completely shaken them free of old soil. Cover with 6 inches of compost. Give them a watering with water containing 100 parts of guano to the surface with short dung. *W. Coleman, Eastnor.*

CUCUMBERS.—Favoured by mild, genial weather, Cucumbers are remarkably clean, healthy, and prolific. The soil has been raised to its usual level, and red-spider is less troublesome than usual; a cultivator must not, however, on this account allow his energies to slacken. To keep the plants in a satisfactory state, stopping and dressing over, now growth is so rapid, must be attended to twice or three times a week, as nothing injures the plants more than neglect in this direction. Neither must spider have uninterrupted possession. It will, therefore, be well to apply the usual remedies once a week to keep the plants clean. If the plants are in a state of stagnation from overcropping may have a portion of the old soil removed from the roots, and replaced with a rich compost of turf, lime rubble, and fresh horse-dung, into which new healthy feeding-roots will quickly find their way, and the foliage will be revived. Flag a good deal, some very slight material may be drawn over the roof as much for the protection of the young fruit as of the leaves; but the system of shading for the sake of saving roots must not be evinced. Plants in pits and frames may now have more water; stop and train thinly; add fresh earth to the hills as growth proceeds; closeabout 2 o'clock on fine days, and sprinkle overhead with water at a temperature of 85° or 90°. The next thing to be done is to commence removing the linings. Cover up at night with good dry mats, and give a little air at the back of each light. If newly formed beds continue too hot for the reception of the plants when they are in the best condition, they may be put out, at a distance of 2 feet in length and 6 inches in diameter may be laid across the bed in the centre of each light before the hills are made, and left open at the ends. The hills should be made small at first, and when the heat has declined to 85° the ends of the pipes may be closed, and more soil added at the roots push to the sides. *W. Coleman, Eastnor.*

PEACHES AND NECTARINES.—Considerable care and attention will now be requisite to regulate and check the exuberant tendency in the growths of the current year, so as to render the flow of the sap even in its operation over the whole surface of the tree. A considerable amount of pruning will be necessary to do this properly. To sustain a healthy and vigorous condition in the trees a plentiful leafage is indispensable, which should be well distributed in a manner which will admit of its perfect development. The tendency of the trees to overgrow, and to over-crop, must be allowed a good run, if the limit of the trellis will admit it, before being stopped, but those side shoots which issue from behind the fruit should be checked if they be vigorous, in order to assist the swelling off of the fruit. Every encouragement towards this object should be vigorously enforced by keeping both foliage and roots in a healthy state. Syringe the

trees with rain-water twice every day, and supply it, enriched with some manure agent, plentifully at the roots at this season, when a very good supply of ripe fruit is obtained from trees in pots and the fruit is approaching the colouring process the foregoing observations must be sedulously observed. Attend to the trees in later houses as before advised, remove a large portion of the fruit, when it is necessary off those trees before it becomes large, as at this season it can in general be relied on, and if left on will only be to the disadvantage of those which are required. *G. T. Miles, Weymouth Abbey.*

KITCHEN GARDEN.

Sowing for successional purposes will still require the constant attention of the kitchen gardener. It is hardly possible to point out within a week or ten days when such operations should be carried out, the seasons vary so much that though it would in one season be correct to recommend the sowing of the main crop of Carrots on April 16, in another it might not be possible until the 25th; at all events, experience tells us that somewhere about or between those dates is the best time, and when we recommended that this or that crop should be got in, our words must be taken with a grain of salt, and then or about that time be understood. With regard to the main crop of Carrots it should be got in once in a finely pulverized soil, one half of the crop should consist of James' Intermediate Scarlet, the other moiety may be divided between Red Sarrey and the Improved Altringham. Sow successional crops of Carrots in the following lion's share; if these could be sown in single rows with wide spaces between for other crops the produce would be greatly increased. Successional sowings of Broad Windsor Beans should be put in as soon as the previous sowing pushed through the surface. Another small sowing of early Turnips will be necessary towards the end of the month. The hot burning sun has such an injurious effect on the flavour of this crop during the summer that it can only be counteracted by copious sowing of successive crops. It is necessary, therefore, as far as possible, to sow the plots near the water supply as may be. The same precautionary remarks will apply equally to Turnip and other Radishes, which cannot be had in perfection in hot, dry weather, and in the middle of the month. Basil and Sweet Basil in pans, and forward them in a gentle heat, to be afterwards pricked out along the foot of south walls. Where salading is in constant request it will be necessary to make sowings of Lettuces, both Cos and Cabbage, in the middle of the month, ten days at present, and the quantity required to keep the breath to be sown. The same remarks will apply to Small Saladings. Spinach also must follow pretty nearly the same rule, as during the next three months the weather will be very much in favour of its running to seed. The ground should now be constantly stirred amongst Cauliflowers, Cabbages, Lettuces, and all other advancing crops; and as it is much to be feared that, owing to the mild and moist seasons, we shall find the bugs more than usually troublesome, it is advisable to dress the ground between the crops very heavily with lime previous to the surface stirring. The various beds sown with Brassica, Onions, and Parsnips, should also be occasionally dressed over with very quick lime; and if the destructive turnip-fly makes its appearance amongst the Brassica tribe, add dry soot and wood-ashes to the lime for the dressing. Throw up a good bed of fermenting material, consisting of straw, one-light hot bed, which will sow ridge Cucumbers and Vegetable Marrows for transplanting on the ridges early next month, for which purpose see that fermenting material is in the course of preparation. Where red Beet is in much request, sow a few boxes or pans may be sown and placed under shelter (a great heat is not necessary) so that they can be forwarded in any place secure from frost; they will be ready to transplant into a warm situation early next month, and are protected from frost for a week or so they will be fit for planting in advance of those sown in the open air at the proper season.

As neatness in this department is at all times a desideratum, means should be adopted at once in order to secure the freedom of the walks from weeds, which are now beginning to make themselves unpleasantly visible. Turning the gravel is a most excellent plan, but as the material of the walks is not always adapted for turning, and as time for so doing cannot be afforded, the use of a roller must be adopted, such as a thorough good dressing of soil, or sulphuric acid mixed with water in the proportion of 1 pint to 3 gallons, or of carbonic acid; but in no case must these be used in the most liberal manner. In these there are Box edgings: where hand weeding and turning over the gravel are the obvious remedies. *John Cox, Redleaf.*

THE Gardeners' Chronicle.

SATURDAY, APRIL 14, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, April 15	Sale of <i>Cyperidium</i> eburneum and other Orchids at Stevens' Rooms.
MONDAY, April 15	Royal Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 2 P.M.; Exhibition of Government Garden Produce.
WEDNESDAY, April 18	Royal Botanic Society's Second Spring Show.
THURSDAY, April 19	Scientific Society's Meeting at 8 P.M.
FRIDAY, April 20	Scientific Apparatus, at Stevens' Rooms.
SAURDAY, April 21	Sale of Photographic Apparatus, &c., at Stevens' Rooms.

ONCE more an INTERNATIONAL HORTICULTURAL EXHIBITION, or rather an Internationale Tentoonstelling van Tuinbouw—the site that quaintest of quaint towns, AMSTERDAM. Twelve years ago, when such exhibitions were in their infancy, Amsterdam made an excellent second to Brussels, and both were eclipsed by our display in 1866. Since that time various towns—St. Petersburg, Florence, Paris, and others—have taken up the tale, and now once more it is the turn for Amsterdam.

At the time of writing this note confusion reigns supreme, and it will only be after the lapse of two days that the Exhibition will be pronounced ready for opening, and therefore what we may say is open to correction. Nevertheless, the impression we have gained up to this time is that as a flower show it is far behind its predecessor of 1865. Indeed, neither in point of cultivation nor of novelty is the present Exhibition at all remarkable. True it is more dispersed. Instead of being arranged wholly within the Crystal Palace as before, the plants are dispersed through various stoves, conservatories, and temporary arcades scattered about the garden which now surrounds the building. Probably, then, there may be more exhibits than in 1865, but they do not at present show to such advantage. Moreover there is a lack of exhibits from the great Ghent nursermen, few of whom, except M. LINDEN, are exhibitors on a large scale. Of British exhibitors, Mr. WILLIAMS amply sustains the credit, but he is left to do the honours for his country almost alone. That he has done it well no one who knows what his usual practice is will doubt. Nay, were it not for Mr. WILLIAMS, the show would indeed be a poor one. Of course we speak generally. There are some exceptions, to which we may hereafter refer. The general arrangements are far from good. Several hours elapsed after the jury were summoned before they were told off to work. When they began to do so, the Presidents of sections did not know who were to be their fellow jurors. The Secretary scoured the building for the President — the President hunted for the Secretary — Both set out in search of their company of jurors. When at length some of these were found—for the whole number was rarely made up—then began the search for the objects to be adjudicated on; No. 1 was here, No. 2 was a quarter of a mile away, No. 3 was nowhere, there were two No. 5's, and no No. 6, and so forth. All this might have been obviated by a little foresight and management—qualities which our Dutch friends are not usually deficient in. It must always be remembered that we are writing before the Exhibition is complete, and therefore much improvement may fairly be looked for; but at the same time we cannot too strongly represent to the managers of such exhibitions that it is little less than cruel to summon some hundreds of exhibitors, jurors, and members of Congress from all quarters of the globe, and then waste their precious time, when, if not wanted at the Exhibition, they might employ it so profitably and pleasantly elsewhere in the city. On the other

hand, cordiality and hospitality never fail on these occasions, and there is ample promise that the Dutchmen will be equal to the occasion in this particular. As not only objects of horticultural interest are represented, but also Tobacco, Cinchona, Cotton, and other vegetable products, so the number of jurors and members of Congress is very large; among them, as usual, is a large proportion of the horticultural and botanical notabilities of Europe.

To this we may add, that we have received a telegraphic message from Amsterdam, to the effect that Mr. B. S. WILLIAMS, of Holloway, has been awarded the Prize of Honour, as well as eight gold medals.

— We are authorised to state that Her Majesty the QUEEN has intimated her intention to VISIT THE EXHIBITION OF CHOICE FLOWERS to be held in the conservatory of the Royal Horticultural Society, South Kensington, on Wednesday, May 2; and that the flower show which was intended to have been held on the 1st will consequently take place as originally fixed. These changes backwards and forwards are some of the results of the recent meddling and muddling with engagements already fixed, announced in our last issue. The show of the Pelargonium Society is another case of accepted arrangements upset; and all for what? There are those who can tell, but the real reason is probably little suspected by the horticultural world generally.

— The Cryptogamic botany of the late Transit of Venus Expedition still affords ample results, inasmuch as two further contributions, read at the Linnean Society on April 5, afford evidence. Professor REINSCHE's article on the FRESH WATER ALGÆ OF THE CAPE OF GOOD HOPE, if technical, was at least beautifully illustrated by careful drawings of structural detail; and Mr. W. MITTENS' observations on the HEPATICÆ from near Cape Town equally attested accurate knowledge of his subject. But the Cryptogamy of our own islands does not seem exhausted, as Irish Lichens, by the Rev. W. LEIGHTON, stated.

— THE FERNS of MADAGASCAR evidently display an unlooked-for richness, since only last year Mr. POOL'S collection yielded a great number of new forms; but again another collection by Miss HELEN GILPIN, from the neighbourhood of Antananarivo, placed in Mr. J. G. BAKER'S hands, gives also good results. Of 150 species, seventeen are new—the points of interest concerning these having been laid before the Linnean Society on April 5 by Mr. BAKER, of Kew.

— We are glad to see, from a circular issued by the ROYAL MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY, that £5400 has been raised towards the extinction of the debt of £6000, which has for many years been hanging like a millstone about its neck. This being the Society's Jubilee Year, it is proposed to make a special effort to get in the remainder, so as to send it forth free on its mission of improving the tastes of the dense population which surrounds it, and of encouraging the art of cultivation, by continuing its annual exhibitions, which are second to none, and at which premiums are distributed with a liberal hand for high-class horticultural productions. The Society well merits this support at the hands of all who, having the means, take an interest in the advancement of horticultural science and the refinement of the public taste; for it has now for fifty years done good work in this direction, having distributed in prizes a sum amounting to nearly £40,000. The annual flower show is held in the Society's garden at Old Trafford during Whitsun week, this season being kept as a holiday in the district, and the working classes, who are admitted at a low price, embrace the opportunity thus afforded them in large numbers, upwards of 30,000 having been admitted annually during the past nine years, in which the Society has extended and remodelled its exhibitions. Mr. B. FINLAY, the Secretary and Curator, would gladly furnish forms of subscription to any persons willing to help in so good a cause. The Society's National Exhibition opens this year on May 18.

— Two correspondents have sent us some curious abnormal growths of *DENDROBIUM NOBILE*. They consist of young shoots, producing roots, thrown out from the old stems, but instead of leaves these shoots bear membranous sheaths, out of which issues a solitary flower. In one shoot of three flowers there are no leaves; in another there are two leafless sheaths with a flower issuing from within each, then two sheaths bearing leaves, and also having axillary flowers, and finally a terminal leaf with a smaller leaf in its axil. The flowers are also abnormal, the lip being elongated, and convex instead of concave. Our correspondents ask the reason for these freaks, which we cannot tell. Have they been observed elsewhere?

— On Thursday, April 5, a considerable number of POTATOS WERE PLANTED IN THE CHISWICK GARDENS under the personal superintendence of Mr. W. G. SMITH, with a view towards averting the usual murrain of the autumn. The ground selected is heavy, non-porous loam and loamy clay, and the principal position is between rows of trees, both representing highly favourable conditions for an attack of the disease. Most of the Potatos were planted in the same piece of ground where the disease was so unusually virulent in 1875, and the only natural position usually reserved for the disease has not been found. One-half the Potatos were planted whole, the other half cut; and the Potatos selected for trial were the following—1, American Early Rose (this is the Potato which suffered more severely than any other in the 1875 attack, and the Potato in all parts of which the resting-spores were found); 2, Lapstone; 3, Breeze's Prolific; 4, Paterson's Victoria; 5, Rintoul's Striped Don; 6, Regents. No farmyard manure or guano was used, but the material termed "Salus" was sifted into the furrows before and after planting, and the cut Potatos were dipped into the material.

— The large pair of CHUSAN PALMS (*Chamaerops FORTALE*) are now in splendid flower at the Victoria and Paradise Nurseries, and the best of the upright spikes are about 3 feet long; a large crop of seed is expected.

— The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, April 16, when a paper will be read by Mr. J. SHAW, on "The Rivers Pollution Prevention Act, 1876." The chair to be taken at 8 o'clock.

— Rather more than two years ago the eldest son of the late Mr. WILLIAM BARNES, of Camberwell, was unfortunately deprived of insanity by the means of supporting his wife and four young children, and it was thought by some friends of the family that something might be done to alleviate and render assistance in this dire calamity. A few old acquaintances of Mr. BARNES formed themselves into a committee, and an appeal was sent out, which resulted more successfully than the committee had anticipated, and an amount of £221 7s. 6d. was subscribed. The committee have now issued their report and a balance-sheet, showing how the fund has been administered, from which we gather that Mr. BARNES has been started in business as a milliner, at 37, James's Grove, Commercial Road, Peckham, and the committee hope, with every prospect of success; but the utter hopelessness of the recovery of her husband necessarily has a depressing influence on her exertions. In promoting the objects which the committee had in view, it transpired that the second son of the late Mr. BARNES, living in Natal, had expressed a wish to render assistance, and he offered to take charge of the eldest boy, aged 7 years, to educate and provide for him, and to start him in life when old enough. The boy has therefore been provided with an outfit, and sent to Natal, part of the expenses being allowed by the committee, and charged to the fund.

— In CRITCHLEY'S HEAT REGULATOR we have what appears to be a useful contrivance for regulating the distribution of heat in plant-houses. It is also claimed for it that the amount of heat may be more efficiently regulated by this than by other means, the valves being worked to a scale marked on the piston valves. There are no doubt other methods of accomplishing the same objects, but there is a simplicity about the arrangements in this case which commends itself as being preferable to the intricacy of distant

and often inconveniently placed valves, since the valves—which in this case are sluice-valves—are here all brought together to one square box, and consequently are all close at hand, and all easily accessible, so that the hot water can be turned off and on without any difficulty or loss of time. The facility afforded for turning on and shutting off the heat in particular houses, where several are heated from one boiler, seems to us one of the main advantages to be derived from Messrs. CATCHLEY'S apparatus, as the flow can be carried on through the regulator, and the pipes for supplying bottom or top-heat in a particular house shut off on one or both sides by closing the side valves, while the heated water flows on to the house or houses beyond. Any one house of a series can thus be either heated or not, without interfering at all with the heating of the remainder, and more readily

RIDER, of Bartholomew Close, E.C., the publishers of the *Timber Trade Journal*, will also be the publishers of the new journal, to which we wish every success, though we hope it will not interfere in any way with the proceedings of that useful institution, the Scottish Arboricultural Society.

— Mr. A. W. FALCONER, late gardener to S. SCHLOSS, Esq., Dowdon, Cheshire, has been appointed to the management of the gardens of Mrs. F. G. WILKINS, The Poppars, Leyton, in succession to Mr. WARD.

— The next exhibition of the BURTON-UPON-TRENT HORTICULTURAL SOCIETY is announced to be held on June 27th. We see by the annual balance-sheet that the Society is in a flourishing con-

dition, the resultant fluid various seedling plants of *Acacia arabica* were placed, as nearly equal as possible in point of development, and their growth noted for a period of one month. The increase in the weight of the seedlings ranged from 0.36 gramme (1 grain = 15 grains) to 0.19 gramme; the number of leaves from twenty-two to six, and the length of roots from 10 inches to 1½ inch. It will be seen that this experiment is an application of the process of water-culture, now so largely followed in experimental laboratories, and by means of which the effect of any particular salt upon the growth of plants may be observed by adding the salt to, or abstracting it from, the solution in which the plant is grown. A comparison of the soluble chemical contents of the soil with those of the solution used in the water-culture experiments shows the suitability or the reverse of the soil for

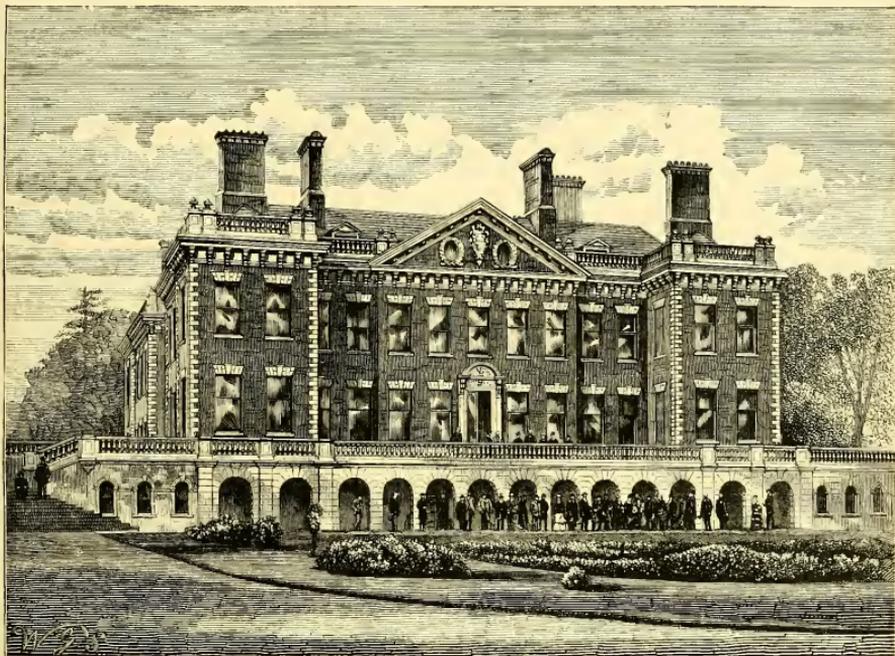


FIG. 72.—SHOBDON COURT, THE RESIDENCE OF LORD BATEMAN.

than by a complicated system of valves. The regulation of the amount of heat by the use of these particular valves does not appear to present any special advantage over that of other plans for effecting the same object, unless it be in their simplicity and accessibility. Those who have had them in use, including Mr. CRONK, gardener at Berkeley Castle, speak well of them; in fact, the latter writes that his two regulators, which represent thirty valves, are far superior to any other contrivance for effecting the same object.

— It is proposed to publish monthly a *Journal of Forestry* for the purpose of encouraging the study of forestry in its many aspects, scientific, practical, artistic, and economic. It is hoped that the new journal will be useful to foresters, land-agents, and landed proprietors, and furnish "all those other little pieces of news which are so pleasing to read and yet so difficult to obtain in a reliable form." Messrs.

dition, having a balance in hand of nearly £350, and as many as 1500 annual subscribers. The prizes offered are very liberal.

— Mr. A. G. HIGHT, of the Indian Forest Department, has been making some interesting experiments with a view to determine the EFFECT OF THE SOLUBLE SALTS in certain soils on the growth of plants. The plants experimented on were grown in watery extracts of the soils to be examined, and their vigour, size, and weight duly noted. Samples of five descriptions of soil were taken at a depth of 18 inches from the surface, and a watery extract prepared by pouring distilled water over them, and gradually heating the water to the boiling point. On cooling the water was poured off from the soil and set aside. On to the soil thus drained another quantity of water was poured, heated, and decanted as before, and so on for four times. The water from the four decantations was then mixed and filtered, and in

the cultivation of any particular plant. Mr. HIGHT'S experiments are very interesting and suggestive, but not as yet numerous enough to exclude or compensate sources of error, particularly that arising from natural variation in the vigour of individual plants from the same stock. How necessary this is to be attended to seems shown by the author's figures, which show in one case a variation in the same soil (experiments 4, 5, 6) of from 0.10 to 0.36 gramme, in number of leaves from thirteen to twenty-two, and in length of root from 2½ to 7½ inches. Nevertheless, we believe that a similar practical analysis of various soils carried out on a large scale would be productive of excellent results. We trust Mr. HIGHT may be encouraged to pursue his investigations in the future. Mr. HIGHT'S paper is in the February part of the *Journal of the Chemical Society*.

— The question, WHICH ARE THE BEST LATE GRAPES? is one of considerable importance, and one

to which an unanimous response can scarcely be expected. Some notes on this subject were published in our columns in January last, and Mr. HILL, of the Kewle Hall, whose name stands very high in the records of Grape-growing, has since then sent us some samples, accompanied by the following remarks:—

"I have grown a lot of different varieties of Grapes during the last twenty-eight years, grafted and otherwise, and have long since come to the conclusion that we have too many sorts. If I were asked to select six kinds for winter work I should name Lady Downe's Seedling, Alicante, and Mrs. Prince's Black Muscat as blacks; and Muscat of Alexandria, Mrs. Pearson, and Old Tokay, which are the latter in fact. Grape when well done—far before Trebbiano or Raisin de Calabre. For summer and autumn work I should have, of blacks, Black Hamburg, Snow's Muscat Hamburg grafted on Black Hamburg, and Black Prince; and of whites, Muscat, Foster's White, and Bredford Sweetwater. Chasselas also forces well. Were I tied down to four varieties only I should have Muscat of Alexandria, Black Hamburg, Lady Downe's Seedling, and Alicante. The latter I consider a fine Grape. This and Lady Downe's keep longer bottled than any I ever tried—and we were among the first to bottle Grapes in this country. Those I send were cut from the Vines the first week in January."

This sample reached us about the end of February, and was in every way perfect as to outside appearance, the berries being mostly plump, and the quality excellent. Lady Downe's was the best sample, and was plump and good, retaining its full flavour and all its good looks. Mrs. Prince's Muscat appeared to us to stand next best, the berries being very rich, but a little shrivelled, so that the appearance was not quite equal to that of Lady Downe's. Then came the Alicante, again plump and good, as perfect as any at this stage of its growth, and vying in quality with Lady Downe's. The Black Morocco which accompanied them was flat, being past its best, and deficient in flavour. The four samples were, however, taken altogether, as pretty an example of Grape-growing and Grape-preservation as any model meet with in a day's march.

— Bad news for CYCLAMEN growers! It was stated at a recent meeting of the Central Horticultural Society of France that the cultivation of the Cyclamen had been nearly abandoned in Paris, owing to the attacks of a fungus, against which no remedy had been found to avail.

— THE DISCOVERY of a NEW CONIFER in EUROPE is as interesting as unexpected. It inhabits the mountains of those "unhappy" countries, Servia, Bosnia, and Montenegro, and Dr. PAUCIE is the botanist who, after much consideration and research, and after taking the opinion of the late A. BRAUN, K. KOCH, and others, has described it as a new species under the name of PINUS OMORIKA. It belongs to the Abies section, and is most nearly allied to P. orientalis. Omorika is the Servian name of this tree, which Dr. PAUCIE describes as being of gigantic stature, equalling, if not exceeding, the loftiest of its European congeners. It is of slender habit, with rather short branches forming a pyramidal crown; by the loss of the trunk spruned, peeling off, the segments often break up in scales around the base of the trunk. The lower branches pendent, with the extremities only directed upward. Needles (leaves) of a silver-grey hue, small and short (about 5 lines long), usually obtuse; comes oval-oblong, 2 inches long, at first erect, gradually assuming a horizontal position, and finally pendent; when young of a beautiful violet colour, when mature reddish brown, with an intermixture of ash-grey. Scales of a roundish shape, faintly striated, and unequally toothed at the upper part. The forest-going particulars are from a lengthy article by CARL BOHLE in the Berlin Horticultural Society's *Journal*. Dr. REICHENBACH contributes some notes on the same subject to the *Botanische Zeitung*, n.s., 1877, from which it appears this tree—"whether species, variety, or climatic form"—is known by the name Omorika from the Adriatic to the Danube; and it is supposed that it was formerly more widely dispersed than appears to be the case at present. This is founded on the assumption that because the name is so widely understood, the tree yields a valuable timber. REICHENBACH regards it as a variety of P. orientalis, but, whether distinct or not, it is none the less interesting, and another illustration of the dis-

tribution of Conifers as exemplified by the Cedars, Pinus Peuce of REICHENBACH, &c. Both REICHENBACH and BOHLE had specimens before them, as well as a paper on the subject by PAUCIE himself.

— THE INTERNATIONAL CONGRESS OF HORTICULTURISTS and BOTANISTS, in connection with the great horticultural exhibition of PARIS next year, is to be held on August 18 and eight following days. The head-quarters will be at the rooms of the Central Horticultural Society and of the Botanical Society, 84, Rue de Grenelle Saint Germain.

— THE KIRKEY MALLERD AUCURIAS are now in fine condition, and the strong, stalwart trusses carry with them a rich promise of fine heads of bloom. A magnificent growth is the general characteristic—not a coarse, but a refined leaf development, and the Rev. Mr. HORNER anticipates that some of the choicest varieties will be in fine character. They are now in a roomy lean-to south house, and during the recent cold weather the plants have had the benefit of a little fire-heat. At this time of year the Auciaria is a greenhouse plant, and some warmth is absolutely necessary to the proper expansion and finishing of the pips.

— THE usual monthly dinner of the HORTICULTURAL CLUB took place on Wednesday, the 4th inst. There was a fair attendance. Mr. CANT, of Colchester, sent some dishes for the dessert of the Essex Spice Apple, in capital order, and a wit's of thanks was given to Mr. CANT for his courtesy.

— THE *Revue Horticole* reports the FRUITING of four plants of MUSA SINENSIS in the *Fleuriste de Paris*. They were planted out in the ground in a tropical-house in 1874, and in 1876 each of them showed an enormous inflorescence of more than 200 flowers, more than three-fourths of which set and ripened fruit. It is not stated what the quality of the fruit was, but the writer says that it is not only an exceedingly ornamental plant, but it may be profitably cultivated for its fruit.

— In addition to the gentlemen already named, the following have accepted the office of local hon. secretaries of the NATIONAL ROSE SOCIETY:—Capt. CARTER, for Hordham and West Sussex; J. L. CARTER, Esq., for Chilton and neighbourhood; and — CHEALES, Esq., for Tring and neighbourhood.

— AT CHISWICK HOUSE BEDDING-out has already commenced. Mr. EDMONDS finds it necessary to be early in order to have the beds well furnished by the time garden parties commence. Already the Calceolarias are bedded out, after having been duly hardened off, and then quite a fence of branches of evergreens are put round and about the beds. These serve to keep the plants quite snug, meanwhile they are having for an amended better able to withstand the dry influences that invariably accompany the sunny month of May. Lines of Echeverias are also marking the marginal lines of beds and borders. The hardy plants are got out to supply the framework of the floral pictures; by-and-by, when fear of danger is well past, the tenderer plants fall in to impart their particular touches of colour, and the picture is complete.

— Some huge plants of RICHARDIA ÆTHIOPICA are in fine condition in one of the glass structures at Chiswick House, and they are yielding an abundant number of the magnificent blossoms of the Marlborough House. They are in the warmest part of a house near the glass, and being abundantly supplied with water, alternated with occasional doses of liquid manure, the floral harvest is in keeping with the high cultivation. Mr. EDMONDS states it is an invaluable flower-yielding plant for this season of the year. In the same house a remarkable plant of Fuchsia Dominiana has been in flower for a considerable time past.

— THE BERLIN HORTICULTURAL SOCIETY has decided to hold no public exhibitions this year. In the first place the Society is poor, and it is the opinion of many of the members that flower and fruit shows are becoming too frequent to promote true horticulture, or benefit the public. The various com-

mittees will continue their labours, and there will be a private show on the foundation day. There is no doubt that flower shows, as a rule, do very little towards furthering horticulture, and it is a wise course not to spend the money of a society in the gratification of the outside public, because the public is a large body, and can afford to pay, and does pay, for the kind of recreation or instruction that suits its taste. Make your entertainment known, and then if the people do not come, you may guess there is a mistake somewhere—not far from home.

— The last number of the *Revue Horticole* contains a coloured plate of a rare Brazilian Bromeliad, LAMPROCOCCUS VALLEARIANI, a tufted plant with the habit and foliage of a Pine-apple. The central panicle of flowers is provided with numerous bracts of a pale rose colour and covered with greyish hair. Within the axils of these bracts are peduncles bearing five or six sessile flowers of linear oblong form. Both calyx and corolla are of a lilac colour.

— We have frequently had occasion to mention the POMOLOGICAL INSTITUTE of FROSKAU in Upper Silesia, Prussia, especially when the education of gardeners has been in question. Almost every gardener in this country who has attained eminence in his profession has done so by sheer perseverance and hard work in self-instruction, in gaining the theoretical knowledge necessary to enable him to carry out the higher flights of skill and to quell the complaint of men like these that most of their time, and even health, was sacrificed in attaining their object. Yet this would have been comparatively easy had they had the advantage of the assistance of competent instructors. Although this is the case, it is not at all likely that we shall soon have a national educational (practical and theoretical) establishment in this country. It is urged by some that our large nurseries answer the purpose fairly well, but this is an obvious mistake, requiring no explanation for those who have given the subject a thought or experienced the difficulties of the position. The state of affairs is in striking contrast to the provision made for the thorough instruction of gardeners in Prussia, where they are now, as we lately reported, agitating for the foundation of a high school of horticulture. The establishment at Proskau, though called pomological, is so comprehensive in its scope that the students have the opportunity of obtaining an insight into every branch of learning necessary to enable them to become accomplished gardeners, and this without any of the unimportant practical acquaintance with details of ordinary operations. The pupils are lodged, boarded, and taught in the Institution on payment of a very small sum, and in return they receive no payment for their labour. At present it accommodates thirty-six young men, but as the applications are always in excess of the vacancies, it is intended to enlarge the building. The area of land now under cultivation is about sixty-five acres, ten of which are devoted to a nursery of fruit trees. A large extent of it is occupied with a collection of fruit trees planted in irregular style, and termed the fruit park. Abutting on this is the stock collection, covering some 25 acres. The trees are all standards, and planted 24 feet asunder in the centre of grass strips, 8 feet wide. These grass strips are 30 feet apart, and the intervening tilled ground is devoted to the cultivation of various crops. Landscape gardening and flower gardening also form a part of the practical instruction; and there is a physiological and experimental department. As to the theoretical instruction, it would satisfy the wants of every branch of the profession.

— ON the occasion of the Spring Exhibition of the NEWCASTLE-ON-TYNE HORTICULTURAL SOCIETY on the 21st and 22d ult., an invitation was given to the whole of the public elementary schools in the town to pass through the exhibition on the morning of Thursday, the 22d ult., before the admission of the public. It was computed that some 2600 children were thus permitted to see the plants and flowers, and they all seemed much pleased with the treat afforded them. Through the forethought of the hon. secretary, each child on leaving the building had placed in his or her hand a paper setting forth the objects of the Society, and the terms of membership. Members of the third class subscribe 5s. per annum, and have privileges framed in a liberal spirit.

As a considerable number of the operative and artisan classes in Newcastle-on-Tyne take considerable interest in flowers, this means of bringing the claims of the Society before them through the instrumentality of the children appears to be a step in the right direction. The promoters are evidently alive to the importance of popularising horticulture, and it is not unlikely that some societies struggling with difficulties might appropriately take a leaf out of their book. Some of the most flourishing societies connected with horticulture up and down the country are those who bid for popular support, and when this is done in a proper manner the appeal is rarely made in vain.

— A very useful pamphlet, entitled *State Forestry: its Aim and Object*, has been published by Captain CAMPBELL WALKER, Conservator of the New Zealand forests. The pamphlet is based upon a lecture delivered at the Otago Institute, Dunedin, and though so far as details are concerned, it is intended to apply to New Zealand, yet the general principles laid down apply to all countries. We do not know any publication so certainly novel of so small a size, in which the objects to be attained, and the methods to be followed for that purpose, are so clearly and concisely laid down as in the pamphlet before us, which, it is to be hoped, may be reprinted, so as to obtain a larger circulation among foresters at home, in India and the colonies, than is possible under existing circumstances.

— A specimen of *CRINUM AQUATICUM*, grown by Sir CHARLES STRICKLAND, from material obtained at Grahamstown, South Africa, was exhibited at the last meeting of the Linnean Society, Mr. J. G. BAKER, of Kew, remarking that this showy plant, one by no means difficult to rear, had seldom been seen in Britain.

— In a lecture on the METAMORPHOSES OF PLANTS, before the botanical section of the *Scientific Gesellschaft für Vaterländische Kultur*, Dr. GOEPFERT mentioned, among other more commonly-known instances, a very striking Weeping Spruce Fir in the garden of the Villa Pallavicini, near Genoa, and a handsome weeping Dodonæ, 25 feet high, growing in the gardens of Baron FRANCESCONI at Intra, on Lake Major. Regarding the propagation of the so-called Snake Firs, he observed that BAKER had the seed of a specimen growing in Bohemia have altogether the normal growth and habit. A very remarkable Ivy, with an erect, unsupported stem 9 or to feet high, may be seen at Villa Pallavicini. The Irish Yew is of a more delicate constitution than the ordinary Yew, and is severely injured in very cold winters in Germany, whereas the common one is perfectly unsusceptible. Among recently noticed variegated and coloured-leaved trees and plants were *Populus tremula*, with dark purple foliage; and *Salix aurita* bibrata, with white variegated leaves. Of abnormal flowers and parts of flowers, Dr. GOEPFERT described a specimen of *Myosurus minimus*, which had the receptacle of some of the flowers doubled, and in others forked, nearly to the base; also compound ears of Wheat and Barley. Flowers coloured green were observed on plants of *Rosa Luteola*, *Lonicera castra*, *Erysimum Allfarra*, *Turritia glabra*, *Primula elatior*, and two *Dahlia*s, which latter, however, were not constant and soon reverted. The lecturer concluded with some remarks on the development of roots, alluding more particularly to the extraordinary masses of fine fibrous roots frequently found in drain-pipes. He had calculated the length, by weight, of a mass of roots of a Willow, probably of *Salix alba*, taken from a drain; it was about 4 feet long by 2 inches thick, and weighed a little over half a pound when dry. By selecting a number of the fibres, and taking their weight and measurement, the total length of fibres forming the mass was estimated at not less than 2000 yards. The foregoing particulars are from OTTO's *Hamburger Garten- und Baumzucht*.

— Dr. TSCHEPLOWITZ, assistant in the physiological department of the Pomological Institute at Proskau, has been making some experiments on the EVAPORATION OF WATER BY PLANTS, the results of which he lately communicated to the Botanical Society of Berlin, from whose *Monatsschrift* we extract the particulars. A small plant frequently transpires daily more than its own weight. It has been generally accepted that the more a plant transpired the greater

the increase of dry substance as compared to other individuals of the same species which have transpired less; but Dr. TSCHEPLOWITZ's experiments go to prove that this is not necessarily the case—in fact the contrary was almost the rule, though the processes may go on actively at the same time. One set of experiments was with seedling Peas about an inch high at the commencement. These were placed in a vessel for water culture, which was filled with water, the necessary nutrient substances added, and the whole weighed. After carefully placing the vessel the height of the water was marked, and after the lapse of five days the apparatus was again weighed, and the loss reckoned as evaporated water. Then the vessel was filled up to the original height with water, and the whole again weighed, the excess being regarded as the increase in the weight of the growing plant. This operation was repeated every five days. Dr. TSCHEPLOWITZ is of opinion that the increase of dry weight moves subject to the same laws as the increase of the total weight.

— From all that we can learn up to the time of going to press, there can be little doubt but that the EXHIBITION OF COVENT GARDEN PRODUCE, to be held at South Kensington on Wednesday next, will be a very successful affair. All the leading growers have signified their intention of showing the best examples they have of their special cultures; and we believe that the leading nurserymen also intend to contribute largely from their stores. We understand that Her Royal Highness the Princess MARY, Duchess of Teck, will open the exhibition at 1 P.M., and that in the evening the growers will dine together, at 7 o'clock, at the "Criterion."

— The nineteenth Report of the East Kent Natural History Society has some excellent remarks on the proper function of local MUSEUMS as educational institutes, and not mere curiosity shops. A museum should, in some sense, be a better sort of text-book or library of reference on the subjects it professes to embrace. What should we say of a library half the books in which were irrelevant, as to subject, with the professed object of the collection, and wherein the remainder were ill-selected, worse assorted, and unclassified for? And yet this is the condition of affairs in most cases of the kind. The zeal of amateurs cannot be expected to last for ever, and their exertions are more likely to be discursive than systematic. What is wanted in most cases is a competent and well-paid Curator, with sufficient assistance at command, and with intelligent appreciation and encouragement to support him.

— The relation which the various MINERAL INGREDIENTS OF PLANTS bear to the other constituents, and the office they fill, has received an interesting illustration of late at the hands of M. BOUÏE, who shows that, if lime be absent from the soil, the starch is less widely diffused and remains stored up in certain parts of the plant, instead of being generally distributed.

SHOBDON COURT.

SHOBDON COURT, the seat of the Right Hon. Lord Bateman, Lord-Lieutenant of Herefordshire, is much admired for its four handsome fronts, each varying from the other. It was built in the time of George I. by Viscount Bateman, in the Louis Quatorze style, but much more highly ornamented by the present Lord Bateman some fifteen years ago, with exceedingly handsome balustrades on the terraces at the east, south, and west fronts, and all round the eaves of the house. Here the geologist could at once remark upon the sad loss his lordship has sustained in listening in an evil hour to the persuasion of some architect or contractor to adopt Bath stone, which, on account of its massy easy weight, had been previously chosen. It has already, and in so short a space, proved an enemy prey to atmospheric influence, showing the noble proprietor that at vast expense the whole of this magnificent ornamentation must be renewed, next time most likely with the far more durable material dug from a quarry on the estate and without railway carriage.

The park is 3 or 4 miles in extent, and includes some very rich and picturesque scenery. Great admiration is always expressed at the size of the Spanish Chestnut trees, the Oriental Planes, the Cedars of Lebanon and the Atlas, one of the former measuring 18 feet

in circumference, still in healthy growth, but its top gone with the hurricane, the other in stately growth and in full vigour, measuring 18 feet 10 inches; a splendid deciduous Cypress, and a fine yellow Chestnut, but unfortunately each damaging the other from proximity, the Chestnut tree having several large bunches of *Mistletoe* on its branches.

The old trunk of the Cedar tree on the lawn, some 20 feet high and still living, has a perfect bole, measuring at 4 feet from the ground 18 feet 2 inches in circumference. Another Cedar in the grounds below, at 6 feet from the ground gave the enormous circumference for a Cedar tree of 21 feet 8 inches. These trees are the finest in the country, and were probably planted about the year 1758.

The view engraved (fig. 72, p. 466), taken from the gravel-walk beneath the arched front of the south terrace, includes portraits of Lord and Lady Bateman, several members of the family, and the visitors staying in the house, assembled on the balconied terrace above. The members of the Woolhope Club are assembled below, ready to start the park and woods, for a morning's pedestrianism, some in a carriage, and his lordship soon following with a pony for the assistance of the Rev. M. J. Berkeley.

From the high ground at the top of Shobdon Hill, which rises above the deer park, in which is a large herd of deer, may be seen on the Herefordshire look-out the valleys of Teme, Lugg, Arrow, with the woods, hills, and dales around Ludlow, Leominster, Weobley, Hereford, and Kingston—the Malvern, the Dimore Hills, Garston, Foxley, the Meerbatch Hills, Moccas country, and within the two last-named below, a fine glimpse, too, of the Aberystwyth, the Brecon Beacon, and other prominent landmarks. When the summit is reached, and the eye gazes in the opposite direction on Radnorshire, Montgomeryshire, and Shropshire, the vales of Lingen and Prestegise lie just underneath, while the country of Caracatus' retreat, Wapley, Coxwall Knoll, Croft Ambury, Brandon Camp, Car Caradoc, is all within range. Some there were who saw the Wrekin; enough for us that we saw the Glass over Ludlow, with Bringewood Chase and the High Vine, the latter our standpoint. The Church Streeton Hills, and Caradoc, and the Longmynd were clearly visible, and the road leading up to them, through a park of several miles, was bespiced with fine Scotch Firs and other trees and innumerable trees.

On the way from Kinglamb station to Shobdon Court, at 2 miles from the former, near a milestone at the junction of four roads and the old hostelry named from the *locus*, is the pedestal which commemorates the bloody battle of Mortimer's Cross, fought here from March 19 to 20 on a Condemna Day, 1455, when the Yorkists defeated the Lancastrians under Tudor, Earl of Pembroke, and secured the ascent to the throne of the Earl of March. It was the last great battle fought within the county.

A very curious circumstance may be here mentioned in reference to the hawfinch. Just before the members of the Woolhope Club arrived at Shobdon last autumn Lord Bateman picked up at the front door, quite recently killed, a fine specimen of the hawfinch, which had flown against one of the plate-glass windows to its own destruction. This rare bird has not been unaccountably found, and breeds some years in Herefordshire. It is an inhabitant of the more temperate climates of Spain, Italy, and France, visiting this island occasionally, and most generally in winter. These birds vary in plumage very much, scarcely two of them being alike. It is hoped the specimen will find its way to the Hereford Museum.

The church stands near the mansion, on the site of the former edifice. The old church was built by Oliver de Merlimont about the year 1150. It is said that Hugh de Mortimer gave Shobdon to his chief steward, Oliver de Merlimont, in the reign of King Stephen (A.D. 1135–54), and that the latter immediately proceeded to build a church. A little chapel of wood was the only ecclesiastical building which had previously stood there.

The style of the architecture of this ancient church, and the peculiarities of its sculpture, differ from the general character of that which is known to be Norman. There is much more refinement in the design generally, and more truth in the sculptured forms of the different living beings represented, than is seen in the character of the Norman period, and there is a

high artistic feeling in the composition of the whole, as well as in all the leading features, which would induce us to conclude that it has more of the character of the very early Irish school of design, of which we have but few examples left. Oliver de Merlimond also founded a small priory for canons near the church, which was afterwards removed from Eye, and finally to Wigmore.

In 1753 the old church of Shobdon was pulled down to make way for the present modern structure, the old tower being the only part retained; but even then the sculptured columns and arches were considered so extraordinary that it was determined to preserve them, and they were re-erected in their present position in the park.

THE ROYAL HORTICULTURAL SOCIETY.

MANY times I have felt disposed to express my very decided views I hold concerning the present position of the Royal Horticultural Society, because I believe my views to be largely held, and to represent the action of many of the horticulturists throughout the country. A little while ago, when I saw that "last letters" were being written, I determined to hold my peace, but since then the letters of Mr. Gilbert, Mr. Veitch, and Mr. Wilson, have in a measure changed the gardening public to say why they still decline to be charmed by the guinea membership. There is scarcely a village in England that does not contain one amateur gardener at least, and the Royal Horticultural Society should attract all these. How is it that it does not? I will shortly tell you. First let me ask what the Society does; and, secondly, let me point out what it ought to do. First, what it does.

1. It keeps up a fashionable and costly lounge at South Kensington.

2. It patronises and promotes flower-shows.

3. It gives prizes for new plants and for successful culture.

4. It keeps up an experimental garden at Chiswick.

Now what are these things worth? What South Kensington is worth we all know. It is a terrible drain upon the resources of the Society—a drain which diverts all its property into its proper work and which will go on so long as the Society is controlled by the debenture-holders, who naturally decline to see that they have lost their money, and who, not very unaturally, prefer the distant hope of a dividend to the immediate interests of horticulture. The debenture-holders decline to give votes to the "guinea men," because they know that the "guinea men" would vote for horticulture first, and for debenture-holders in the second place.

2. Flower shows, or "floral fetes" as we now call them, may be valuable to horticulturists, if they are properly adapted to large miserrymen, who very properly find in them their best advertisements. Most of us, however, think that it is this very tendency catch at popular applause, to prostitute horticulture to gala purposes, which led to South Kensington, and which has wrecked the Society. We all know that large flower shows lead to—the hacking about of huge plants from show to show, and to the encouragement, not of methodical gardening at home, nor of a genuine and wider love of the art, but of cultural quackery, and of the manufacture of "pot-bellies" for exhibition.

The Royal Horticultural Society has at South Kensington and elsewhere fanned the vulgar desire for these ostentatious galas, and now proposes to extend this policy.

3. The prizes and certificates are, on the whole, fairly and worthily given, and enable importers and growers to reach the public, but they could be given without a Royal Horticultural Society.

4. Chiswick.—I am sick of hearing of Chiswick. Chiswick is the one argument to silence us all. "Look at our experimental garden!" Well, let us look at it! What has been done at Chiswick? Nothing. Some one lately dared derision by saying that Chiswick was not only justified in itself, but justified the Society in all its doings, because some one had classified some Apples there. All the world knows, or may know, that there is no method at Chiswick for which a trained man of science could profess the faintest respect, and as for the empirical art of horticulture, I do not hesitate to say that more experiments are made in a month by such men as Mr. Speed, Mr. Denning, Mr. Stevens, Mr. Ingram, and many like them, than are made at Chiswick in a year. So much for the

"read to the sack." Now what, on the other hand, do we expect a Horticultural Society? Many things, here are some of them.

1. To hold meetings in London, such as are held by the other learned societies, for the reading of papers and discussion. This would lead, of course, to the publication of a proper series of valuable *Transactions*, and to the proper functions and management of a great special library.

2. To form and endow chairs for Professors of horticulture and allied subjects.

3. To establish in London or at Chiswick a system of lectures, which would soon lead to the formation of a horticultural board or college, whose certificates would be earnestly sought after by the younger professional gardeners.

4. To send lecturers in the winter months to deliver courses in other towns and at large establishments. Such lectures, I am in a position to say, would be cordially welcomed by the chief head gardeners in England.

5. To offer cups and prizes, not for gala competitions, but for those gardeners whose whole establishments, large or small, would best bear judging for general system, neatness, cultural excellence, and experimental results.

6. To hold a general summer gathering, like the gatherings of the Archaeological and other societies, where the reading of papers and general discussions would be arranged, and where horticulturists would meet, compare notes, and form mutual friendships.

7. To hold fortnightly meetings, as at present, and to give medals and commendations, as at present.

In a word, the function of the Horticultural Society should be to promote high culture and the introduction of new plants, to reduce the empirical or rule-of-thumb knowledge now possessed by our chief gardeners to some kind of scientific system, and to educate the rising generation of gardeners in the science of botany and the art of horticulture. The journals week after week are full of the conflicting opinions of leading gardeners on the commonest subjects—such even as Grape growing. Methodical investigation should and could settle these doubts, and explain these difficulties once and for all. Can our Royal Horticultural Society point to one single doctrine ever discovered and settled by it since it was founded? My scheme will be said by your readers to be ambitious. It is. My horticultural aspirations soar beyond the successful management of a gala, and beyond the delights of a lounge in a fashionable garden. *T. Clifford Allbutt, Leeds, April 6.*

[We print this letter as we believe it expresses opinions which are prevalent in the country; but we do not agree in the writer's estimate of the value of the work done at Chiswick, though we would willingly see that improved. Eds.]

THE JERUSALEM ARTICHOKE.

I HAVE more than once given out intimations that I had reason to believe that this esculent originated in the valley of the Mississippi, from a species of Sunflower (called *Helianthus dromicoides* by Lamarck), which is common there. The reason is (1) that the foliage, flowers, and mode of growth of this wild variety are much like those of the cultivated Artichoke, except that the tubers are long and slender—are commonly rootstocks rather than tubers. (2) But having planted these, and raised them in the garden for a dozen or fifteen years, I found that some tubers are long and narrow, and rather tough, while others are good "Artichokes." It is possible, however, that they had got mixed with the old cultivated plants, some of which grew near by. (3) But last autumn Professor John M. Coulter sent me, from Indiana, roots of the wild Sunflower in question; and I noticed that while some were quite like my original stock from Kentucky, others were shorter and thicker, and a few were to all appearance good Artichokes.

Now LINNÆUS, in the *Species Plantarum*, gives Brazil as the native country of *Helianthus tuberosus*, the Jerusalem Artichoke. We can trace the origin of this misconception, but, without entering into details, we will only say that these Artichokes no more came from Brazil than they did from Jerusalem. But LINNÆUS, in an earlier work (*the Hortus Cliffortianus*), says they came from Canada. That, on the other hand, seemed to be too far north, but I have thought it probable that they reached Europe by way of Canada, and Canada by way of the Great

Lakes and the Mississippi or Ohio. But I had not ascertained that any of our Indian tribes knew of this tuber, and had ever cultivated or used it. That was because I had not investigated the question as I should a botanical point, and because I did not apply to the proper source for information. The reference to a statement in Palfrey's *History of New England* made it appear that there was evidence upon this point somewhere in existence; and an inquiry made of our most learned scholar in Indian lore, Mr. J. H. Trumbull, of Hartford, Conn., now brings the facts to light.

It appears that SAGARD, in his *History of Canada* (1636) and in his *Grand Voyage*, mentions, as among the provisions of the Hurons, "roots that we call Canadiennes or Pommes de Canada, and that they call Oraquenta, which are not very common in their country. They eat them raw as well as cooked," &c. He mentions Potatoes ("potates") which he had seen on board an English vessel, and which, "they say, if cut in pieces and planted in the earth, in short time grow and multiply, like the Pommes de Canada."—This seems to show that the Huron Indians had Artichokes in cultivation. Still earlier, viz. in 1612, Lescaut, in his history, mentions roots found in the country of the Armonchipou (Canada and Northern New England), as big as Turnips, which were excellent eating, of a flavour reminding one of Caroons, and which, when planted, multiply in a marvellous fashion. Possibly these may be the tubers of *Apios tuberosa*, or ground-nut, but the account agrees much better with Artichoke. Now the evidence which the old herbalists furnish, and which Mr. Trumbull has looked up, make it clear that Jerusalem Artichokes went from Canada to Europe within a dozen years after the first settlement of Canada, viz. at Quebec. I cannot here enter into particulars; but suffice it to say, that the plant was received in England, "Anno 1617," and Italy, early enough to have got the name "Jerusalem Artichoke" established at the date of Johnson's edition of Gerard's *Herbals*, 1633; for this Jerusalem is doubtless an English corruption of *Girasol*, sunflower; and the plant was at a very early date cultivated in the Farnese Garden. *Asa Gray, in the "American Agriculturist."*



Home Correspondence.

The Ivy.—I have read with interest Mr. Grieve's article on the Ivy, and have great pleasure in bearing testimony to its usefulness and beauty when associated with buildings. Here nearly half the Castle is covered with it, and the plan pursued is to drive into the wall, about 2 feet apart, large clout nails diamond pattern, and from nail to nail is worked copper wire, simply twisting it round the neck of the nail, and passing on to the next. The wire is thus about 2 inches from the wall. The variety used is what is known as the Irish Ivy, which is by far the best for lofty buildings. The Ivy loves good soil to start in, and plenty of moisture, when it will soon reach a great height, the same as it does here, and will look beautiful all the year, as well as toning down a great mass of masonry. It also unquestionably has a great tendency to render any building dry and warm in winter. We cut the Ivy here annually the first week in April, with a sharp scimitar sort of hook, and the leaves cut off are carried to the deer in the park, who enjoy the change of food. In a very short time after cutting, the remaining fresh leaves are formed, giving to the building a pleasing appearance all through the following summer and winter. The great advantage of the nails and wire as described is that it completely secures the plant to the wall, and although it "souls" (weaver's "comes up from the coast" occasionally at the rate of 90 miles an hour, yet the Ivy is very seldom displaced, and looks after its washing as fresh as a Daisy, notwithstanding some of it being sixty years old. Some of the variegated varieties are very beautiful, and also many of the small green ones are very neat, but they are best for walls and buildings under 20 feet, and where their beauty is best seen when one is close to them. *F. Ruiz, Bridge Castle, Thurbridge Wells.* [We prefer alleged "being" in our experience, the quickest grower. Eds.]

Orange Blossoms.—I saw a question asked a few weeks ago, relative to the origin of the custom of placing Orange blossoms in bridal wreaths, and think I can now throw some light on the subject; for the Rev. James Niel, author of *Polestina*, has just published a most excellent lecture at Petersfield a few evenings ago, in which the "Apples" mentioned in Scripture as growing in Palestine were really Orange trees, and that the bride in the days of Solomon was decked with their blossoms; the figure "Apples of gold in pictures of silver," was also an allusion to the Orange, which bears fruit and blooms at the same time. *Helen G. Walton.*

Potato Planting.—I cannot say that Potato growers are having a good time yet. The winter proved to be an exceedingly trying one for keeping the tubers, and its comparative mildness induced a good deal of premature sprouting, much to the injury of the seed; and now that the planting time is upon us, and the fast passing days argue that the work should be done as speedily as possible, we are having heavy rains in such frequency that scarcely is the surface of the soil dry before it is wet again, whilst the water is still in the tubers, and the ground is so dry it is so desirable for Potato planting that it is better to wait a little than plant in the rain; but now the waning spring renders the planting a matter of necessity. Some persons who have no fear of late spring frosts here there they are planting their tubers in dry weather in March, and if no late frosts come they will be fortunate people; but as we have late sharp frosts five years out of six, all Potato hauls taken from the ground at the end of April stands but a poor chance of escaping the market. The same may be said of Potatos are being got in as fast as the weather will permit, the plough and the dibber being the most potent agents in planting. As fast as the ground is turned over men follow behind with the dibbers in order to fill the holes with the same soil as the ground. Others fill the holes in, and soon afterwards a harrow is sent over the ground, and all is finished. In this way a large breadth is soon got in. *A. D.*

Double Daisies.—Some of the most pleasing of spring garden flowers are found in the pretty double Daisies, a few of which may be found in almost every cottage garden in the kingdom. It is perhaps quite correct to say of the Daisy that it is too common and too well cultivated to be worth notice. It has many advantages, it is perhaps somewhat despised by many gardeners. Yet there are properties in the Daisy that should render its cultivation more generally favoured; there is considerable variety in colour of the flowers, and in the habit of the plant. Some are single, some bedding, ribbon bordering, and edging, whilst in the majority of sorts the flowers are so double and of such excellent form as to present capital models for florists who may be striving to improve things which need little more than a little Daisies in the garden, and the Giant White purity of colour that might vie with the snow-wreath, whilst in the Sweep and Bacchus are found sorts that in comparison are blood-red, and furnish a rich glowing tint that is of great effect amidst the too common pinks, yellows, blues, and whites of our hardy spring flowers. Although the Daisy does not depart from the two primary hues of red and white, yet in many flowers these are so blended as to produce some very charming shades of rose and pink, two of the very best of which are mixed hues perhaps being found in Rosy Gem, a large flat-petalled kind, having white petals heavily suffused with rose, and Early Gem, a large quilled kind, in which the two colours are about equally blended and so blended as to give a beautiful pink. The Daisy is infrequently given some excellent double flowers, and some of new form or colour. In this way persons may soon secure stocks of sorts quite new and distinct. The tendency of the Daisy to sport is found in the existence of the variegated kinds which have thus originated. *A.*

Waltham Cross Grape.—I would have written you in answer to H. F. C. G., but hoped that some one else would have done so for me on this subject. Your correspondent says that he knows "one or two noted Grape growers who have completely failed with it," but this information is of little value unless he would say in which way they had failed. He only gives us his own experience, and the fault with him is that Waltham Cross is a shy bearer. This statement surprises me, for here at Loxford Hall we have two rods of it, and for two seasons nearly, if not all the lateral showed three bunches each, and such bunches they were as to quantity and length. My own experience as I have seen it at Waltham Cross and here is, that it is one of the most free bearing sorts we have. It may not do well as a pot plant, but it had no opportunity of judging, but from the drift of your correspondent's letter he has only grown one cane of it as a pot Vine, which did not show fruit. Surely this experience was not enough to condemn a new Grape upon. As Mr. W. Paul

exhibited it at South Kensington, the Fruit Committee could not do less than grant it a First-class Certificate. I saw the bunch and tasted the fruit, and from that did not hesitate to order a cane. I believe the same bunch was figured in the *Florist and Pomologist*, and I should say that the artist has done it less than justice. As you have already alluded in referring terms to the fruit grown at Loxford it does not become me to say more on that head, except that none of our bunches come near in appearance the one shown in the *Florist and Pomologist*. Your correspondent also very kindly tells the Fruit Committee how they ought to do their work. "They should have growing specimens of the fruit before them." Surely if he is a practical man he must know that unless the committee could see the fruit, or unless the committee visited the garden where the fruit was growing. The first method would not do justice to the Grape, and no committee would undertake the other. Surely, I believe many "noted growers" visited the Vines of Mr. W. Paul, and were quite satisfied with the Vines at Waltham Cross. Further, the following valuable information is freely tendered to us:—"There are several good practical gardeners on the committee who would grow the plants either in Vines or likely to be fruitful or not. No gardener, or "noted grower" either, could tell this unless it was in fruit or showing, and then a child could tell just as well. J. Douglas, Loxford Hall, Herts, Es., April 9."

The Rose House at Gunnersbury.—In your issue of June 3 last, "R. D." describes a new Rose-house at Gunnersbury in which the plants are planted out in beds; it would be much to my interest to know whether the rose house you refer to at the present time: have the plants been forced at all, and if so, how does their produce compare with pot culture? Doubtless in quantity and quality they are equal if not superior, but are they as much under control as the plants in pots? Bloomed at the same time? The relative qualities of the varieties grown would also much oblige. *An Amateur*. [In order to reply fully to the queries of "An Amateur" I have just inspected the Rose-house at Gunnersbury, and I am bound to say the rose house sight is now a most attractive and instructive one. The house is yielding from 400 to 500 beautiful blooms per week, and cutting has gone on uninterrupted since August. The Roses were trained over the top, the house was shut up early, and for fortnight, and then fire-heat was employed, and it has been continued ever since. The produce compares in the most favourable manner with flowers obtained from plants in pots. As in the house I saw some splendid blooms of Marechal Vallant, Charles Ledre, Dupuy Jamin, Madame Victor Verdier, Gloire de Dijon, Madame d'O, Madame Jules Margottin, Bouquet Faicot, President, and Chesnut Hybrid, I may now name a splendid Rose or two more. The plants are all planted out in raised beds 2 feet in depth, and though the roots may have got away beyond the confines of the house in some instances they are perfectly under control. The constant cutting has been granted, and the sides of the house, after the flowers are removed from the points of the leading shoots, lateral buds break forth freely and produce blossoms. The Gunnersbury house is one of the most successful illustrations of Rose culture under glass to be met with around London. *R. D.*]

Loberia Emperor William.—Permit me to say a few more words in reply to Mr. Bester's statement at p. 376, wherein he admits that I have given a true history as to the origin of this variety, and yet claims the credit of its being raised by me. I do not, and I emphatically deny. He also infers that he gave Mr. Brownell a pinch of the seed from which he raised it, which is an erroneous statement, as the packet of seed from which it originated was purchased by Mr. Brownell for 1s. in February, 1874, which was two years and a-half previous to its gaining the certificate; and in the spring of 1873 myself and others in this neighbourhood were in possession of it before Mr. Bester had even seen it. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Lilium giganteum.—Though this Lily may be flowered in a pot, it is extremely doubtful whether so vigorous a growing plant can do as well under such treatment as when planted out. About three years since I bought two rather small bulbs, one of which was planted in an open border in light sandy loam with a spit or two of well-rotted manure dug in about 2 feet below the surface. It was then left undisturbed, and in the autumn the plant was raised to the stem measured 7½ feet high and 1½ inches in girth at the base, bearing fifteen bulbs. The bulb being completely exhausted, as I believe is invariably the case with this Lily after flowering, has left behind six offsets, and removing two of the best I have found the roots of the old bulb were very large and penetrated deeply into the soil. The other bulb was potted, and, though it has been throughout under the

care of a most experienced gardener, is not yet sufficiently strong to bloom. *Charles F. Knight, Sevenoaks.*

Double Narcissus.—When I sent you the double and single forms of *N. Talamonius* on March 28, I promised to send you the double and single forms of *N. Penderelensis* also. The double form of this is, that is to say, the double and the single are found growing more or less together. You will see they are far removed from the *Talamonius*. I have only met with the double in any quantity in one part of England, but I will be glad to plant you a few if it possesses in the wild state, from having the trumpet generally complete and full of petals. Indeed, the tendency in the wild state is to be semi-double, as in one of the accompanying specimens; whereas in my soil the tendency is to increase in double form and to develop a rose flower instead of a trumpet. I find this the case also with the double form of *Talamonius*, and the double form of *cernuus*. This latter, growing on stiff loamy soil, invariably retains the trumpet perfect. The specimens I send of the double, Parkinson calls *Pseudo-Narcissus anglica flore pleno*—Mr. Gerald's double *Dafodil*, who, Parkinson states, first discovered it in the world, finding it in a poor woman's garden in the east part of England, where, first before the woman came to live there; and he goes on to say—"I have heard since it is natural to the Isle of Wight." The specimens sent are the most varied I could find, the semi-double being almost the only one in the quarter of the garden. *Barr, 12, King Street, Covent Garden.* [In several of the specimens sent the flower is so completely full that the trumpet portion is altogether obliterated. *Eds.*]

The Wetteranne.—Some time since one of your correspondents asked the question, What sort of tree is the Wetteranne of the Alps?—to which, as far as I have observed, no answer has been given. Allow me to give in elucidation of this subject some extracts from a short manuscript on the subject by Z. de Berlepsch, translated by the Rev. Leslie Stephen. It will appear that the word does not signify a species of the Pine or Fir, but a Pine tree of peculiar shape and abnormal growth, owing to exposure to the weather on high mountains. The higher boundary of the forest lies behind us. It reaches to 5000 or 5500 feet above the sea. Higher up the mountains are only fresh green alpine pastures, with short close turf, interrupted occasionally by scattered bushes of pine and fir, and by Larches. To these bold outposts of the forest belong especially the Wetteranne, or Weather-Pine. The Wetteranne, which rises in isolated positions on the alpine meadows at heights of 6000, and in the Gisons of 7000 feet, is a hermit grown up by itself. . . . a solitary tree on an alpine pasturage, which, as implied by its name, has a thoroughly weathered appearance. It is generally a Pine, whose heavy and far-extended branches begin a few feet from the ground, and in the normal shape, the form is repeated by the young branches up to the top, forming a thickly wooded and sheltering roof. Often, however, it is a form which sets at defiance all common laws of growth. . . . It does not look like one tree; it seems to be a mass of stems, or a mass of stems—a whole family of Pines. Here the straight coquetish shaft has been metamorphosed into a rough knotted cylinder of compressed and deeply marked wood. Its noble striving after its law of vertical growth has been broken up by the influence of the outward circumstances—storms, avalanches, and thunderstorms—have so knocked it about, broken it off short, and amputated its limbs, that it is covered over and over with rents and deeply scarred wounds, full of knots and malformations. But still he fights his way up with irresistible power of vitality—a noble fellow, full to the brim of energy, manly and inflexible, a character in whom every bone must be made to measure. And then the boughs, they have the same active nature, the same push at all hazards as the stem. Every little twig stands up for his own independent rights, and will be a bit of a tree on his own account. It is an illustration of the law of the survival of the fittest, *die fitteste*.—As the old ones sing, still twitter the young. Quite unlike the horizontal boughs of the lowland Pine, these boughs, after a short level shoot outwards, turn like a swan's neck upwards, and grow straight and more and more into the sky. But the boughs do not stand equally all round the stem, but on one side, where the lightning has scored and crashed, or the storm cut out the limbs, they are wanting, whilst on the opposite side boughs and leaves grow more thickly and more closely packed. Here and there withered dead stumps of boughs strike out, and help, with the long beardlike lichens, to give a wilder expression to the whole

picture. . . . A colossal specimen, three-pointed, like a hand raised for an oath, stands in the Valzeiner Alys at the entrance of the Prätigan, Grisons, whose stem, 4½ feet from the ground, is 7 feet in diameter.

It is yet a benevolent, hospitable tree—a *hospice* erected by Nature, with shelter and asylum, to whose protection the cattle fly with sudden black stags and broken rain clouds discharging their burdens, or hallstorns rattling down in thick masses. But also in the sultry height of summer, when the sun is near the zenith, and over the whole broad alpine meadow no shady spot is to be found, the cattle intuitively seek the Wetterstein, and stand comfortably in its cool, refreshing shadows. To this double service in good and bad weather it probably owes its name as much to its appearance. I have only to add to this that it is the *Beech* of some southern usually, and in this place, to mention in particular the Pinus Cembra. John M. Gillington, Knapp Hill, April 9.

Mistletoe.—Considering the interesting nature of this parasite, and its exceedingly ornamental character when seen clinging to the branches of evergreen trees, leading to the fact that in the winter months it is a wonder that worked plants of it are not more an article of commerce among nurserymen who make trees and shrubs a speciality of their trade. In parks and dress gardens, and in having a few of the more ornamental branches laden with the above would be a most interesting feature, and as it is such a very easy matter to get it established, and the present the proper time to set about its propagation either by grafting or seed, any one desiring to introduce it into a garden should do it by one or other of these methods. Although the Mistletoe does best on the Apple, Thorn, or Lime, it succeeds on many other kinds of trees, even to the Oak, but its presence on this appears to be of its rare occurrence, not as it is in the time of the Oaks.

Drawn when it was held in such veneration. Where suitable trees abound, it might be found a very profitable plant to grow, thus combining utility with ornament, as there is always, and is ever likely to be, an immense demand for it, not only for use for decorative purposes at the native season of Christmastide, when in certain circles it gives license to swains and blushing maidens, and causes a good deal of hilarity.

In places where Mistletoe once gains a footing the seeds are shed from the tree, and the birds, by constantly devouring them frequently find themselves incommoded by the viscid fluid that sticks to their bills with glue-like tenacity, and to rid themselves of it they wipe their beak on the branches, thus depositing any seeds which may be attached to the beak. As we wish to introduce this novel plant we have only to imitate the sweet songsters of our woods, and stick the seed in like manner on any clean young branches of the particular tree on which we wish to have it grow.

Success depends a good deal on the way the berries ripen than on anything else, as it is just as impossible for the seed of Mistletoe to grow in an immature state as it is in the case of any other plant, and many have given up all attempts to get it established through the berries, and to have the berries at the wrong time. One might as well collect those of the Holly while green, and expect them to grow, as to get the Mistletoe before March, at which time they are fully ripe; and as the winter has been so exceedingly mild the berries have remained unmoistened, so that the present season affords an excellent opportunity of obtaining them in a state in which they will be likely to germinate. Those who have to get them from a distance should be careful to have them all gathered from the plant, and directly they arrive, at once placed on the branches of either a Thorn, Crab, Lime or Apple; but it is useless doing this on the thick hard bark, the cuttings of which get the seed almost perfectly dry. Choose, therefore, nice young branches on the most prominent part of the trees, and on these stick the berries by simply breaking the skin so that the viscid flesh may be rubbed on and cause the seed to adhere. If placed on the under sides of the large twiggy shoots, they are more safe from the keen eyes of birds, and it is quite as well to ward these off by tying a piece of thin muslin around the branch so as to cover the seed, thus making success in this matter almost certain. It is interesting to watch the swelling and germinating process through its various stages, so that, independent of the beauty of the plant and its novel character, there is much pleasure to be derived from it almost immediately after the seed is placed in a position favorable to its growth. Mistletoe may also be propagated by grafting, which should be done in April or early in May, but as this is a difficult operation to perform, and there is not much gain in point of time, it is scarcely worth the trouble unless the grower is a person pretty well skilled in that branch of gardening. Like most parasites, the Mistletoe is a great robber, living at the expense of the tree to which it attaches itself. It will therefore be advisable in introducing it not to apply one's own labor to the propagation of it of much value, as their fruit-bearing powers will

not be so great when they have to support a plant that causes such a drain on the sap and is constantly taxing their energies. F. Sheppard.

Potatoes.—During the last season, an experiment was raised in the haum from the ground succeeded so well (at least, a lesser quantity of disease coincided so completely with the Potatos tested, that possibly some of your readers may be inclined presently to try the plan. Looking at the influence which date has been shown to have on the sprout of Peronospora, I had lines of strong tarred twine taken at about 22 inches from the ground between the rows of Potatos, the cords supported by stout pegs, so that the haum was kept from lying on the ground during its whole life. The arrangement allowed a great deal of sunshine and free passage of air between the rows for some weeks longer in the early stage of growth than is usually the case, and by occasionally nipping off some of the tips of the shoots they were kept in manageable length, and had healthy foliage (not disfigured as usual by yellow and decaying leaves in large numbers), till in the natural course of things it withered in autumn. At Christmas, when the few months of storing had tried the crop, the Potatos which had been grown as usual were for the most part diseased, but those which had been grown with the raised haum had only a small percentage bad, and continue in excellent condition for household supply. The sorts experimented on were Paterson's King, which I had already seen in your column (I had the same garden the previous year), and a few lines of Jersey Blues. Of course, the comparative absence of disease may be only from coincidence, but I hope to try the experiment again this year on a larger scale; and will be glad to hear should you have any other experiment, and would kindly give the results, it would be of much interest. O.

Silene Hookeri × S. Elizabethae.—I wrote on the evening before a meeting of the Royal Horticultural Society, in order to be submitted to the Scientific Committee, and in great haste to catch the post; a note of the above hybrid, and of a cross I effected thereon, but without reading over what I had written. I found on reading it over in your publication of March 24, giving a report of the meeting that, having left a sentence unfinished, I had made many of it, yet as it was not in your column I did not think it worth troubling you to correct it. But there was a more important mistake, unintentionally committed, about which Mr. Thompson, of Ipswich, feels aggrieved, and very justly I find, and I had much to say to him, yet as I had not time to do I had got the Silene Hookeri from Messrs. Backhouse & Son, and believing it to be so, I stated that it was an introduction of theirs from Oregon. Mr. Thompson writes:—"Now, as this plant had been merely introduced by myself from California and supplied by me to them (Messrs. Backhouse & Son) on more than one occasion, I hope you will not think me unduly sensitive if I ask a rectification on the subject." I am aware that Messrs. Backhouse had been merely introduced by myself from California, and sent to them, but I was informed that they arrived dead. As I was the first to raise and offer for sale, I hope you will not think I ask too much in begging that this may be put on record in any way you may prefer. I did not know the occurrence, and I think it certainly by no means improvable." I cheerfully comply with Mr. Thompson's request, and think it but common justice that he should have the credit of introducing the S. Hookeri as a living plant into this country, and all the more so as I had not time to do this acknowledgment and correction, that in his annual catalogue I find the descriptions of his many very important introductions set down with exemplary modesty, and rarely, if ever, overstatement. I have no doubt that he would be glad to have his name in his account of it (*Bot. Mag.*, tab. 6051), observes that it had been discovered some forty years ago in woods of the Wahlamet, in Oregon, and has been gathered repeatedly since by various collectors in different parts of Oregon and California, and as this Professor Bolander had sent seeds to Mr. Thompson, of Ipswich, who forwarded living specimens to Kew, which flowered there in May, 1873; with all this history it is coming from California, rather delicate for our climate; and it is to be hoped that Mr. Thompson may succeed in getting it from Oregon, whose severer climate will insure greater hardihood. I. Anclerson-Henry, Hay Lodge, Trinity, Edinburgh, April 11.

Rainfall in 1876 at Fota, Sligo, Co. Cork.—The rainfall recorded here was—January, 2.30 inches; February, 1.99; March, 3.59; April, 3.28; May, 0.11; June, 1.01; July, 1.49; August, 3.29; September, 6.83; October, 5.20; November, 7.25; December, 8.10—total, 47.64 inches. The number of days on which rain fell was—January, 13; February, 20; March, 15; April, 13; May, 12;

June, 9; July, 5; August, 11; September, 16; October, 16; November, 21; December, 24—total, 165 days. The coldest day was January 22, 19°; and the hottest, June 26, 90° in shade. Although we had a very dry summer the rainfall was over the average by several inches. W. Osborne, Fota.

Foreign Correspondence.

CAMBRIDGE, MASS.: *Acclimatization.*—There can be, judging from past failures in acclimatization, but little hope that plants can be accustomed, save by the very slow process of natural selection, to new conditions of temperature. But there is much to be gained by cultivators if it be borne in mind that individuals of widely spread species vary to a remarkable degree in their power to withstand cold, and that this power is increased in proportion to the distance at which the parent plant is found from the Equator, or above the level of the ocean.

But few references in garden literature to this subject have come under my notice. In the volume of the *Gardener's Chronicle* for 1861, p. 239, the Editor, commenting on the severe winter of 1860-61, notices that in a lot of seedling *Amarantus* a portion have been killed, while the rest are uninjured. This is accounted for on the supposition that the seed from which these plants had been raised had been collected in widely different localities and elevations, and that those seedlings only which had been raised from seed collected at high elevations, or towards the southern limits of the species, had been able to withstand the severe ordeal of the English winter. In the same article importers of seeds of certain not very hardy plants are very sensibly advised to procure their supplies from certain regions in which these plants are known to thrive naturally.

In the volume for 1876 Mr. Maw calls attention to the fact that certain herbaceous plants, principally Sedums of the Mediterranean regions, are more hardy in his garden when brought from the coldest localities where they are known to exist, than are individuals of the same species collected in Barbary and Algeria.

I find no other allusion to this important subject, for the records of certain trees, especially of the Scotch Pine and the European Larch, are more robust when collected under certain favourable circumstances, and which has been noticed by most recent writers on arboriculture, is hardly analogous, and can be sufficiently explained in other ways. It is well, then, to chronicle a conspicuous example of this power of certain individuals of a species to withstand a much lower temperature than others, which has come under the notice of American dendrologists. Experiments extending over many years have proved that two Conifers from the Pacific coast, *Abies Douglasii* and *Abies Menziesii*, were unable to withstand, with any certainty, the severe winter of the Northern Atlantic States, and their cultivation had practically been abandoned there. In 1862 Dr. Parry visited the mountains of Colorado, and sent here a large collection of plants and seeds of that region, and among them seeds of these two Spruces, which form vast forests on the eastern slopes of the Rocky Mountains, ascending to fully 9000 feet above the sea-level.

The plants raised from this seed have now stood the test of a dozen years of exposure here without the slightest injury, although within that time several winters have occurred remarkably destructive to plant life. With a view of making the experiment as complete as possible these young plants have been widely distributed through several of the northern States, and without exception, so far as I have heard, not a single one has ever been at all affected either by the climate or the very different soils in which they have been planted. So then it is necessary to go to the highest elevation where these trees grow, to collect the seed, and we add at once to the short list of Conifers capable of supporting the New England climate two trees of first-rate importance, although all previous efforts with these same species had been unsuccessful so long as the source of the supply of seed had been the lower elevation of the Pacific coast range. The importance of Dr. Parry's introduction can hardly be exaggerated. It has already supplied us with valuable and unworked material for plantations, and its true importance has a wider significance in the fact that it furnishes another indication that it is a general law of plant life that different individuals of

the same species vary remarkably in their adaptability to different climates—a law which, in imposing new duties on experimental horticulture, promises to its observers results of the greatest practical value. C. S. Sargent, Cambridge, March, 1877.

Notices of Books.

Die Pflanzen-Welt Norwegens, &c. (The Plant-World of Norway.) By Dr. Schübler. (Christiania: Brögger. (Williams & Norgate.)

The first part of this very valuable contribution to the literature of cultural botany appeared some years since, and was issued in an English version, under the title of *Synopsis of the Vegetable Products of Norway*.

In the present publication we have a systematic account of all the more important wild and cultivated plants of Norway. The subject is treated, not from the point of view of the descriptive botanist, as in the ordinary Floras, but in a form which will excite interest in the general student of natural history, and satisfy the wishes of the intelligent cultivator of plants or student of economic botany, as well as of the historian, the philologist, and the jurist. We have in this way an account of the general and topographical distribution of the more important species, details relating to the use made of them, the method of cultivation adopted, as well as historical details and other matters of interest. For instance, in the case of the common Elder, we are told that it grows wild as far as the 63° N. lat., while in a cultivated state, or as an escape from cultivation it extends to lat. 67°, flowering in the latter part of August or beginning of September. At Drömnethin, in lat. 63°, it produces ripe berries. The largest Elder in Norway is in lat. 58°, on the S.W. coast. It is about 26 feet in height, with a diameter of head of 25 feet. The names of the cultivated varieties are then given. Under the head of Roses the author mentions a Rose which produced on the same shoot a white Moss Rose, and a second Rose, destitute of moss, and resembling a bloom of the common Rosa canina. This is by no means a solitary instance, but such cases are always deserving of record. Illustrations of some of the more peculiar varieties and forms of Conifers and other trees are given, which add greatly to the interest of the book, and bear witness to the almost unquenchable vitality of trees in certain cases. Some of the woodcuts showing trees which have been blown down by the wind, and fallen in point.

In some cases the felled or uprooted trunk has rooted at both ends, and from the centre have sprung "laterals" which have assumed large dimensions, and at the same time reproduced the form of the parent tree. In the appendices are given alphabetical lists of the plants, with their polar limits of distribution, other lists showing the period of opening of flowers for ten years, in various localities. Associated with these are various climatal details, information relating to the appearance of insects, the migrations of birds, &c. The whole is terminated by a full alphabetical index. We can only express our sense of the great value of this publication by hoping that it may speedily be rendered accessible to English students by means of as good a translation as its great merits call for.

PUBLICATIONS RECEIVED.—Science Gossip.—Popular Science Review.—Moniteur Horticole Belge.—Monatschrift des Vereines zur Beforderung des Gartenbaues, &c., Berlin.—Journal de la Société Centrale d'Horticulture (Paris).—Revue Horticole.—Gartenflora.—Revue de l'Horticulture Belge.—Illustration Horticole.—Journal of the Society of Arts.—The Gardener.—Étude sur les Produits Commerciaux de l'Afrique Centrale, par M. Bernardin, R. J. (Ghent).—The Villa Gardener.—Miniature Fruit Garden, by T. F. Rivers (7th edition).—London Society (Sampson, Low & Co.).—Hardy Plants for Little Front Gardens, by S. Stackhouse (Warne & Co.).

Florists' Flowers.

MEAL-LEAVED AURICULAS.—When looking over the Rev. F. D. Horner's splendid collection of Auriculas at Kirkby Malzeard a few days ago, I was much struck with the exceeding beauty of the many varieties with handsome mealed foliage. One great attraction about the Auricula is the many changes of leaf garb it assumes during the year, but especially now when the flowers are being put forth. Then it is that the Auricula, when grown as Mr. Horner grows it, puts forth such a grandeur of leaf develop-

ment, as if no dress was too good at the time of the birth of the flowers, or no leaf garniture too rich and exuberant so that the flowerets thereby attained a sweeter bloom.

The large majority of the Auriculas with mealed foliage are comprehended in the white-edged class. There are a goodly number of self-flowers with mealed foliage, but there is no grey-edged with mealed foliage as one sees it in the case of Smiling Beauty—that exquisite queen of Auriculas—Taylor's Glory, Ne Plus Ultra, &c. In the case of some of the grey-edged flowers, there is just a dash of meal on the inner leaves in the form of a kind of thin-powdered flame up it, and this it takes on at flowering time, when the leaves are vigorous in development.

In the white-edged class we get varieties with leaves densely mealed above and below, overlaid with a farina of the most delicate character. The most striking are Smiling Beauty, Taylor's Glory, Taylor's Favourite, the leaves of which are toothed like a saw, and have in addition a dense beading of meal; Earl Grosvenor, Ann Smith, Catharina, Lady Sale, John Simonite, Trail's Beauty, Regular, Gaines' Model, and McDonald's Miss Arckley. There are a few white-edged flowers with mealed foliage that are apt to come grey on the edge, among them may be mentioned Trail's Beauty, True Briton, Maria, and Lady Sale. Trail's Beauty is a white-edged flower, so short of white on the edge as to be in the character of a whitish or grey grey edge.

In the grey-edged class Colonel Champey's is perhaps the particular variety that has the most densely mealed leaves. Charles E. Brown, Privateer, and some others have the meal on their leaves as above stated.

There is no green-edged Auricula with mealed foliage, for as the old growers termed it, they have "green grass;" there may be sometimes a dash of meal about the buds, but none on the foliage.

In the self class there are a number of varieties with handsome mealed foliage, such as Pizarro, Duke of Argyle, Miss Brightley, Lord of Lorne, Vulcan, Charles Perry, Meteor Flag, Topsy, Fanny Crossland, Simonite's Yellow, Mrs. Sturrock, Petronella, Smith's Pensioner, Smith's Garland, Eliza, &c.

And one great attraction in a collection of Auriculas is the green-leaved forms alternating with those with mealed foliage. The self class illustrates this diversity in a remarkable manner, for of those having green foliage may be enumerated Othello, Ruby (this sometimes has a few grains of meal so delicately spread over the leaves, as if they had fallen from a fairy snow-cloud); Lord Lee, William Lightbody, Lord Clyde, Nimrod, Blackbird, Spalding's Metropolitan, and Lowe's Mackin.

What is known as *Primula Auricula* var. *marginata* is one of the most handsomely mealed of Auriculas, and the young leaves are most richly powdered at mid-winter. It is a variety of the yellow Auricula, with flowers of a deeper and more golden yellow, and it is in every respect a most interesting and desirable plant for pot culture. R. D.

— A variety of the DOUBLE PRIMROSE, named *Violacea*, appears to be a welcome addition to this class of spring flowering plants. It is quite distinct in character, the flowers of a violet-purple colour, large and full, and it appears to be of vigorous growth. A collection of double Primroses now comprises a goodly number of varieties, for there are the white, lilac, blue, violet, rose, Scotch, red, purple, crimson-purple, crimson, bright red, sulphur, Giant yellow, and Giantess yellow, in all thirteen sorts, and perchance this list may not exhaust all the known varieties that are in cultivation. It would be interesting to know to what happy circumstance we were indebted for the first double Primrose, and how the above large and varied collection has originated.

Forestry.

THAT branch of forestry comprising the relief of plants from everything that impedes their growth and development, is of such vital import that it demands more than a general remark or passing observation. Myriads of plants perish year by year, from no other cause than that of being choked with grass and other luxuriant herbage. It is often a subject of enquiry, and also of dispute, which season of the year is best for clearing forest trees of rank herbage, such as Furze, Bracken, Nettles, Thistles, and such-like,

because on the one hand the sudden and severe exposure, caused by cutting down that which surrounded and confined the plants, is more felt in winter than summer, and on the other, some species of trees are so like the summer herbage in colour as to render the work of clearing them with sharp instruments extremely hazardous. The richest and best ground in a plantation is generally productive of such herbage as destroys the young trees, and instead of such districts producing timber trees proportionately valuable as the grounds on which they grow, the very reverse is the case, and there is frequently no crop at all. Such ground as produces strong herbage of rapid growth indicates the presence of a richness and fertility just in proportion, and but for the circumstance that the young plants are overgrown and destroyed in the first year of their growth, they would throughout their lives maintain their superiority. In such cases it is quite evident that unless the plants are cleared the first season before they complete their period of growth, the young wood is immature and unfit to withstand the winter when the herbage falls down and leaves them exposed. The kind of work most pressing at the present time is, in most cases, that of clearing last year's plants of the decayed grassy herbage that envelops them, and excludes them from sun and air. Many plants, too, will be found lying flat upon the ground, and completely covered with grass as if to hide them entirely from view. Such plants, of whatever species, are unable to extricate themselves from their position, and only require one more year's growth to accumulate over them to complete the work of their destruction.

From the time I commence spring planting there are a number of boys and women employed putting in plants both in the forest and the nursery, and, as often occurs, during intervals of frost, sometimes a whole day, and sometimes only part of a day. During such frosty weather, unless accompanied with snow, I employ the planters, under the superintendance of a competent man, to do the work of clearing young trees in the nearest plantations. In some cases the grass is best cleared off with the hand in a glove, as thereby no injury results to the plants, as sometimes happens with sharp instruments. In other cases a hooked piece of strong wire stuck into a wooden handle is used for drawing the withered grass away from the plants. The two processes of clearing are not applicable only to decayed and tender herbage, but also to Whins, Heaths, Brambles, and such-like, which must of course be cut with the hook-bill or hand-bill, an instrument I have often recommended for such work. When herbage of any kind is cut or disengaged from the plants the operator should give it a tramp down with the foot to prevent it from blowing about and adhering to trees, fences, &c.

In seasons such as this, when severe snowstorms have occurred, accompanied by winds and dril, much damage may have been done to trees and young plantations in ravines and sheltered places. It is not plantations of one, two, or three years' growth that suffer most from heavy lodgments of snow, but those of older growth, say from ten to twenty years. Trees of small and slender growth yield to the pressure, and, though buried for months underneath the snow, will rise and erect themselves as if nothing had happened. Not so, however, with older trees, they are often broken, bruised, and mangled to such a degree as never again to be restored. With regard to such damage all should be done that can be done, leaving Nature to do the rest. Larch and hard woods, where much injured should be cut over, the latter near the ground, if required, but the former will only reproduce a leader if a fair proportion of branches are below the fracture, and not otherwise.

Some trees can be put erect, and remain so, by simply putting a turf as a brattice to that side to which they incline. Others require a forked piece of wood, say a young tree with divided top, cut to the required length to form a prop or temporary support. Others require only to have their broken branches pruned off, and so on with others, treating each as the surgeon does his patients in the battle-field.

At this season of the year in particular the good old proverb should be borne in mind. "As the twig is bent the tree inclines." In a general sense every tree should be seen at this particular season of the year to be in its true and proper position, since in a short time its condition becomes fixed and established unalterably.

Since I began of late years to pay special attention to this particular branch of forestry, I have seen the

results to be good, and far beyond what the most sanguine could have anticipated. The expense per acre for clearing plants differs so widely from various causes that an estimate even the most general would do more to mislead than guide upon the subject. Sometimes a woman or lad will clear 1200 plants per day, while at other times, with equal diligence and application, they will not clear over 600.

At whatever cost or sacrifice, however, the work should be done, and should never be neglected. Better that only 100 acres be planted annually, and properly looked after and attended to, than 200 acres treated in the too common but profitless manner. As a rule, the soils and situations naturally most capable of producing good and profitable crops of trees of all others produce the worst, and often, indeed, none at all, an effect produced by the very obvious cause—the rank herbage choking the young and tender plants in their infancy, and no hand outstretched to save them. *C. Y. Michie, Cullen House, Cullen, April 7.*



PROFITABLE GARDENING AND ROTATION OF CROPS.—Under this heading it is proposed to throw out a few suggestions to Villa gardeners as to a judicious selection of garden crops. It is a common practice to attempt too much—to crowd too many things, say, into a piece of kitchen garden, as if the cultivator were under the impression he must grow something of every article enumerated in a seed catalogue.

In cropping a piece of garden ground its size should be the first consideration in deciding on what should be grown. The ordinary wants of a family will pretty well determine what quantity should be sown of each article, and if it should happen that there is a superabundance of any particular thing—which is likely enough to happen with crops that come in with a glut and go out of condition quickly—it is, after all, rather pleasant to be able to make a present to a neighbour while the produce is in its prime, which is far better than leaving the crop to run to seed or rot on the ground, and so become wasted.

Next follows a very useful rule, which can be heartily commended to Villa gardeners—make it a rule to clear off any crop as soon as it ceases to be useful; and if the ground is wanted in a restricted size never attempt to grow anything respecting which there is room to doubt it will not afford an adequate supply; therefore it is a good plan to grow only those things likely to be manageable and to furnish a fair return.

Most Villa gardeners who have a piece of kitchen garden like to grow a few leading things, such as Cabbage, Kale, Brussels Sprouts, Cauliflowers, and Sprouting Broccoli, as they are all good and useful. These seeds are sown in seed beds, and then planted out as soon as the ground can be cleared for the purpose. In planting out select the very best and strongest plants, and leave the worst behind, and give these good plants all the attention they deserve, and they will repay it. It is a common error to delay sowing these things till the end of April, which is much too late, for the plants can scarcely be planted out permanently before the dry weather sets in, and thus they do not get a good start, and grow into size by the winter. If it should be thought desirable to save a few plants for seed, let the very best plants of the truest character be set apart for the purpose, and be well attended to, so that the seed may become well matured.

In setting in one's mind what articles are to be grown, it needs to be borne in mind that Carrots, Parsnips, and Beet require a deep, friable, and rich mould, and if of a sandy character so much the better. Such a soil is necessary, that the growing roots may thrust themselves well down into it. Then Cabbages, Broccoli, Brussels Sprouts, Kales, &c., require a good rich loam and plenty of manure; it is almost a waste of time to put the plants into a poor soil. Beans prefer fields by farmers to prepare such ground in the open air, and they are much soil for Wheat. If a piece of ground be broken up for the first time, it is always a good plan to grow a crop of Potatoes on it, for there is no crop that equals

Potatoes in commencing a course of culture with a view to mellowing and preparing a new soil, and fitting it for general culture.

So far as it can be carried out in a restricted piece of ground, a proper rotation of crops is very important. It is an old adage among gardeners that sowing. They held that a change of crop was necessary to "clean the ground." The "best rule for a rotation course," writes an old gardener, "is never to follow across with another belonging to the same family. After Peas it would be folly to plant Peas or Beans, though the sort might be different; after Cabbage, no Broccoli, Cauliflower or Kale should be planted; and it is not well to grow Potatoes on the same patch two seasons running, though a course of winter culture and fair manuring may, in most cases, render the ground quite fit for Potatoes again."

And in arranging crops it is very important to bear in mind the state of the ground in so far as it is affected by previous manuring, for it is a sheer waste to plant a crop that will do on poor soil in one that has been much enriched, merely for the sake of a change. Celery is always a favourite vegetable, and there is no Villa gardener but makes a point of growing a little Celery if he can possibly do so. Now, good Celery cannot be grown without abundance of manure, and when it is liberally given there is this advantage—that the ground, instead of being exhausted, is in excellent condition for growing Onions the succeeding year. Beet, too, is commonly grown, because so good for eating, but it does best on ground that has not been manured for two seasons, because it is not wanted large; the same with Onions for pickling, which should be sown on the poorest soil in the garden. After Peas and Potatoes, Carrots and Parsnips may be grown; they would do better than as if they followed Cabbage and Broccoli on heavily-manured ground.

It has been laid down by old gardening authorities that it is advisable in all cases to succeed every spindle-rooted crop—such as Carrots, Parsnips, &c.—with one that has fibrous roots, such as Peas, Beans, &c., and *vice versa*. Dependent upon it, there is much reason and sound advice in this; it is one of those sensible suggestions that may be advantageously pressed on the attention of all gardeners.



Natural History.

CHAFERS.—Is it not a fact that the chaffer is now much scarcer with us than it was thirty years ago?—at least such is my impression. I have a distinct recollection when a boy that, with others, we used to assemble in the road, armed with boughs, in the early summer evenings, when the chafers were on the wing, and invariably flying from west to east, and found it fine fun to knock them down wholesale as they passed over. The flight was regular in the evening, and literally in crowds; but now the chaffer is almost a novelty, indeed it is quite a rarity in this part of the kingdom. At that time, living at the old nursery grounds at Hill, Southampton, my recollection is strengthened by the fact that the men used to be put to shake and beat the Beech and Hornbeam hedge that ran here and there across the nursery, and the insects lodged in them were so numerous that they were swept up in the pathways and thrown into a large tub of water to destroy them. The chaffer, in its winged form, is a ravenous vegetarian, and does infinite mischief to those trees to the leafage of which it has special affinity. Why the appellation cockchafer is invariably given to this insect I cannot say, but I believe as boys we had no difficulty in deciding which in our naturalistic vocabulary were "cock" and which "hen" chafers. Perhaps the continuous war

made upon the winged insect has done more to reduce its numbers, and it is equally probable that the enlightenment which, thanks to the Peas, has spread among agriculturists, has done something towards promoting greater toleration for that useful bird, the rook, the natural enemy of the chaffer grub. If these birds are ill, to them the axiom most specially applies—

"Thy Rater than those ill we have,

Than fly to others that we know not of."

A. D.

NIGHTINGALES.—A friend of mine tells me that he heard two of these birds sing beautifully in Holt Forest, near Farnham, on the 5th; and another Liss resident says she heard the nightingale on the 4th in a small wood close to the village; so the "Eos," as we Welsh people call Philomela, has put in an appearance early this season. *Helan Watney, Liss.*



STATE OF THE WEATHER AT BLACKHATH, LONDON FOR THE WEEK ENDING WEDNESDAY, APRIL 11, 1877.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.		HYGROMETRIC DEVIATIONS FROM TABLE 5th Edition.	WIND.	RAINFALL.
	Mean Reading Reduced to Sea Level.	Deposure from Average.	Range.	Mean for Day.			
April 5	30.0	0.0	58.0	58.0	85	S.S.W.	0.0
6	30.3	-0.4	56.39	57.17	84	S.W.	0.08
7	30.47	-0.37	57.19	56.45	80	S.W.	0.04
8	30.46	-0.35	55.2	57.0	84	S.W.	0.39
9	30.35	-0.39	55.47	56.89	87	S.W.	0.17
10	30.37	-0.37	56.45	57.4	84	S.W.	0.27
11	30.55	-0.18	56.43	57.4	87	S.W.	0.10
Mean	30.39	-0.35	56.41	57.4	85	S.W.	0.29

- April 5.—Fine, but cloudy; frequent showers of rain.
- 6.—A fine day, partially cloudy and showery.
- 7.—Fine, but cloudy day. Showers at times.
- 8.—A very dull day, rain fell continuously after 3 P.M., and very heavily in the evening.
- 9.—Fine, but cloudy and dull; rain fell after 4 P.M.
- 10.—Fine day, very cloudy till night, then cloudless. Rain fell heavily in morning.
- 11.—Dull and cloudy; fine at times. Thunderstorm, with rain in afternoon.

LONDON: Barometer.—During the week ending Saturday, April 7, in the suburbs of London, the reading of the barometer at the level of the sea decreased from 30.07 inches at the beginning of the week to 29 inches by the afternoon of the 4th, increased to 29 inches by the morning of the 7th, and was 29.66 inches at the end of the week. The mean daily temperatures of the air were, being 0.05 inch below that of the preceding week, and 0.37 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 67° on the 4th to 52½° on the 1st; the mean value for the week was 57½°. The lowest temperatures of the air ranged from 37½° on the 7th to 45½° on the 1st; the mean for the week was 41½°. The mean daily range of temperature in the week was 16½°, the greatest range in the day being 22° on the 4th, and the least 7°, on the 1st. The mean temperature of the air for the week was as follows:—April 1, 48°; 2d, 45°; 3d, 49°; 4th, 53°; 5th, 46°; 6th, 45°; 7th, 45°; and the departures in excess of their respective averages were—3°; 8°; 4°; 3°; 5°; 8°; 3°; 1°; 6°; 0°; 4° and 0°; 3°. The mean temperature of the air for the week was 47½°, being 3° above the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 120° on the 4th, 116° on the 5th, 110° on the 6th, and 111½° on the 7th; on the 1st the reading did not rise above 64°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 34½° on the 7th, 36½° on the 6th, and 37½° on the 5th; the mean value for the week was 39°.

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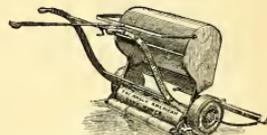
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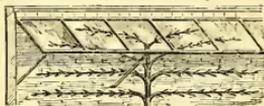
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JOURNEYMEN, or IMPROVER, in the Nurseries.—Age 21, single, tall suited. Can produce six years' good character. A small Farm if required.—H. B., Canon Hill, Bear Market, Bristol.

IMPROVER, under a Foreman, or as a SECOND in a Small Establishment, or as an assistant. Good character.—Adrian, staying wages, to W. B., Kofis Park, Chigwell, Essex.

To Landscape Gardeners. — WANTED ENGLISHMAN, near Langley Gleaner. Has had considerable experience in New Ground Work, Planting, &c.—R. L. R., McLaren, Newsgate, Hammersmith Gate, W.

TRAVELLER. T. FOX, late of Tooting, is in want of a situation to suit on Commission Nursery Stock, or Covent Garden Produce.—T. F., Gardeners' Chronicle Office, W.C.

TRAVELLER, MANAGER, BOOK-KEEPER, or CLERK, in a Nursery or Seed Business. First-class references.—K. W., 41, Bewsey Street, Warrington, Lancashire.

To Seedsmen and Florists.

MANAGER.—The Advertiser, who is a successful hybridiser of Florist Flowers, is desirous of obtaining an engagement in a Florist and Seed Business, or Charge of a Nursery, in any of the above. His references are required.—D., Gardeners' Chronicle Office, W.C.

GARDENER, &c.—A Scotchman, age 40, desires a re-engagement, at home or abroad, to carry out Landscape Gardening (in the manner of Man), to act as Kneesuper, or in any such capacity; or as Manager of Tea or Coffee Plantations, or suchlike. Has had over twenty years' practice in the above. Has had extensive knowledge of agricultural pursuits. Excellent references, which will speak of his capabilities, energy, integrity, and respectability. —M. P., General Post-office, Temple Lane, Hyde Park, W.

FOREMAN, or TIME-KEEPER, to Market Gardener, or would Assist a Gentleman in the Management of a Farm and Market Garden combined.—Married, respectable, and well versed in the profession. Good references.—C. H. B., Post-office, Ealing, Middlesex.

POTENTIAL COLLECTOR, to proceed abroad.—Has a good knowledge of Plants, especially of Orchids.—Any Nobleman, Gentleman, or Nurseryman requiring the services of the collector will please write to M. P., 3, Mill Place, King's Road, Chelsea, S.W.

SHOPMAN, or BOOK-KEEPER.—Thirty years' experience.—A. B., Gardeners' Chronicle Office, London, W.C.

BOOK-KEEPER (ASSISTANT), or INVOICE CLERK.—Belongs to a florist in strengthening and corresponds in French and English.—Z. Z., Post Restante, Ghent.

BAILIFF (WORKING), or BAILIFF and FOREMAN.—Married, no encumbrance; large experience in Stock. Wife good Dairy and Poultry-woman. Having thorough depth of late employer. Unexceptional references.—L. V., Mr. Exandine, Nurseryman, Gifford.

KINAHAN'S LL WHISKY. Universally recommended by the Medical Profession. Is of the purest quality, and is of excellent quality in strengthening a debilitated constitution than any other medicine in the world. Persons of a nervous habit of body, and all who are suffering from weak digestion, indigestion, or from a general debility, are benefited by this Whisky. It is also a fine trial. Coughs, colds, catarrhs, and other ailments are also within the range of the salutary powers of this very remarkable medicine, which may be used either as a permanent, or as a superfluous or temporary, but complete and permanent. They are as mild as they are efficacious, and may be given with confidence to delicate females and young children. Their action on the liver, stomach, and bowels is immediate, beneficial, and lasting, and restores the health in every case.

DINNFERD'S FLUID MAGNESIA. The best remedy for ACIDITY of the STOMACH, HEARTBURN, HEADACHE, GOUT, INDIGESTION; and the safest aperient for delicate Constipation. DINNFERD AND CO., 175, New Bond Street, London, and all Chemists.

HOLLOWAY'S PILLS. — These Pills are of excellent quality in strengthening a debilitated constitution than any other medicine in the world. Persons of a nervous habit of body, and all who are suffering from weak digestion, indigestion, or from a general debility, are benefited by this Whisky. It is also a fine trial. Coughs, colds, catarrhs, and other ailments are also within the range of the salutary powers of this very remarkable medicine, which may be used either as a permanent, or as a superfluous or temporary, but complete and permanent. They are as mild as they are efficacious, and may be given with confidence to delicate females and young children. Their action on the liver, stomach, and bowels is immediate, beneficial, and lasting, and restores the health in every case.

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GREEN'S PATENT "SILENS MESSOR" & "MONARCH,"

Or NOISELESS LAWN MOWING, ROLLING, and COLLECTING MACHINES for 1877,

THE WINNERS OF EVERY PRIZE IN ALL CASES OF COMPETITION.

Patronised by Her Most Gracious Majesty the Queen on numerous occasions, H. R. H. the Prince of Wales, the King of the Belgians, the late Emperor of the French, the Emperor of Russia, and most of the Nobility, Clergy, and Gentry in the United Kingdom.

Upwards of 80,000 of the above Machines have been Sold since they were first introduced in the year 1856, And Hundreds of unsolicited Testimonials have been received testifying to their superiority over all others.

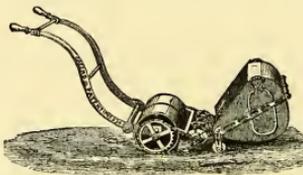
They have been submitted to numerous practical tests in Public Competition, and in all cases have carried off every Prize that has been given.

The following are their special advantages—

- 1st. Simplicity of Construction—every part being free of access.
- 2d. They are worked with far greater ease than any other.
- 3d. They are the least liable to get out of order.
- 4th. They make little or no noise in working.
- 5th. They will cut either long or short Grass, wet or dry.

SINGLE AND DOUBLE-HANDED "SILENS MESSOR" LAWN MOWER.

	£	s.	d.
To cut 6 inches	1	15	0
Can be worked by a Lady.			
To cut 8 inches	2	10	0
Ditto.			
To cut 10 inches	3	10	0
Ditto.			
To cut 12 inches	4	15	0
Can be worked by one Person.			
To cut 14 inches	5	15	0
Ditto.			
To cut 16 inches	6	15	0
Can be worked by one Person on an even Lawn.			



	£	s.	d.
To cut 18 inches	8	0	0
Can be worked by a Man and Boy.			
To cut 20 inches	8	10	0
Ditto.			
" 22 "	9	0	0
Ditto.			
" 24 "	9	10	0
Ditto.			

Prices of Horse, Pony, and Donkey Machines, including Patent Self or Slide Delivery Box; to Ordinary Chaise Traces or Gig Harness:—

DONKEY and PONY MACHINES.

To cut 26 inches	£15	0	0	Leather Boots for Donkey	£1	0	0
" 28 "	17	0	0	" " Pony	1	4	0
" 30 "	18	0	0				

HORSE MACHINES.

To cut 30 inches	£22	0	0	To cut 42 inches	£30	0	0
" 36 "	26	0	0	" 48 "	34	0	0
Leather Boots for Horse	£1	9	0				

The 26 and 28 inches can easily be worked by a Donkey, the 30 inches by a Pony, and the larger sizes by a Horse; and as the Machines make little noise in working, the most spirited animal can be employed without fear of its running away, or in any way damaging the Machines.

Carriage paid to all the principal Railway Stations and Shipping Ports in England, Ireland, and Scotland.

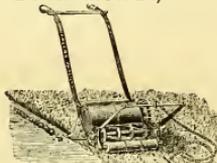
GREEN'S PATENT "MONARCH" LAWN MOWER, with Chain and Internal Gear combined.

This Mower is well adapted for cutting long, coarse, rough, and wet Grass. It is strongly made, and does its work admirably. It will cut nearer to an object than any other Lawn Mower extant.

The sizes and prices of the "Monarch" Mower are in every respect the same as for the "Silens Messor," with Grass Box, &c., complete.

Green's Patent Lawn Mowers have proved to be the best, and have carried off every prize that has been given in all cases of competition.

No Lawn Mower Manufacturer keeps so large a stock of Mowers as is to be found at our London Establishment, 54 and 55, Blackfriars Road, where purchasers can select from upwards of 500 Machines of Hand, Pony, and Horse Power, and have their Orders executed the same day they are received. The above Machines are Warranted to give entire Satisfaction, otherwise they may be returned at once, free of cost to the Purchaser.

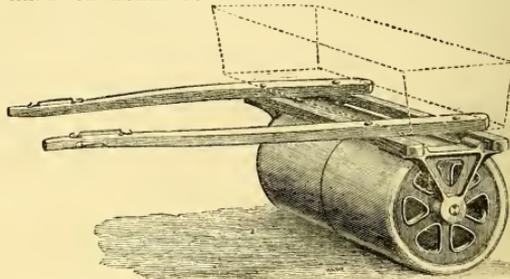
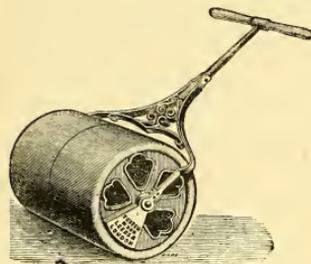


Green's Lawn Mowers are the only Machines in constant use at the Royal Horticultural Society's Gardens, South Kensington, London.

N.B.—Those who have Lawn Mowers which require repairing should send them to either our Leeds or London establishment, where they will have prompt attention, as an Efficient Staff of Workmen is kept at both places.

Delivered, Carriage Free, at all the principal Railway Stations and Shipping Ports in England, Ireland, and Scotland.

GREEN'S PATENT ROLLERS FOR LAWNS, DRIVES, BOWLING GREENS, CRICKET FIELDS, AND GRAVEL PATHS, SUITABLE FOR HAND OR HORSE POWER.



PRICES OF HAND ROLLERS.

In One Piece.				In Two Pieces.			
Diam.	Length.	£	s.	Diam.	Length.	£	s.
16 inches	by 17 inches	3	0	16 inches	by 17 inches	3	5
20 "	22 "	3	12	20 "	22 "	4	7
24 "	26 "	5	0	24 "	26 "	5	12
				30 "	32 "	9	10

PRICES OF ROLLERS, IN TWO PARTS, FITTED WITH SHAFTS.

Diam.	Length.	£	s.	Diam.	Length.	£	s.
30 inches	by 32 inches	13	10	30 inches	by 48 inches	17	0
30 "	36 "	14	0	30 "	60 "	16	10
30 "	42 "	15	10	30 "	72 "	22	0

Special quotations made for Rollers 3 feet and 4 feet diameter, fitted with Shafts for One or Two Horses.

THEY CAN BE HAD FROM ALL RESPECTABLE IRONMONGERS AND SEEDSMEN IN THE UNITED KINGDOM; OR FROM THOMAS GREEN & SON, Smithfield Ironworks, Leeds; and 54 and 55, Blackfriars Road, London, S.E. ILLUSTRATED PRICE LIST FREE ON APPLICATION.

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 173.—VOL. VII. [New Series.]

SATURDAY, APRIL 21, 1877.

Registered at the General Post Office as a Newspaper. Price 5d. Post Free, 6d.

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ROYAL MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY—ARICULCA SHOW, &c., at the Town Hall, Manchester, on April 27. The GRAND NATIONAL FLOWER SHOW, &c., at the Crystal Palace, London, on May 17. (ONE THOUSAND POUNDS in Prizes) will open on May 17. Special Show of ROSES, TULIPS, DINNERS, and FRUIT, &c., at the Crystal Palace, London, on May 10. For Schedules apply to—
H. B. GUY, Secretary, Royal Botanic Gardens, Manchester.

GRAND FLOWER SHOW will be held by the Orleans House Club, Twickenham, on FRIDAY and SATURDAY, May 25 and 26. The Show will be under the entire superintendence of Mr. Thomas K. Riddison. Plants and full particulars can be had of WILLIAM RIDDISON and SONS, The Nurseries, Tooting S.W. Apply to H. W. WIMBURY, Manager and Secretary, Offices, 24, Waterloo Place, S.W.

BURTON-ON-TRENT FLORAL AND HORTICULTURAL SOCIETY—THE FIRST EXHIBITION of the Season of PLANTS, FLOWERS, FRUITS and VEGETABLES will be held at the Hay, Burton-on-Trent on WEDNESDAY, June 27, 1877. £200, £10, and £5 for the best TWENTY-SIX SPECIMENS of each of the following SCHEDULES of PRIZES and any information may be obtained from the Secretary, to whom Nurserymen and others wishing to become subscribers should apply.
F. S. DUNWELL, Secretary, 20, Market Place, Burton-on-Trent.

TORBAY HORTICULTURAL SOCIETY, TORQUAY, JUNE 27 and 28. SUMMER SHOW of FRUIT, FLOWERS, and VEGETABLES, &c., Prizes ONE HUNDRED POUNDS; and a Grand ROSE SHOW, Money Prizes amounting to FIFTY POUNDS; and Five Silver Cups. For 73 varieties, one brass each, at size. Cup value 25 s. 3d. prize, 2 s. 6d. prize, 1 s. For 15 varieties, one brass each, at size. Cup value 10 s. 6d. prize, 5 s. 6d. prize, 2 s. 6d. prize, 1 s. 6d. prize. W. FANE TUCKER, Capt., Hon. Sec. T. H. S., Bradton Tor, Torquay.

FROME ROSE CLUB.—THE ANNUAL SHOW of the above is fixed for THURSDAY, June 28. ONE HUNDRED POUNDS will be given in Prizes, besides Silver Cups, &c. For Schedules apply to—
Mr. W. L. STANEY, Sec., Colchester.

THE INTERNATIONAL POTATO EXHIBITION will be held at the Royal Aquarium, Westminster, S.W., on October 3. Prizes will be presented to upwards of ONE HUNDRED and TWENTY POUNDS will be awarded. SCHEDULES will be ready, and may be had on application to—

Mr. J. A. MCKENZIE, 1 and 3, Great Winchester Street, Buildings, London, E.C.

PROTHEROE and MORRIS, HORTICULTURAL MARKET GARDENS and ESTATE AUCTIONEERS and ESTATE AGENTS, 25, Great Winchester Street, London, E.C. Monthly Horticultural Register had on application.

NURSERYMEN COMING to HOLLAND during the International Horticultural Show at Amsterdam, in April, 1877, are kindly requested to visit My Nursery, 10, THE LONDON LANE, Tottenham Nursery, Dedmansvat, near Zwole, Netherlands.

NEW REGAL PELARGONIUMS

(Two of the Gems of the Season).

"PRINCE OF WALES" and "PRINCESS OF WALES."

To be sent out the first week in May by WILLIAM BULL, 7, Tottenham Court Road, for New and Rare Plants, King's Road, Chelsea, London, S.W.

Special Offer.—150,000 Vesuvius.

WILLIAM BADMAN offers strong autumn-struck VESUVIUS, from single pots, 10s per 100; or from stock-pots, 5s per 100, 75s per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S. E.

Pelargoniums.

CHARLES TURNER can supply strong healthy plants of all the classes; they will have a good head of bloom this season.

The Royal Nurseries, Slough.

Gentiana acaulis.

OSBORN and SONS can supply fine Clumps of the above at 6s per dozen, 50s per 100. Trade price on application.

The Nurseries, Fullam, London, S.W.

To the Trade.

MANDEVILLA SAUVEOLENS.—

Strong and thoroughly healthy plants, 8s per dozen, or 4s per 100.

FRANCIS R. KINGHORN, Sheen Nurseries, Richmond, Surrey.

EARL BEACONSFIELD FUCHSIA is

the greatest novelty of the year. Two First-class Certificates. (See *Gardener's Chronicle*, April 7, p. 436.) 5s per 100, post-free. For Trade apply to—

JOHN LAING and CO., Epsom Park, Forest Hill, S. E.

Verbenas, Verbenas, Verbenas.

WILLIAM BADMAN offers Purple King, White, Scarlet, Crimson, and Rose VERBENAS, in single pots, 2s each; or struck out of pots, 10s per 100. Good rooted Cuttings, 6s per 100, 50s per 1000, package included. Terms Cash.

Cemetery Nursery, Gravesend, S. E.

VERBENAS, VERBENAS, VERBENAS.

Strong, well-rooted, healthy cuttings, perfectly free from disease, White, Purple, Scarlet and Pink, 6s per 100, 50s per 1000, 20s rooted cuttings, in 12 distinct and beautiful varieties, first price flowers, for 8s. Terms cash.

H. BLANDFORD, The Glass Nurseries, Blandford.

SPIRÆA PALMATA.—Fine Crowns

for Forcing, 2s; smaller sizes, 1s per 100, 10s per 1000.

CHARLES NOBLE, Bagehot.

CENTAUREA CANDIDISSIMA.—Nice

plants, in single pots, 2s per 100, package included. Terms Cash.

JOHN HOUSE, Eastgate Nurseries, Peterborough.

Carnations, Picoetes, and Cloves.

CHARLES TURNER can supply the above in great variety. Now is the time for planting them out.

The Royal Nurseries, Slough.

Clematis Roots for Grafting, 50s per 1000.

CLEMATIS.—Finest named kinds, spring and autumn flowering, many number at very reduced prices.

CHARLES NOBLE, Bagehot.

New Spring Catalogue.

CHARLES TURNER'S CATALOGUE OF PLANTS is now ready, and may be had free on application.

The Royal Nurseries, Slough.

Scarlet Runners, English-saved.

TO MARKET GARDENERS and LARGE GROWERS.

JAMES FARRAR and CO. offer a very fine lot of the above, in moderate terms.

Seed Warehouse, 65, Golden Lane, Barbican, London, E. C.

English Scarlet Runner Beans.

H. AND F. SHARPE, have a few Bushels of the above more than they require, and offer them to the Trade at a very reasonable price.

Seed Growing Establishment, Wiltchob.

Gentlemen's Gardeners, Amateurs, and Others

GARDEN POTS of best quality, are requested to send their orders to—

J. MATHIE WILK, Royal Pottery, Weston-super-Mere, Price List on application.

WANTED, 400 nice Plants of SEMPER-

VIVUM CALIFORNICUM. State lowest price for Cash with order to—

GEORGE COOPER and CO., Seed Merchants, Derby.

MRS. POLLOCK, or OTHER TRICOLOR

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R. AND F. ALLUM, The Nurseries, Tunworth.

W A N T E D

Robinson's Champion Scotch and Red Fielding CABBAGE PLANTS.

Must be strong.

Send samples and lowest cash price to—

B. T. FLETCHER and CO., Horse Market, Warrington.

ASPARAGUS, Giant, 3-yr. and 4-yr. fine, price 3s per 100, 25s per 1000. R. BATH, Crayford, Kent.

To the Trade. U. S. GIANT, 1-yr., 2-yr., 3-yr., and 4-yr. fine. JAMES BIRD, Nurseryman, Dovanham.

ASPARAGUS.—Now is the best time for Planting. Strong plants, at 2s. (2s. 6d., and 5s. per 100; 20s, 30s, and 60s per 1000. JAMES DICKSON and SONS, New Nursery, Chester.

NEW POTATO, 1877.—Lowe's Late Keeping Fairygold, a much heavier cropper than Early Rose, flesh very white and good. Single Tubers, 6d. each. J. AND G. LOWE, Uxbridge.

WEBB'S PRIZE CO. FILBERTS, and other PRIZE CO. NUTS and FILBERTS, LISTS of these varieties from Mr. WEBB, Colfax, Reading.

WEBB'S NEW GIANT POLYANTHUS, a Florist Flower, and GIANT COWSLIP SEEDS: also Plants of all the varieties, with Double PRIMROSES of different colours; AURICULAS, both Single and Double, with every sort of Early Spring Flowers. LIST on application to Mr. WEBB, Colfax, Reading.

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Vines, Vines, Vines.—The Planting Season.

THE COWAN PATENT'S COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent Planting Vines of all the leading varieties from their well-known Stock. They can also supply Vines for Planting in a Growing State, when such are preferred. Trade supplied.

Grape Vines.

B. S. WILLIAMS has still on hand a large stock of MUSCATA, ALEXANDRIA, and SCOT'S MUSCATA, strong Planting or Fruiting Canes, 5s each. Early orders respectfully solicited.

Victoria and Garden Nurseries, Upper Holloway, N.

Tea Roses on Seedling Briar.

WILLIAM HILLIER offers the above, in splendid plants and best varieties, by the dozen or 100; also NEW H.P. ROSES, and full LISTS on application.

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All the Best Selected

NEW CONTINENTAL ROSES for 1877.

Description of all the above newly selected.

WILLIAM WOOD and SON, The Nurseries, Maresfield, Uckfield, Sussex.

NEW 1877 ROSES.—

Our Plants are now fine and strong. Early orders are respectfully solicited. LISTS on application.

Description of ALL ABOVE on application.

The new CLEMATIS LIST will be ready in May.

EWING and GOSWAIN, Royal Norfolk Nurseries, Eaton, Norwich.

BEGONIAS, tuberous-rooted.—

Strong On seedlings, just starting into growth, fine for Planting. Out this summer, 2s per dozen, 6s per 100.

RODGER McCLELLAND and CO., 64, Hill Street, Newry.

ORANGE TREES.—

Seventeen, in good healthy condition, have not been grafted on, for Sale.

D. CAPTAIN A. F. TRAINER, Storr, Bridgton, South W. Isles.

MYRTLES, Large.—

For Sale Seedling, in pots and tubs, from 10 to 30 feet high, price 2s.

Mr. FLETCHER, Darby Lodge, Sunbury-on-Thames, Middlesex.

HOLLYHOCKS.—

Lists of Varieties, with their colours and price, on application; also TEA ROSES, in pots.

L. W. THORPE, Glazewood Nursery, Brantree, Essex.

To the Trade.

PINUS INSIGNIS, 1-yr., in single pots, 1s per 100, 10s per 1000.

IVY, 1-yr., 5s per 100, 75s per 1000; 2-yr., about 1 to 2 feet, 80s per 1000.

RODGER McCLELLAND and CO., 64, Hill Street, Newry.

Special List of Choice Orchids (No. 33).

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Centaurea candidissima or ragulina.

WOOD and INGRAM offer fine plants of the above, already established in 50s pots, at 20s per 100, or 2s per 1000. Not less than 50 will be sold at the 200 price, or 100 at the 1000 price.

The Nurseries, Hinton, Wiltshire.



E. G. HENDERSON & SON

Offer the following in Seed, of quality the best that can be had, at per packet:

- CALCEOLARIA**—the variety of colours, size, and shape of the flowers is the result of many years' continual improvement; 2s. 6d. and 5s.
- CINERARIA**—the shape and brilliancy of colour in these flowers is of great importance; 2s. 6d. and 5s.
- double-flowered, 2s. 6d. and 5s.
- FRIMULA SINENSIS**, crimson, scarlet, and white (better cannot be had), separate or mixed, 2s. 6d. and 5s.
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- PINK**, from named collection, 1s. and 2s. 6d.
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- MIMULUS**, superb strain, same as exhibited every year at the Royal Horticultural Society, 1s. 6d.
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- PANSY**, English, show flowers, 1s. 6d.
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- SWEET WILLIAM**, extra fine, 1s.
- from named flowers, 1s. and 2s. 6d.
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- Intermediate, Brilliant scarlet, and others. See Catalogue.
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- SOLANUM**, Improved Hybrid, as grown for the London Market, 1s.
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- GLOXINIA**, drooping and erect, 1s. 6d. each; mixed, 2s. 6d.
- HOLLYHOCK**, from named collection, 1s. and 2s. 6d.
- PRIMROSE**, POLYANTHUS, and OXLIP, best quality, mixed colours of each, 1s.
- WALL-FLOWER**, double German, mixed colours, 6d. and 1s.
- PINE-APPLE NURSERY, MAIDA VALE, LONDON, W.**

THE NEW ENGLISH ROSE, QUEEN OF BEDDERS (Noble).

Coloured Plates of this Magnificent
BEDDING ROSE,

Drawn by Mrs. DUFFIELD, may be had for
12 stamps each.

CHARLES NOBLE, BAGSHOT.

CRANSTON'S NURSERIES.

ESTABLISHED 1785.

SPECIALITIES.

ROSES, FRUIT TREES, CONIFERS.

Address — CRANSTON & CO.,
KING'S ACRE, near HERFORD.

GOETIA, LADY ALBEMARLE.

First-class Certificate, Royal Horticultural Society,
August 2, 1876.



A magnificent new variety, growing 4 feet high. Flowers 3½ to 4 inches across, and of the most intense glowing crimson-crimson colour, which being produced in wonderful profusion give the plants the most charming appearance. This is the finest annual ever sent out, and being extremely hardy and easy of cultivation, should be in every garden.

Seed, with full cultural directions, per packet, 1s. 6d., and 5s. free.

"We have scarcely any plant of such a lovely shade of colour."—*The Villa Gardener*, September, 1876.

"An extremely beautiful variety bearing flowers quite 4 inches in diameter, of a glowing crimson colour."—*Gardener's Magazine*, August 15, 1876.

"A remarkable and splendid variety, far superior to any other of the Family."—*Journal of Horticulture*, Aug. 3, 1876.

May be had of all Seedsmen, and Wholesale Retail of

DANIELS BROS.,

THE ROYAL NORFOLK SEED ESTABLISHMENT,
Norwich.



TREE FERNS.

THE LARGEST AND BEST STOCK IN EUROPE.



WILLIAM BULL, F.L.S.,

Respectfully invites the Nobility and Gentry to an inspection of the above; also of his
MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,
Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS, KINGS ROAD, CHELSEA, LONDON, S.W.

NEW PELARGONIUM, DUCHESS OF BEDFORD.

MESSRS. BECKWITH & SON,

TOTTENHAM, N.

Have much pleasure in offering the above Pelargonium as the best White ever sent out, and having a large Stock can offer it at once.

It has received a First-class Certificate from the Royal Horticultural Society,

Price for Strong Plants, in 5-inch pots, coming into flower, 7s. 6d. and 10s. 6d. each; a few Large Specimens, in 24-size pots, 2 guineas each.

TOTTENHAM NURSERY, TOTTENHAM, N.

VALUABLE IMPORTED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 23, at half-past 12 o'clock precisely, a fine importation of RARE ORCHIDS, collected and sent home by Mr. F. Klaboch, consisting of a large quantity of the rare UROPEDIUM LINDENI, in finest condition, containing masses of altogether unusual size, freely breaking and growing; a fine lot of the beautiful PESCATORIA DAYANA, and the rare BATEMANIA WALLISIA MAJOR, in finest condition; many large plants of BOLLEA COLESTIS, ODONTOGLOSSUM ROEZLII and O. VEXILLARIUM, from a new district; together with a great quantity of ONCIDIUM KRAMERI and ODONTOGLOSSUM CIRRHOSUM. Also the new MAXILLARIA SPECIOSA, described by Professor Reichenbach in the *Gardener's Chronicle*, August 12, 1876; a new ONCIDIUM, in the way of O. WELTONI, and a quantity of Established and Cool ORCHIDS.

Can view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN,
LONDON, W.C.

IMPORTED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 26, at half-past 12 o'clock precisely, a large importation of Plants of CYMBIDIUM EBURNEUM, also a quantity of Plants of the handsome and rare COLOGYNE BARBATA, one of the handsomest Cologynes known, giving snow-white flowers in the way of *Cologyne cristata*, but with erect spikes and the flowers not wavy, the lip bordered with ciliate fringes; and a quantity of Plants of the beautiful DENDROBIUM FREEMANII, a large number of Plants of AERIDES FIELDINGII (FOXBRUSH), DENDROBIUM HOOKERIANUM, D. NOBILE WALICHI, VANDA STRIATA, DENDROBIUM CARINIFERUM, D. JENKINSII, and others; good Plants of the rare ARUNDINA BAMBUSIFOLIA, which gives large Cattleya-like flowers of a light purple colour, with rich violet-purple labellums; also a quantity of good Clumps, each containing a number of tubers, just starting into growth, of DISA GRANDIFLORA; and at the same time a large number of good Tubers of the blue-flowered DISA, D. HERSHELLII; also some good Plants of ODONTOGLOSSUM PESCATORII, O. CORONARIUM, O. CRISPUM (ALEXANDRÆ), and O. TRIUMPHANS, &c.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN,
LONDON, W.C.

LYE'S FAVOURITE.—The handsomest and best Potato ever offered. Indispensable for Exhibition. This variety will be the greatest Prize Winner of the season. We have purchased the entire Stock of Mr. James Lye, Clyffe Hall, Market Lavington, and parties wishing to grow this remarkably handsome and beautiful variety should order at once, as the stock is getting very limited. It can only be obtained direct from us. Price 5s. per lb. Orders of 2oz. and upwards carriage free.

DANIELS BROS., The Royal Seedsmen, Norwich.

Cheap Bedding Geraniums.

ALFRED FRYER offers the following good Bedders at per dozen for each Golden Trolley: Peter Greig, 12s.; Prince of Wales, 6s.; Lady Cullum, 5s. 6d.; Sir Robert Napier, 3s. 6d.; Mrs. Pollock, 3s.; Sophia Dumoreque, 2s.; Silver Fringers; Lass of Gowrie, 4s. 6d.; Queen of Hearts, 4s. 6d.; Miss Burnett Counts, 3s. 6d.; Mrs. G. Clutton, 3s. 6d.; Prince Silverwing, 2s. Double flowered: Marie Lemoine, 3s.; or one of each for 5s. No charge for packing, if empties are returned at us; also postage for 6d. per dozen extra. For Priced Lists apply to **ALFRED FRYER, The Nurseries, Chatteris, Cambridge-shire.**

AVENUE TREES.

PLATANUS OCCIDENTALIS (true), 10 to 18 feet high, and girthing 4 to 8 inches at 4 feet from the ground.

LIMES, 12 to 20 feet high, and girthing 6 to 10 inches at 4 feet from the ground.

POPULUS CANADENSIS NOVA, 15 to 16 feet high, and girthing 6 inches at 4 feet from the ground.

ANTHONY WATERER

Has to offer many thousands of the above. They may be seen growing at Knapp Hill. They are straight, handsome, and well rooted, and altogether the finest Trees of the kind to be found in any nursery in Europe.

KNAP HILL NURSERY, WOKING, SURREY.

SPECIAL NOTICE.

APRIL and MAY the best Season for Transplanting HOLLIES.

W. M. CUTBUSH & SON

POSSESS MANY THOUSANDS OF

VARIEGATED AND OTHER CHOICE HOLLIES,
AT THEIR "BARNET NURSERIES,"

varying from 2 to 6 feet, bushy, all transplanted in 1874, and will move with splendid roots.

An Inspection invited, or Prices, &c., sent on application.

EXTRA STRONG IRISH and OTHER IVIES.

WM. CUTBUSH & SON have a very large Stock of IVIES in Pots, which they are offering at low prices, to be had on application—specially low to the Trade.

HIGHGATE NURSERIES, N., OR BARNET, HERTS.

**THE NEW ROSE,
QUEEN OF BEDDERS (NOBLE).**

Perhaps the Finest Rose for Bedding ever sent out.

COLOUR of "CHARLES LEBEVRE."

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that a plant 18 inches high had 84 Buds and expanded Roses upon it on the 6th September, 1876, and flowered continuously from June until November, on the 20th of which month (1876) it was still in bloom.

Good Plants will be sent out, in strict rotation, at 10s. 6d. each,
COMMENCING FIRST WEEK IN MAY.

CHARLES NOBLE, BAGSHOT.

The Best Hardy Bedding Plant.

CLEMATIS JACKMANII.—Flowers rich purple, 4 inches across, and so profuse as to completely cover the leaf. Begins to bloom in June, and continues until severe frost. It is perfectly hardy, and the stock improve annually. The only secret of success is a rich soil, to keep up free growth. Extra strong plants, 18s. per dozen. Other sorts of Clematis and Climbers in great variety. Descriptive List on application.

RICHARD SMITH, Nurseryman, Worcester.

New Bedding Tropaeolum.—"Hunter" **DOWNIE and LAIRD** have much pleasure in offering for Spring delivery the above Tropaeolum, which has been raised by Mr. Andrew Hunter, gardener to Lord Shand, New Hall, House, near Edinburgh. This is an excellent Bedding Tropaeolum, surpassing its parent Cooperi, being of a dwarfier habit, and we can with perfect confidence commend it. The Editor of the *Gardener's Chronicle* says, "It grows about 6 inches high, is very neat and compact in habit, and a most profuse bloomer, the flowers being of medium size, nice form, and of a bright scarlet colour." Price, per dozen plants, 12s.; each, 2s. 6d. Usual discount to the Trade.

West Coates Nursery, Edinburgh.

BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from 4s. to 8s. per 100, and 18s. to 30s. per dozen.

Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or 4s. per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded, 4s. to 8s. per 100, or 18s. per dozen.

ANTHONY WATERER,

KNAP HILL NURSERY, WOKING, SURREY.

FIFTY THOUSAND MAGNIFICENT

DWARF ROSES, in POTS.
ROSES for BEES or Southern Railways at 12s. per 100. TEA-SCENTED ROSES, superb, established in 6-in. pots. Adapted for greenhouse or conservatory, 30s. per dozen, 100s. per 100. Descriptive CATALOGUES on application. **WILLIAM WOOD AND SON, The Nurseries, Marcelland, Litchfield, Sussex.**

PEAT.—A few hundred Tons of superior Peat, delivered at the Farnborough Stations on the South Western or Southern Railways at 12s. per ton. **W. TARRY, Ballif, Farnham, Surrey.**

Fibrous Peat for Orchids, &c. E. T. best quality. **BROWN FIBROUS PEAT**, 6s. 6d. per truck. **BLACK FIBROUS PEAT**, for Rhododendrons, Azaleas, Healths, American Planting, &c., 7s. per ton. For silver plants, 12s. to 14s. per ton. R. or Farnborough, S. W. R., by the truck-load. Sample sack, 5s. 6d. each. **Fresh SPHAGNUM**, 10s. per 50 bushels. **WALKER AND CO., Farnborough Station, Hants.**

COCOA-NUT FIBRE REFUSE, invaluable for Gardening purposes. One thousand tons available. Four-hashed bag, 1s., bag included; truck-load, loose, free to any Rail, 3s. **POTTER OYLER, Spitalfields Market, N. E.**

COCOA-NUT FIBRE REFUSE, new-made.—Reduced price, 20 bushels, 4s. 6d., and 20s. or 1 truck-load, 40s. Delivered free to any rail in London. **J. STEVENS AND CO., Fibre Works, Greyhound Yard, 134 High Street, London, E. C.**

COCOA-NUT FIBRE REFUSE, as supplied to Carter, Veitch, Wills, Bull, Daniel, Laing, Henderson, Dickson, &c., per bushel, 10 bush 5s. per 100; truck, 40s. free to rail or wharf. **PEAT, LOAM, SAND, LEAF MOULD, &c.**, per bushel, bag, or truck. **FRESH SPHAGNUM**, 10s. per 50 bushels. **M. H. BENTON, Nunhead, S. E.**

ODAMS' MANURES,
FOR ALL CROPS.

Manufactured by the NITRO-PHOSPHATE and ODAMS CHEMICAL MANUFACTURING CO. (LIMITED), consisting of Tenant-Farmers occupying upwards of 150,000 acres of Land. **Chairman—ROBERT LEEDS, Kenwood Old Hall, Norwich.**

Sub-Manager and Secretary—C. T. MACADAM.
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WESTON SQUARE, LONDON, E. C. For particulars will be forwarded on application to the Secretary, or may be had of the Local Agents.

MILLER AND JOHNSON

(ESTABLISHED 1852)
Manufacture the highest quality of **ARTIFICIAL MANURES** FOR ROOT, CORN, and GRASS CROPS. 35, Mark Lane, London, E. C.

IRWING'S MILDEW COMPOSITION, in Bottles, 12s. 6d. and 3s. each. One Gallon Cans (to make 100 gallons of mixture for spraying), 12s. each, 2s. each. Two Gallon Cans, 2s. each.

Mildew or Red Spider are effectually prevented or destroyed by merely painting the affected parts with the composition mixed with white-wash. No direct application to the foliage is then necessary.

Royal Norfolk Nurseries, Eaton, Norwich.

GISHURST COMPOUND.

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

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

BEST & CHEAPEST INSECTICIDES

Duty Free, under permission of the Hon. Board of Customs.

THE "LONDON" TOBACCO POWDER,
"Horticultural" Tobacco Juice, also **TOBACCO PAPER, CLOTH and CORD.**

Particulars on application, **CORRY & SOPER,** BONDED TOBACCO STORES, SHAD THAMES, LONDON, S. E.

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

Wholesale Russia Mat Merchants. **MARENDAZ AND SONS**, 10, Finsbury Street, Covering and Packing. **W. C. IMPORTERS OF RUSSIA MATS, RAFFIA FIBRE, &c.** Large stock of TANNED GARDEN NETTING, RABBIT NETTING, TIFFANY, &c., at wholesale prices for the trade.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, giving the size of every class of Mat, forwarded post-free on application. **JAS. T. ANDERSON, 149, Commercial Street, Shoreditch, London, E. C.**

MR. POSTANS' PELARGONIUMS FOR 1877.

CHARLES BURLEY

Has much pleasure to announce that he is now prepared to distribute part of those magnificent new Zonal and other Pelargoniums purchased by him of R. B. Postans, Esq. The following form part of the collection, and are the magnificent varieties spoken of so highly by the Editor of the *Gardeners' Magazine*, as being "matchless in form and colour." The whole have large trusses, and with flowers of perfect form.

To be sent out in May in good strong plants.

The "Gardeners' Magazine," April 29, 1876, speaks as follows:—

"Mr. R. B. Postans' collection of Seedling Pelargoniums, Hybrid Perpetual and Tea Roses, &c., have passed into the hands of Mr. Charles Burley, of the Paradise Nursery, Brentwood. We have before us a box of flowers of Mr. Postans' latest Seedling Zonals, and they are certainly remarkable for quality. We see amongst them huge single flowers of faultless form, and of the most glorious crimson and scarlet colours, and a double white which ought—as we now judge it by trusses only—to sweep all other double whites out of the market. The name of this is Bridal Bouquet."

BEEHOTHVEN.

A magnificent variety, velvety crimson upper petals, lower petals purple-magenta, with shades and streaks of claret; large flower, of perfect form, immense trusses standing erect over a beautiful green zonal foliage.

Price 6s. 6d. each.

OHARM.

A grand variety with globular trusses of immense size, bearing beautiful round flowers of perfect form, of purple-crisse shaded carmine, upper petals shaded crimson, trusses standing well up over a neat dark green zonal foliage; branching habit, free bloomer. This variety was awarded a Floral Certificate at the Royal Botanic Society, Regent's Park, in June, 1876.

Price 7s. 6d. each.

HOGARTH.

Fine large well-formed flowers of crimson-maroon, shaded carmine and purple-magenta, with veins of claret in lower petals; the flowers are of a thick leathery substance, borne on fine large globular trusses, standing on thick footstalks well up over a remarkable good branching habit of good zonal pleasing foliage.

Price 5s. each.

MAGNIFICENT.

Fine shaped flower of soft rosy purple, upper petals shaded crimson-maroon with shades of carmine round the edge of petals, with a striking white eye; flowers of great substance and of the true floral form, on fine bold trusses of great size, standing well over a fine dark zonal foliage; the habit is all that can be wished for in a Zonal Pelargonium.

Price 5s. each.

NEW BEDDING ZONAL PELARGONIUMS.

PURPLE KING.

This is a plant of dwarf branching habit, with small foliage of dark green, slightly zonal, flowering freely, throwing up nice trusses with round flowers of a marvellous colour, blue-magenta, edges of petals shaded carmine; it is, without exception, the finest colour in this way, and a good bedder.

Price 5s. each.

The above set of Ten Varieties for £2 10s.

NEW BEDDING PELARGONIUMS WITH WHITE VARIEGATED FOLIAGE.

MRS. J. C. QUENNEL.

A splendid silver-edged variety of great beauty; the plant is of free growth and makes wood freely, growing like an ordinary scarlet Geranium, with fine large globular-shaped leaves, very broad white leaf margin, centre emerald-green, producing nice trusses of a splendid bright pink; flower of good shape.

This is a grand variety for bedding purposes as well as pot-work.

Awarded a Floral Certificate of Merit by the Royal Botanic Society of London, June, 1876.

Price 10s. 6d. each.

MRS. HANBURY.

A handsome silver-edged Pelargonium, of great merit. A remarkable free grower, with pure white broad leaf-margin, the centre of leaf dark green, throwing up a profusion of good trusses of nice shaped pure white flowers, with bright pink eye or centre; this is the finest in this direction yet seen.

Price 10s. 6d. each.

In June, 1876, when exhibited at the Royal Botanic Society's Gardens, Regent's Park, some Plants of the above two Pelargoniums were stolen from my van on its way home. Any one giving information that will lead to the conviction of the thief, shall receive a reward of £5.

NEW SILVER TRICOLOR PELARGONIUM OF THE SEASON 1877.

MRS. R. B. POSTANS.

Somewhat similar to Proteus and Lady Dorothy Neville in leaf making, but much more colour, of free growth, with splendid round leaves of good size. Models of perfection.

Price 15s. each.

"BRIDAL BOUQUET."

This is a charming variety, and described by the editor of the *Gardeners' Magazine* as a miniature bridal bouquet. The plant is of moderate growth, and resembles a common Zonal Pelargonium, with round leaves and branching habit, throwing up good trusses of magnificent flowers of pure white, each pip resembling a miniature bridal bouquet; the lower petals are of fine substance and form, quite round, while the centre is raised oval, the exact shape of a bridal bouquet. Single flowers of this beautiful variety, when a piece of Maidenhair Fern is placed behind it, makes a pretty buttonhole.

The *Gardeners' Magazine*, April 29, 1876, speaks as follows:—"Mr. R. B. Postans' collection of Seedling Pelargoniums, Hybrid Perpetual and Tea Roses, &c., have passed into the hands of Mr. Charles Burley, of the Paradise Nursery, Brentwood. We have before us a box of flowers of Mr. Postans' latest seedling zonals, and they are certainly remarkable for quality. We see amongst them huge single flowers of faultless form, and of the most glorious crimson and scarlet colours, and a double white which ought—as we judge it by trusses only—to sweep all other double whites out of the market. The name of this is Bridal Bouquet."

Plants in May, 1877.

"WHITE WONDERFUL."

Habit that of an ordinary Zonal Pelargonium, with medium-sized dark green foliage, with a pleasing dark zone; growth very compact, throwing up trusses of good sized double white flowers of rare substance and shape; each flower is remarkable for its peculiar form, and may fairly be said to be strictly novel inasmuch that it is a good shaped flower with five petals, then comes another layer of petals of not quite the same size, and then a few irregular centre petals; it is a pure white and a fine variety. Every one who has seen the plant in bloom has been delighted with it.

A truss was sent by Mr. C. Turner, who writes as follows:—"The Royal Nurseries, Slough, August 21, 1876.—Many thanks for truss of your double white Geranium White Wonderful, a very good one, for it is a wonderful good variety, the best I have seen by far. Will it be sent out next spring?"

Mr. H. S. Williams, of Victoria and Paradise Nurseries, Upper Holloway, writes, August 30, 1876:—"Your box containing flowers of Geranium to hand. It is the best thing in that way I have yet seen. White Wonderful."

Price 10s. 6d. each, in May.

"BELLE OF THE BALL."

This is a free flowering distinct variety, and remarkable for its great beauty. The habit is very compact, of the ordinary royal type, dark green foliage with good well defined dark zone, throwing up nice trusses of really good double flowers of pure white with bright pink centre; the single pips are famous for bouquets, the effect is charming. There is but little doubt that this variety is a step in the right direction.

In May, price 10s. 6d. each.

USUAL ALLOWANCE TO THE TRADE.

DESCRIPTIVE CATALOGUE FREE.

NURSERIES, HIGH STREET, BRENTWOOD.

By Her Majesty's  Letters Patent

RENDEL'S PATENT SYSTEM OF GLAZING
 CONSERVATORIES, PLANT-HOUSES,
 Orchard-houses, Greenhouses, Rose Temples
 And other Horticultural Structures.

Under the Patronage of

- His Royal Highness the Prince of Wales
- His Royal Highness Prince Christian
- His Highness the Maharajah Duleep Singh
- His Majesty's Commissioners for Parks and Gardens.
- His Majesty's Government, Royal Arsenal, Woolwich, War Department
- Royal Engineers, Woolwich
- Metropolitan Board of Works
- Commissioners of Sewers
- Corporation of Birmingham
- His Grace the Duke of Rutland
- His Grace the Duke of Portland
- His Grace the Duke of Sutherland
- His Grace the Duke of Devonshire
- The Most Noble the Marquis of Exeter
- Most Noble the Marchioness of Anglesey
- The Right Hon. the Earl of Strathmore and Warrington
- Great Western Railway Company
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- Great Northern Railway Company
- South Devon Railway Company
- The Royal Aquarium and Winter Garden Society, Westminster
- The Royal Horticultural Society, South Kensington
- The Royal Gardens, Chelsea
- The Botanic Gardens, Chelsea
- Wolverhampton Slating Rink
- Leicester Furling Mill
- Royal Hotel, Blackfriars
- Chelsea Swimming Bath Company
- Blackpool Winter Gardens
- Rhyl Winter Gardens
- Birmingham Winter Gardens, Aston Park
- And One Thousand of the Leading County Families in the United Kingdom.

SPECIAL ADVANTAGES

Rendle's Patent System of Glazing.

This system is now being universally adopted by Her Majesty's Government, several of the leading Railway Companies, some of the principal Corporations, including the Metropolitan Board of Works, Commissioners of Sewers, and the New Winter Garden Companies throughout the country.

There will be an enormous saving in the Maintenance and Repairs of Roofs on this System—say from 50 to 90 per Cent.—and there is no reason why a roof should not be as perfect in 20 years as the first week, because all the perishable materials, such as wood, iron, or paint, are completely covered by the glass from the destructive influences of the weather.

Another grand recommendation is, that there is no breakage from contraction or expansion either from heat or cold, as the glass has full play in every direction. Tens of thousands of squares are broken from this cause every year. Nor is there any breakage from vibration of large Railway Roofs in heavy gales of wind, or from the passing of express or fast trains. Indeed, it is well known that a puttyed roof is never perfect in a station where express trains run through.

In adopting this System, all the exorbitant expenses of re-painting, re-puttying and re-glazing are completely done away with; and if it were now in use throughout several of the Great Railway Companies, such an enormous saving would be effected that it would have a considerable influence in supplying an addition to the yearly dividends.

Summary of Special Advantages.

- 1.—Saving of from 80 to 90 per Cent. in maintenance and repairs.
- 2.—No breakage from contraction or expansion, from heat or frost.
- 3.—No breakage from vibration caused by heavy winds or passing trains.
- 4.—Squares of glass can be instantly replaced.
- 5.—The construction is very strong and durable.
- 6.—The glass can be put on in one-fourth the time of the old plan.

For all the other advantages see Illustrated CATALOGUES and BOOKS OF DESIGN, which can be obtained from the Inventor and Patentee—

WILLIAM EDGE CUMBE RENDEL,
 3, WESTMINSTER CHAMBERS, VICTORIA ST.,
 LONDON, E.W.

 **SUTTON'S CHOICE FLOWER SEEDS,**
 FREE BY POST OR RAIL.



Sutton's Improved Miniature Aster.

A profuse flowering variety, of dwarf compact habit, remaining in bloom for a considerable period, hence it is invaluable for growing in pots for conservatory or drawing-room decoration. We have this season succeeded in sowing six distinct colours, which greatly increases the value of this beautiful Aster for bedding purposes.

Price per Packet, mixed, 2s. 6d.
 Six varieties, separate, 5s.

SUTTON'S COLLECTIONS OF CHOICE FLOWER SEEDS,

To produce a beautiful and continuous display during Summer and Autumn.

	Free by Post or Rail.	£	s.	d.
No. 1 Collection of Flower Seeds	2	2	0
No. 2 Collection Ditto	2	11	0
No. 3 Collection Ditto	1	1	0
No. 4 Collection Ditto	0	15	0
No. 5 Collection Ditto	0	10	6

Small and useful Collections can also be had, from 2s. 6d. to 7s. 6d., free by post.

Full particulars may be had, gratis and post-free, on application.

TO OBTAIN THE

Best Garden Lawns and Croquet Grounds
 SOW
SUTTON'S LAWN GRASS MIXTURE,

Which forms a close velvety turf in a very short time.

For making New Lawns or Croquet Grounds 3 bushels, or 60 lb., is required per acre, or a gallon to every six rods (or perches) of ground.

For improving those already in turf, 20 lb. should be sown per acre.

March, April, and May are the best months for sowing.

Price, 1s. 3d. per lb., 22s. 6d. per bushel, carriage free.

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds
 Gratis and post-free.

Sutton Sons

THE QUEEN'S SEEDSMEN,
 READING, BERKS.



SATURDAY, APRIL 21, 1877.

THE AMERICAN FRUIT SUPPLY.

FOLLOWING rapidly the new project of supplying England with fresh American meat has come the extensive development this winter of the fruit trade with that country, specially in Apples. For the past twenty-five or thirty years American Apples have found their way to the English market, but only in comparatively small quantities. One difficulty was the ocean transportation. Fruit that would keep well in America for months, was found rapidly to deteriorate when barrelled and stowed away in the hold of a vessel, even during the short time occupied in making the passage. The only variety that for a long time was supposed to possess the necessary keeping quality, was the Newtown Pippin, but as this Apple was expensive, and some seasons poor in quality, the shipments were very limited. In 1866, however, experiments were made with Spitzenbergs, Baldwins, and Greenings, which proved successful, as the fruit arrived in good order. For six years shipments of these varieties were made, more or less financially successful.

In the fall of 1873 our Apple crop was almost a total failure, while that of the United States and Canada was unusually abundant, with consequently low prices. Shipments to this country proved very remunerative, and the quantity sent over that year was greater than the total shipments of the previous ten years. From that period, however, up till last autumn, the shipments of Apples from America have been light, as our orchards have yielded fairly. Last season our crop of Apples again failed, while that of the United States and Canada was enormous, and of excellent quality, excepting the Newtown Pippin. The American fruit trade has thus received a new impetus, and been placed this winter upon a more systematic and permanent basis than has hitherto governed it. A large New York produce house has taken up the shipment of fruit to this country. One of the firm has spent this winter in England attending to the reception and sale of Apples shipped from that port. The other member of it has attended to the selection of the fruit in America, its packing and shipment in proper condition. The results so far are stated to have been most successful, and what has hitherto been regarded as a hazardous series of ventures is now put on a firm and solid business footing.

From the middle of October until the end of March almost every steamer leaving New York for Liverpool or London has carried shipments, varying from 500 to 3000 barrels. In December alone no less than 90,000 barrels of Apples were landed at Liverpool. From this port Manchester, Birmingham, Hull, Bristol, and the metropolis have been supplied. The fruit has found much favour with consumers, and its abundance has kept down the prices to such a figure as to extend the demand largely.

During the cold weather but little difficulty is experienced in transporting the fruit. With the approach of warm weather, however, certain means must be employed to protect it during the sea voyage. Arrangements for this purpose have now been made, and the fruit for the future is to be conveyed as the fresh beef is—in compartments of steamers properly refri-

gerated. The first shipment in this manner was made from the *Algeria*, of the Cunard line, which brought over a fortnight ago 2300 barrels, and landed them at Liverpool in perfectly good order. Large shipments were made also to Glasgow and London. From Canada unusually large shipments were made, from Montreal, Quebec, and Portland, and the quality of the fruit was excellent. New England fruit found its outlet to us at Boston, and, although not so fine in quality as that from Canada or New York, has still been well received, and sold rapidly though at lower prices.

The greater portion of the Apples sent from New York come from the western portion of that State. On arrival each barrel is opened, inspected, branded, and shipped in most cases direct from the railway station.

The new refrigerating process which has facilitated the transportation of meat from America will operate in largely developing the shipment of not only Apples at all seasons across the Atlantic, but also of more delicate fruits, such as Peaches, early summer Apples, Pears, Grapes, and Cherries.

Those who have not visited America—in which term I include Canada and the United States—have but little conception of the fruit resources of the country, both in extent and quality. The area in orchards for various kinds of fruit was in 1875 no less than 1,500,000 acres; the shipment in Apples alone amounted in 1873 to 1,185,803 barrels, and about the same are retained for home consumption. From the few kinds of American Apples which have reached us, a very limited idea is formed of the varieties grown there; there are, however, over sixty fine varieties of Apples, ten or eleven varieties of the common Siberian Crab, and ten other descriptions of the same fruit. Of Pears there are no less than sixty-seven different kinds, and of Peaches quite a large number, ripening in succession from July till October. Many of the varieties of Apples exceed in fineness of quality anything we have ever seen here, but their tenderness has hitherto prevented their transportation. We may now, however, expect to receive them; and that American Peaches—now manageable as a perishable fruit by refrigeration—will be as well known in London as they are in New York in the month of August. *M.*

LOW NIGHT TEMPERATURES IN RELATION TO SLIGHT IN- EQUALITIES OF SURFACE.*

In a valuable paper on the Temperature and Humidity of the Air at Different Heights, recently published in the *Transactions of the Royal Society of Sciences at Upsal*, Dr. Hamberg gives an account of some interesting observations made by him with the view of defining with some exactness the influence of the inequalities of the earth's surface on the temperature of the air during night. The instruments of observation were a dry and a wet bulb thermometer, at a height of 3 inches above the surface, and a similar pair of thermometers at a height of 5 feet. The thermometers were fixed to little posts, and their bulbs were protected from direct radiation.

Over ground the surface of which is uneven and covered with grass the temperature close to the surface is generally higher over those portions which rise above the rest. Thus over even a small elevation of from 1 to 3 feet the temperature is frequently 2° or more higher than the general level of the plot of ground. On the other hand, a trench or depression 1 or 2 feet below the general level is often 2° or more colder than what is observed on the borders of the depression and over the general level. At the bottom of a ditch 5 to 8 feet deep, and with double the depth, the temperature fell on one occasion 10°·8 lower than that on the remaining side of the ditch.

Open drains for field irrigation always indicated, when covered with grass, 2° to 5°·4 greater cold than

the margins of the drains. But when the sides and bottom of the drains were composed of bare clay, the reverse held good.

A tree, a bush, a pond, or a stream, raised the temperature all round, or, to speak more correctly, arrested to a great extent the fall of the temperature. The temperature was sensibly higher over shrub than over long grass, in accordance with what Galisher sawed in various years ago; and it was sensibly higher over sand than over grass.

At the height of 5 feet the temperature also varied with the inequalities of the surface, but not nearly to the same extent as at 3 inches from the ground. On a meadow the temperature fell one night to 40°·5 and 48°·9 at the surface, and at a height of 5 feet respectively; on the summit of a hillock, 150 feet high, at the same heights, it fell to 50°·2 and 51°·3; whereas in a trench on the top of the hillock it fell to 45°·3 and 50°, and on another night to 39°·9 and 45°·5. On a steep but equal sloping side of a hillock 100 feet high, the differences between the temperature at the top and the temperature observed all down the sides almost to the foot were comparatively slight, being only from 2° to 3°·5. But at those places where it sloped less, the difference became greater; where it expanded out into a little plain, still greater; and where it formed a depression the greatest differences were noted, in some cases greater even than the differences between the very summit and base of the hillock. In all these cases, when long grass took the place of shorter grass, the temperature was observed to fall more rapidly. In

the streets of town the temperatures at 5 inches, 5 feet, and 200 feet, were at midnight 57°·2, 57°·4, and 57°·9; and at 0.30 A.M. 56°·8, 57°, and 57°·6 respectively.

The bearing of all this on horticulture is very evident. To secure the best protection for tender plants in spring when a night's frost may be productive of a ruinous loss, a gently sloping surface, if possible, be selected. But if there be no choice, and the plant-beds must be made on a level piece of ground, let the beds slope slightly from the centre line on both sides to the trenches which separate them. Let the trenches furthermore be kept open from grass, weeds, leaves, and other litter, which being bad conductors of heat, will only retain and store up the cold of radiation; and let care be taken that the earth of the trenches be not kept loose by raking, but be beaten or trodden into as firmly compacted a mass as possible, so that the heat of the soil may the more readily be conducted to the surface to counteract the cold rapidly increasing there through the effects of nocturnal radiation.

MARKET PLANTS.

THE *Dracena* is a favourite market plant, as it is so invaluable for decorative purposes, and can be used in many ways, being of a somewhat lasting character. Those who grow them for market propagate them with remarkable rapidity, and the work is commenced about the month of November by cutting up the stems of a plant into segments, each one having an eye. These are planted in cocoanut fibre on a strong bottom-heat, and they soon commence to grow. In this way cuttings are obtained much as one would get them in the case of Dahlias. When the cuttings are from 3 to 4 inches in length they are taken off, put singly in small pots in a brisk bottom-heat, and root in ten or twelve days. The *Dracena* is a rapid-growing plant when properly treated; an example of D. Shepherd, struck from a top cutting at Mr. H. B. Smith's, Faling Dean Nursery, in December, 1874, by the spring of 1876 had grown into a remarkable fine specimen 7 feet in height.

Dracenas are also propagated by leaf cuttings; that is, an eye is taken off with a leaf attaching to it, which is of great assistance in getting it to break into growth. The head of a good plant can be removed at an eye or two below the lower leaves, and will quickly make an independent plant, whilst its removal leaves the whole of the stem of the plant available for propagating purposes, by the process already explained.

The best *Dracenas* for market purposes are those with thickly striated foliage, such as Cooperi, terminalis, melina, Shepherdii, Hendersoni, amabilis, rubra, which is one of the best, and a few others. These retain their colour and brightness well when employed for furnishing, and are therefore liked in

the market. Dull-leaved *Dracenas* are rejected, and indeed are not grown. D. Shepherdii stands and lasts remarkably well. When sent to market in August and September the plants are in 48-pots, but from November till January and later they are sent in 32-pots. D. stricta, which is a very good and handsome variety, requires a 32-pot in order to grow into a good plant.

Curculigo recurvata is an acceptable market plant, and much liked for its bold recurved foliage, and for its lasting quality. It is propagated by offsets, which are thrown up from the roots and taken off when strong enough; and they strike in small pots plunged in bottom-heat, and make good plants in twelve months, being of rapid growth. The variegated form is almost too expensive at present to be used for market growth, and the suckers will only strike root in the spring.

Aspidistra lardia variegata is a good market plant, and valued for furnishing. It is increased by cutting up the roots at any time, but is best done in early spring. The plants in a cool house for a month or six weeks, but stands well. It is an excellent plant for a close confined room if the leaves are occasionally cleaned from the deposits of dust that are inseparable from an indoor position.

Crotons are good market plants, and especially C. variegatus, C. Weismanni, and C. undulatus. They are propagated by means of top and side cuttings taken in early spring, put in pots and plunged in cocoanut fibre, and when rooted treated similarly to the *Dracenas* already described.

Among market Palms, *Chama borbonica* holds a high place. The plants are raised from seed, sown in seed pans in January, or broadcast in a stove frame, in a strong bottom-heat, say of from 90° to 100°. In six weeks the seedlings appear above the soil, and in eighteen months they are fit to grow in 48 and 32 sized pots. The plants are grown on plunged in tan. After the fourth or fifth leaf the true character of the plant is taken on.

Eucharis amazonica is almost a perennial market plant, for it can be had in flower at any time by placing the plants in a cool house for a month or six weeks, and then starting them into growth in heat. The growers for market state it is a plant very impatient of being retopped; and it does not flower till well established in the pots in which it is growing. Liquid manure made from fresh cow-dung is applied to it when in a growing state.

Ferns are in large demand and include such valuable decorative forms as *Adiantum canescens*, *Ghiessbreghtii* (scutum), *formosum*, *macrophyllum*; *Pteris argyræa*, *serrulata*, &c.—about ten being the leading favourites. These are raised from seed in order to supply the quantity required. The seed is sown in pots under bell glasses, and as soon as the seedlings can be handled they are pricked off into pots and kept close under glass. It is the custom to mingle powdered brick with the soil, and also to place a little on the top to keep the soil open.

Ficus elastica is increased by means of cuttings made of the points of the shoots, and the soft stems. They strike best in leaf-mould and sand, in thumb-pots, in bottom-heat, and occupy from four to six weeks in striking root.

And *Strelitzia regina* struck from cuttings taken from the top, while the stalks are also cut up after the plants have broken into growth in heat. When the plants have been sufficiently hardened off they are planted out of-doors during the summer, where they become established, and are again potted in autumn. In this manner good dwarf stocky plants are obtained.

The foregoing are but a few leading subjects, but were statistics collected of the numbers annually taken into the London market, their magnitude would astonish many. The one aim of the cultivator of market plants is to grow on his plants into size as rapidly as possible, at a minimum cost of time and labour. Some of the most laborious work done in the nursery trade is that performed in these plant-growing establishments, and at the height of the season, when propagation is carried on at high pressure, and with a wonderful rapidity, an unceasing attention is requisite. A successful propagator is a man of great ability. He has little chance of being heard of out of his own immediate sphere, but his practical genius is one of no common order; and young men desirous of improving their knowledge as plant cultivators could find no better school for doing this, than in one of the nurseries where plants are so largely grown for market purposes. R. D.

* Abstract of a paper read by Mr. Buchan, Sec. Scottish Society, Edinburgh, at the April meeting of the Botanical Society, Edinburgh.

DASYLIRION LONGIFOLIUM.

We are indebted to M. Jean Verschaffel, Ghent, for forwarding to us the following particulars relating to the flowering of this plant at Hyères (as it is believed for the first time in Europe), under the care of M. Geoffroy Saint Hilaire, the Director of the Jardin d'Acclimatation. M. Geoffroy Saint Hilaire sowed seeds of the plant in 1868, which he had received from MM. Haage & Schmidt, of Erfurt. The following year three of the seedlings were planted out in the open border, where they grew vigorously. The winter of 1870-71 was exceptionally severe, but did them no injury, though the thermometer was for several days 6° below freezing-point of Centigrade.

mixed in with the male flowers. No seeds were, however, produced; the inflorescence gradually dried up, but fortunately the plant itself did not die, but produced a number of sets from the axils of the upper leaves. Our drawing (fig. 73) is from a photograph. In addition to this *Dasylium*, *Yucca filifera* and *Livistona sinensis* (syn. *Lantana horbolicna*), also produced flowers last autumn at Hyères.

SOLOMON'S SEAL.

BEAUTIFUL as this grand old plant is in beds or borders, it is never seen in anything like the state of perfection, or appears half so lovely, as when taken

the purpose. Grown as a border plant, half its beauty is lost, but place it on a stage or shelf in the greenhouse or any other elevated position and then it is singularly attractive and commands admiration.

As a pot plant for window recesses in rooms it is simply perfection, and being so cheap and so readily forced or brought into bloom, it may be enjoyed by every one who has the convenience of a common hot-bed frame to bring it on; or, failing this, an ordinary sitting-room window will do, only in that case it requires a little more time to get it into bloom. For any of the above purposes it should be potted up at once, in doing which it is important to select good strong fleshy roots with plump fat crowns, as it is only such that produce strong shoots and flower in the free manner desirable—although, as before observed, the plants are valuable without those highly ornamental appendages. As the roots have elaborated in themselves all or most of what is essential for their growth and blooming, there will be no necessity to give them much pot-room, as a very little soil will suffice, and they may therefore be put into 6 or 7-inch sizes, which will hold quite sufficient for their support, and be more handy and quite large enough for room decoration. Light rich sandy loam suits them best, and the number of pieces of root for each pot may vary from three to six, according to the kind of specimen desired; each, however, should not be less than from 4 to 5 inches long, terminated by a good plump crown, from whence the young shoots arise. If wanted to flower early plunge the pots in any hot-bed at work, where they can enjoy a bottom-heat ranging anywhere between 65° and 75°, or stand them in any stove or forcing-house, in either of which places they will come on rapidly and assume those delicate tints of green that render them so exceedingly attractive at this season. As soon as they get sufficiently high and begin to show bloom they may be removed to the greenhouse or sitting-room window, where they will be found to last a long time in perfection.

Solomon's Seal is a plant that admits of ready increase by division of the root; and in order to get these strong and fit for forcing they should be dug up and separated at least once in every two years, which may be done any time during the winter or spring before they commence to make their growth. A deep loose sandy soil suits them best, as they can run freely in it, but it should be made rich and light by working in plenty of vegetable mould, such as leaf-soil or any mild rotten manure. In borders they rarely get fair treatment, as they are generally left pretty much to themselves, when they soon become overcrowded and starved from the rapidity with which they multiply their roots and stems, and exhaust the soil within their reach. It is from this cause that a frequent division of their roots becomes desirable, indeed absolutely necessary, if grown for the purpose of forcing for greenhouse or room decoration, as without it they would not be sufficiently strong to produce satisfactory results.

From its naturally vigorous habit it is a plant that adapts itself to almost any position, and appears to succeed equally well in either sunshine or shade, as we have immense tufts of it growing in moist sand, where they never get a particle of sun, and although this is the case, they are equal to any in the most favoured situations. It is, therefore, well adapted for growing near the margins of woodland walks, in the hardy fernery or wild garden, in either of which positions it forms one of the most interesting and effective plants it is possible to have, as it associates well with all the surroundings. S. W.

GREEN MAIZE, OR GREEN CORN.

To an American who has for many years kept the run of all that has been published in English horticultural journals on Maize as a table vegetable, it is very gratifying to see at last an article which shows that the writer has some knowledge of his subject. I refer to the communication by "T. S.," in the *Gardener's Chronicle* for November 12 last, who shows, what I have frequently insisted upon, that there is no good reason why Maize, at least in proper condition for the table, should not be raised in many parts of England. Some ten years or more ago, seeing from the articles published in his journal, that one of the English horticultural editors was quite on the wrong track in his experiments with Maize, using varieties from the Southern States, which would be altogether too late,



FIG. 73.—DASYLIRION LONGIFOLIUM.

Fears were entertained that the plants might rot, but they did not suffer in any way. In the middle of April, 1876, they had attained a height of 90 centimetres (about 3 feet), measuring from the ground to the point where their long recurved leaves fall over the plant. From the centre of two of the plants pushed a thick shoot like a great Asparagus, 10 cent. in diameter, covered with rose-coloured bracts, which dried up as the inflorescence grew. This latter formed ultimately a large panicle with numerous but short and dense branches, 1 m. 25 cent. high, and covered with myriads of flower-buds which speedily opened. Flowers were sent to M. Naudin for examination, which proved to be male flowers with a rudimentary pistil. M. Naudin considered it might be a *Liliasceae*, or an exceptional form of *Juncaceae*; MM. Tulane arrived at the same conclusion. M. Germain de Saint Pierre, who also examined the flowers, referred it to the same group. He found a few fertile or bisexual flowers

up and forced, as then its delicately tinted pale green foliage is always charmingly fresh, and a real treat to behold. Even without its unique silver bell-shaped flowers that all strong shoots produce in such profusion quite to their summit, it would be a most desirable plant to cultivate, affording, as it does, one of the choicest bits of greenery it is possible to have, to dress in with hardy Ghent Azaleas, Lilacs, and many other forced flowers that have no foliage of their own to adorn them, and set them off to advantage. There is no question that the leaves of any plant, of whatever kind it may be, always associate better than any others with the bloom they produce, but when these cannot be had it is necessary to substitute some other, and no better or anything half so lasting and satisfactory can be had as the well-known *Convallaria Polygonatum*, the growth and gracefully pendent habit of which is all that can be desired for

and moreover, of varieties so inferior for the table that they are never used by those who know better, I took the pains to set him right. I procured seeds of several of the most esteemed varieties, and sent them to him with such suggestions as to their culture as seemed proper. While I know that the seeds reached their destination, I have not yet heard that they were tried, or, if so, with what result.

In the first place, a word about the nomenclature of the plant. The term *Maize* is not in common use in this country, it being called "corn" or "Indian Corn." The table varieties, for the reason to be given presently, are called "sweet corn;" it is always in the unripe condition when used as a vegetable, and is known as "green corn" or "corn on the cob" until the kernels are plucked and greengrocers' shops, and inquire for our markets, he would be told that there was no such article to be had. The stem or culm of the plant is the stalk, the panicle of staminate flowers which appears at the summit is the tassel, the collection of pistillate flowers (and grain) on a dense spike is the ear, the leaf involucre, which surrounds the ear, is called the husk, or in some parts of the country, shuck; the long thread-like pistils are, collectively, known as the silk; the grain, that is, the green part of the kernel, the pericarp is the "hull;" and the floral envelopes, which are very small and abortive, the "chaff." The receptacle or rachis upon which the kernels are crowded is the "cob." It is rather amusing to see your correspondent direct that the "cobs" must be boiled until tender. So much for names.

The ordinary field varieties of Indian Corn have, when ripe, a hard, smooth grain, presenting a great variety in size, shape, and colour, the grain within being either mealy or starchy. These varieties are almost innumerable, and show the wonderful plasticity, so to speak, of the plant, which has adapted itself to every climate, from that of Hudson's Bay to that of the Gulf of Mexico. These field varieties are not used in the Northern States for the table, nor are they elsewhere if better sorts are known. Under the name of "sweet corn" we have a set of varieties that are as different from field corn as the wrinkled or marrow Peas are different from the round Peas, and the difference is of a similar character. In sweet corn we have greater firmness and a finer flour, and a much larger amount of sugar; the kernel in these varieties never fills out in ripening, but is always shrivelled and irregular, as are the marrow Peas.

The varieties of sweet corn are numerous, the catalogues of our seedsmen offering from ten to fifteen, and rarely a year passes but some new kind is offered. The varieties differ greatly in earliness, height of stalk, size of ear and of kernel, as well as in the number of rows (of kernels) to the ear, and there is a marked difference in sweetness and table qualities generally. The earlier varieties are smaller in all respects, and generally less sweet than the later.

Besides the named varieties, there are many local ones not known in the seed trade. Those who grow corn for the markets of New York and other cities have their own particular varieties, or rather strains, which they have established by careful selection; earliness and a good-sized and well-shaped ear are the main points with them, and it is only in the later varieties that we find that delicious sweetness and flavour so much prized by connoisseurs. It may be remarked that, in the green Peas, green corn rapidly deteriorates in quality after it is plucked, and those who depend upon the markets for their supplies do not know the possible excellence of either.

Among the early varieties of the catalogues, Early Narragansett and Early Minnesota are the best very early sorts; Crosby's New Sweet comes next. For the general crop I know none superior to Triumph, though Asylum and Moore's Concord are both good. Perhaps the very sweetest and best of all is the Mexican, but it is unfortunately black, or rather dark purple, and does not look tempting upon the table, though it is less popular than its mealy "desire." Stone's Evergreen is an excellent late variety.

Indian Corn is decidedly a hot-weather plant; with us, near New York, the middle of May is the usual time for sowing, though I usually put in a row or two soon after Peas are sown, and let it take the chances; if it happens to be an unusually warm spring, a gain is made of a week or more; if not, there is only the loss of the seed. It should have the warmest and richest soil, and being a rank feeder, may have any quantity of manure. It is sometimes sown in hills,

but I always sow in rows, 3 to 4 feet apart, according to the variety. A furrow is first ploughed, a garden spade, a good supply of fine manure is put into the furrow, earth is drawn over this, and the seed is dropped at about 6 or 8 inches apart, and covered with the hoe, patting the earth down firmly over the seed with the flat of the hoe. Though a very robust plant when well established, Indian Corn is delicate when young, and the crop must be thoroughly worked from the first appearance of the plants until it gets large enough to shade the ground. A horse-cultivator is run between the rows, and the work finished with the hand-hoe. The old plan of earthing-up is now abandoned by good cultivators, and flat culture generally practiced. When a few inches high the superficial plants are cut out, leaving those which remain a foot apart.

Green corn is seldom grown in our market gardens proper, it being regarded as a farm rather than as a garden crop. Farmers who live within easy reach of a market find it an excellent cleansing crop; the thorough cultivation, as well as high manuring it requires, puts the land in fine condition for any other crop; the fodder, after the ears are marketed, is of sufficient value to pay all the expenses of cultivation.

As to the proper time for plucking the ears, your correspondent "T. S. J." gives excellent directions. The grain should be "in the milk," not too small nor too ripe; and soon becomes able to judge of the proper condition by feeling of the ear through the husks. As soon as the ears are plucked the stalks should be cut off by the ground, and after wilting a few hours they may be given to milk cows, for which they are the best possible green food, or they may be cured for winter use. They require some care in curing, for if in too large masses they fermented, it is difficult to get them against a fence or other support, so that the air can circulate through them. When cured they should be stored under cover. Cut into small bits with a fodder-cutter, wet, and allowed to stand a few hours, and then sprinkled with Indian Corn meal, they form most excellent winter fodder for cows.

As to cooking for the table your correspondent's directions to boil for half an hour are proper, though twenty minutes is usually long enough. He is mistaken in the idea that boiling makes the corn tender; it coagulates the contents of the kernel, with excessive cooking will only lengthen it. The general way of serving is *à la mode*. The husks being stripped off, and all remaining silk removed, the ears are boiled for twenty minutes, and served hot. There is but one way to thoroughly enjoy sweet corn, and that is to eat it from the cob. The over-gentle have the kernels cut from the cob, but this, to a real lover of sweet corn, is to spoil it. Butter and salt being first mixed upon the plate—some add pepper—a portion of the ear is dressed with the salt and butter, by the use of the knife, and the kernels thus buttered are—well, not to put too fine a point upon it—grazed off. To be sure a fine young lady does not appear at her best when she thus plays the part of a rodent, but whoever has once tasted sweet corn at its best will forgive appearances, knowing the inward satisfaction that accompanies them. The silversmiths make "green corn-holders." A handle is furnished with prongs which are thrust into each end of the ear, and allow it to be held without touching the corn with the fingers. This is a superfluous refinement, adopted by but very few. Those who have imperfect teeth usually slit the kernels by drawing sharp knife-lengthways of the rows; this cuts through the rather tough hull, and allows the contents to slip out readily. Some boil the corn and cut it from the cob, which is readily done with a sharp knife, cutting down from one end of the ear to the other, taking two or three rows of the kernels at a time. The kernels thus cut off are seasoned with salt, butter, and milk, or cream, and served like peas. A more delicate way is to slit the kernels by running a sharp knife lengthways of the rows, and then scraping out the contents with the back of the knife. Our furnishing stores sell "corn cutters," which slit the kernels and press out the contents at one operation, and do it very rapidly.

During the season we endeavour to have sweet corn—no matter what else there may be—at dinner every day. Last season, on account of the unprecedented drought, some of our crops failed, and there were wide gaps in the supply. It is our custom to cook more than will be disposed of at dinner, to have a supply for breakfast. What is left from the dinner is cut by means of the "corn cutter" above referred to,

and either dressed like Peas, or, what is greatly to be preferred, made into fritters.

Corn Fritters.—To two coffee-cupfuls of corn, removed from the cob to above directed, add three well-beaten eggs, one small cupful of flour, and stir well together; add cream or milk to thin it, so that it will readily drop from the spoon, and fry, as for other fritters. These are sometimes called "corn oysters," but they are good enough to stand on their own merits.

Your correspondent, "T. S. J.," seems to appreciate the whole subject much better than any of his countrymen who have written upon green corn, even if he does call it "green Maize;" and if you will give me his address I shall take much pleasure in sending him seeds of our choicest varieties. If, as I suspect, he has only experimented with field corn, and likes that (as many do who know nothing better), I should like to be by, and see his first essay with one of our choice varieties—the "Triumph," for instance. If large tears of gratitude do not roll down his cheeks I am mistaken in the man.

Some Europeans do not at first take kindly to green corn. When I meet one, and with an indication as to how far he has become Americanised, I ask, "Do you like green corn?" If the answer is in the affirmative, I am sure that he will remain in the country. Our great abundance of Tomatoes, our Water-Melons, our huge Blackberries, and other peculiar American products, Europeans seem to accept much sooner than they do green corn. Some five years ago a story went the rounds of the papers, which showed Pat's view of this favourite vegetable. At our hotels green corn is set before each person as a matter of course: a newly arrived Irishman, seeing that others partook of it, gnawed away at his corn with much satisfaction. A Continental culture, looking but bare "cobs" left, he called to the attendant—"Waither, an' will ye be affier putting some more peps on these shiblicks!" G. T., Bergen Co., N. J.

AGRICULTURE AND GARDENING IN COSTA RICA.

(Continued from p. 490.)

TOBACCO being a Government monopoly is very little grown, but what there is of fine, strong, aromatic quality. Unfortunately, much of the aroma is lost in the bad method employed in curing the leaves. The climate of the higher plains is too cold and damp for the successful cultivation of Cotton and Indigo. Colonial culture has never been so successful, but formerly Wheat and Barley were grown on a small scale. Now the meal can be procured from California and Chili at a cheaper rate than it can be produced in the country itself. If the restrictions on Tobacco growing were removed, there is no doubt that Tobacco would soon become a valuable article of export to the European markets.

Maize yields in the warmer parts of the country two crops of grain, besides a crop of green fodder, in the same year. In the elevated plains, however, the growers are satisfied with one harvest in the year, but they select the less fertile soil for the Maize plantations. The shoots are valuable food for cattle, especially in the dry season, though during this part of the year the draught oxen are chiefly fed upon Sugarcane. The cane attains a height of 10 to 13 feet in ten months, and is then cut before the inflorescence is developed and the root-stocks throw up fresh shoots. As the plantations are made at different seasons there is no regular harvest-time.

Respecting the plants cultivated in gardens, an enumeration of some of the more striking subjects in Mr. Carmigil's garden, which may be regarded as the best in the country, will give some idea of the capabilities of the soil and climate. The hedges are formed of Coffee bushes and tall Roses, and the flower-beds are edged with Box, or more commonly with *Pilea macrophylla*, an indigenous plant. Others, again, are bordered with the native *LOBELIA CLIFORTIANA* and *nicotiana*. *Londium particulifolium* is a charming plant on the margin of a small brook. The commoner weeds among the Cabages, Onions, and other vegetables are *Chenopodium amrosiodioides*, *Galinoga parviflora*, *Helosiodium leptophyllum*, *Lepidium virginicum*, *Verbena litorea*, *Browallia demissa*, *Leonorus sibiricus*, *Eriothora rosea*, *Jægeria hirta*, various species of *Paspalum*, *Panicum*, *Eragrostis*, &c. Some Apple trees were pointed out as great rarities in the country, where, in consequence of their getting no period of rest, they do

not flourish well and bear very little fruit. In fact, the only fruit tree grown with any degree of success, and in quantity, is the Peach, and this only in the more elevated parts on the declivities of the volcano of Irazu. Among other cultivated plants may be mentioned *Albizia leonensis*, *H. rosea-sinensis*, *Pavonia Tiphalea*, *Tagesa patula*, *Encalypta globulosa* (some fine old trees), *Bixa orellana*, *Punica Granatum* (always with single flowers), *Asparagus officinalis*, *Acnistus Plumerii* (forming part of the hedge surrounding the garden), *Bouvardia* spp., *Ocimum Basilicum*, *Origanum*, *Lycopersicum*, &c. Added to these the universally dispersed plants of cultivation, and one may form a picture of the variety and richness of the vegetation. The shrubby *Sida*, probably *S. acuta*, was the species of the fulgent group, with splendid large scarlet flowers, attracts our attention near the entrance, and presently we become aware of the almost stupefying odour of *Clerodendron fragrans*. The glorious *Geraneaceae* plant, *Kohleria tetragona*, afterwards found growing wild, was here seen for the first time. It has velvety leaves, and large red velvety flowers.

Among noteworthy trees in Mr. Carmichael's garden were various species of *Melaleuca*, and which were regarded as great curiosities, some *Conifers*, a species of *Thuja*, *Juniperus virginiana*, and a *Pinus* with the leaves in bundles of five. Small plants of the *Thuja* are exceedingly dear, as are also some other plants which are only grown under difficulties. In the beds were *Dahlia*s, *Asters*, *Zinnias*, species of *Rudbeckia*, *Gladioli*, *Amaryllides*, *Lilium*, numerous species of *Begonia*, *Tropaeolum*. In the vicinity and around the house were observed *Convolvulus*, *Fasson-flowers*, various fine *Aroids*, &c. Growing in pots were numerous indigenous *Orchids*, belonging principally to the genus *Epidendrum*, *Bromeliaceae*, &c.; but among the most favoured were numerous varieties of *Viola tricolor*. In conclusion Dr. Polakowski mentions that the *Coccos* of Costa Rica is of superior quality, equally as good, or perhaps even better, than the celebrated *Coccos* of Nicaragua; but scarcely sufficient for the wants of the country is grown. The formation of a *Coccos* plantation is expensive, as the trees do not yield a good crop before the seventh year.

OLD-FASHIONED PLANTS.

The rage for new plants does not abate, and we hope anything of transcendent merit will never cease to receive due recognition and appreciation, but in the rage for things that are new, in some at all events, it strikes me as possible that many old tried and trusted friends are forgotten. Well, we do not despise the lady or gentleman who makes a hobby of the *Auricula*, or the *Fansy*, or the *Picotee*; there must be an immensity of zeal and intensity of pleasure also devoted to the improvement, or even the desire to improve—for all do not succeed—the quality of those beautiful flowers.

I am not a florist in the enthusiastic sense of the word—I cannot afford to be, and even if I could my sympathies lie in another direction. But we live in an era in which there is a great need of old tried flowers. Those who at one time used to decorate their halls and staircases with foliage plants must now have flowering ones. I think there is a very agreeable change in our system of decoration throughout, I mean in the combination of flowering and foliage plants, and even the introduction of flowers themselves. The one is a relief to the other. If there is a regular demand for home decoration on an extensive scale, of course we must presume that there are facilities for growing plants in proportion to the demand for them, in which case the process is a simple one, and the line clear, always keep the home signal at "danger," and you are never caught napping.

We often hear how well public decorations are done and how effectively; such opinions may be readily endorsed, and why? Because there is a choice of material. If there is a chance call made on a private establishment, the means are not always at command to make an elaborate effect. The best artist in the world cannot put out more than a few plants. Much, however, may be done by growing what I would call "accommodating" plants, and not expensive ones either. I believe there is nothing so healthy and refreshing as a tour among your friends every three months or so; you always learn or unlearn something before you return, and probably make up your mind that after all you are a good bit behind in some things. When I make

a raid on one or two of my particular friends, I always get what would be called in racing phrasology the "tip," but in horticultural language, I must say a "winkle," about something. I must ask your readers not to expect that I have made any remarkable discovery, such as heat without cost, or any remark of that sort; I am merely about to reintroduce a few old friends which I have forgotten in a market-garden, but whose adaptability for fashionable decoration stands unrivalled. On visiting a neighbouring garden the other day I was shown into a house arranged tastefully with the following old plants, and an odd one or two more.

The centre of the middle stage was occupied with *Dendrobium* noble, some plants of which were over 4 feet through, and remarkable for their strength and freedom of flowering; in the old *Eranthemum pulchellum*, such plants as I never saw before—a perfect blaze of their lovely blue flowers, a colour not over plentiful at this time of year. The new *Poinsettia plenisima* was well done, but seems to lose the largest of its leaf-bracts before the centre is formed and appears to advantage; I have, however, great hopes of it turning out well. I think new plants bear an analogy to young gardeners, they have to overcome a good deal of opposition and prejudice, and are often content with the "tip" of the tongue. There were here huge masses of the old *Begonia manicata*, and another old variety, either *hydrocotylifolia* or *Paxtoni*; but both are grand winter-flowering plants, and their value for any purpose of decoration cannot be overrated. *Passacalceae*—the *Passacalcea* with its long racemes of scarlet pendent streamers, is worth growing for more than one purpose. It must be elevated on inverted pots to be seen at its best, and occupy points of vantage. In the same house were a *Convolvulus*, and a *Phalenopsis*, and seven nice samples of *Phalenopsis*, including the queen of *Orchids*, *Phalenopsis amabilis*, which was in its best dress, having a fine spike of flowers just on the turning point. I think it would be well to resuscitate the cultivation of many old plants, which I need not name. Every leaf or joint of these old *Begonias* can be made into plants in a few months where there is a little top and bottom-heat at command. Cuttings of other things mentioned, and many more not named, may be put in now, and grow on without interruption for the next three months, when they will make fine plants. They must then be gradually hardened off, and kept in cold pits or frames in the full blaze of the sun through the winter months. In the latter part of autumn, and when taken indoors again, they should occupy a house which can be kept at a temperature of 50°, and a rather dry atmosphere. A high moist atmosphere is sure to induce a growing rather than a flowering tendency, especially in such plants as *Libonia*, *Seriographis*, &c. *W. Hinds, Utterpool.*

NOTES ON OPEN-AIR VEGETATION AT EDINBURGH.*

The early part of the month of March was considered good for gardening operations, being in general dry and cool, but without much of the wind for which March is proverbial. Towards the end, however, rain fell in abundance, and scarcely ceased for five consecutive days, viz., from the 23d till the 28th. The month commenced with slight snow, and frost has been prevalent throughout. The temperature in general being rather below an average, vegetation has been kept much behind. The general weather we had during the early part of February brought forward vegetation very rapidly, and on March 31 it may be said to be nearly at a standstill. Many of the open-air plants reported to be in bloom during February have since fallen back, and although others have come into flower, few of them show that vigour which they generally do at this season. Hazels and Filberts were beautiful during the early part of February with their long, drooping yellow catkins, but became perfectly brown in consequence of the frost which prevailed in the latter part of the month of February and beginning of March. Similar injury was also observed in the drooping catkins of the *Garrya elliptica*, while the Alder, particularly the *Alnus cordilica*, which was richly covered during the month with its brownish yellow catkins, did not suffer, notwithstanding the frost they had been exposed to. Flowers of the early *Rhododendrons*, *R. dalmanicum*, *R. praecox*, *R. atrovirens*, and *R. dauricum*, were all injured, while the *Rhododendron*, *Noddingum*, and the other large *Rhododendron* hybrids have been very scarce this spring, the buds not having been properly matured during the long wet unseasonable autumn, and now it is rare to see flowers of the early varieties in the open air, kinds which are

generally very common at this season. *Thuja*s, *Biota*s, and other allied coniferous shrubs, are suffering much from a browning of their branches, similar to what took place during the month of April last year, and which resulted in the total destruction of some, and the disfigurement of others. In all these cases, where points of the branches had to be removed from injury (such as *Thuja aurea*, *Fortunei*, *uncinata*, *Knightii*, *orientalis*; also *Cupressus sempervirens* and *torulosa*), the new shoots produced during last summer on those left are again much disfigured. The leaves of many species of the genus *Pinus* have also become very brown, such as *Pinus patula*, *densiflora*, *contorta*, *Fremontiana*, *Bruita*, *maricata*, *subulata*, *Benthamiana*, as well as some specimens of *Larix*, and even the Scotch Fir. This mischief is evidently caused by the long moist autumn and winter, succeeded by a lengthened although not very severe frost, and afterwards followed by a few days of hot sun, upon unpeeped wood. Early fruit tree blooms on walls have also suffered from frost; owing, however, to the unusual number of buds produced a moderate quantity may yet be saved, although it is feared that the long summer wet autumn will be much against a proper setting of fruit, unless extra fine weather should prevail. Many of the early spring bulbs, particularly those growing in low situations, have been very deficient in bloom, the bulbs in such cases having rotted in the ground. It is difficult as yet to say what effect the late excessive damp will have on the roots of many herbageous plants other than bulbs, particularly those with somewhat fleshy roots; it will be possible to ascertain the extent of damage till the season is further advanced. Some important kinds have already suffered, the roots in many cases being infested with grub, wireworm, and other underground vermin.

The scarcity of vegetables for spring planting, such as early *Cabbages*, *Savoy*s, and *Greens*, is something quite unprecedented at Edinburgh, cartloads being usually seen in our markets at this time. The drought which immediately followed the sowing of the seed last year, prevented a healthy germination, and was afterwards followed by an unusual wet autumn, and at a moderate temperature. To this, and the changeable weather experienced during winter, may be attributed their scarcity. Fortunate holders are receiving high prices for them. The scarcity seems to be general throughout Scotland, as few yet arrive by railway.

Excess of moisture has also been much against the printed tallies, commonly used for naming the open-air plants in the garden; many of them have been rendered totally illegible—a circumstance which has not been observed to the same extent at any former period.

On the last day of February fifty species of plants were counted in flower on the rock garden, many of these have since suffered from frost. On March 31 seventy-five species and varieties were counted in bloom, the most conspicuous being *Andromeda floribunda*, *Bulboodium vernalis*, *Corydalis augustifolia*, *Diondia Epipactis*, *Draba aizoides* and *cuspidata*, *Epigaea repens*, *Erica carnea* and *E. carnea alba*, *E. hibernica* alba, and *E. h. nana*; *Erythronium Nuttallianum*, *Viola hutchinsonii*, *Viola filices*, *Heptacapsa andrea*, and other varieties of *Viola*, *Hydrilla*, *Erica reticulata*, *Merendera canescens*, *Omphalodes verna*, *Primula denticulata*, *marginalis*, *Palinuri*, *purpurea*, and *viscosa*; *Saxifraga crassifolia* ovata, *grandiflora* and *bryoides*; *Scilla biflora*, *alba* and *taurica*; *Sisyrinchium grandiflorum* album, also *Narcissus nanus* and *pumilus*.

Of the plants selected for annually recording their dates of blooming, the following is the third list of the series—

	1877.	1876.
<i>Scilla biflora taurica</i>	March 4	March 3
<i>Andromeda floribunda</i>	" 10	" 13
<i>Erica reticulata</i>	" 10	" 13
<i>Draba aizoides</i>	" 11	February 21
<i>Aubretia grandiflora</i>	" 12	February 17
<i>Narcissus pumilus</i>	" 14	March 13
<i>Andragopus vernalis</i>	" 17	" 18
<i>Viola hutchinsonii</i>	" 18	" 18
<i>Erythronium dens canis</i>	" 23	" 20
<i>Heptacapsa andrea</i>	" 23	" 20
<i>Ribes sanguineum</i>	" 25	" 30
<i>Oxolus vernalis</i>	" 27	" 23
<i>Sisyrinchium grandiflora</i>	" 27	" 23
<i>Corydalis toleda</i>	" 28	" 28

During March the thermometer was twenty times at or below the freezing point, indicating collectively

* Read by Mr. M'Nab at the April meeting of the Botanical Society of Edinburgh.

130°; while 98° were registered during the corresponding month last year—the lowest rankings being on the mornings of the 1st, 4th, 15th, 20th, 21st, and 22d, when 17°, 23°, 20°, 18°, 23°, and 24° were respectively indicated. The highest morning temperatures were on the 11th, 14th, 27th, 28th, 29th, and 31st, when 41°, 41°, 36°, 37°, 37°, and 42° were registered. Although 492° of frost had been recorded during the last five months, particularly in the neighbourhood of Edinburgh, it has never been at any one time of such intensity as to produce strong bearing ice.

SCONE PALACE.

EIGHT centuries ago, in the reign of King Constantine, Scone was a royal city, with a monastery, to which was conveyed from Iona a stone seat, for the coronation of the Scottish kings down to Alexander III., the last of an ancient race, and Robert Bruce, the founder of a new dynasty. In 1359 the venerable building, whose relics, with here and there a stone coffin, are now ornamental objects in the Palace gardens, became a blackened ruin, and in the following century the famous Abbey (founded early in succession to the monastery) became a temporal lordship, granted by James VI. to Sir David Murray, afterwards Viscount Stormont, the ancestor of the Earl of Mansfield, the great Chief Justice, and of the present Earl of Mansfield, the present Lord of the Crown. Even in Scotland there are few sites with a richer substratum of historic interests than Scone. The ancient buildings are all gone, the Palace is of the present century, the coronation chair is in Westminster Abbey, and Boot Hill, where the Scottish chiefs paid homage, each standing on his own ground, which he brought with him stuffed in enormous boats—all is gone or greatly altered, but, *manus etiam*! as in the case of the fairies, the perfume of these things remains.

The site of Scone was well selected on the rich alluvial banks of the River Tay, 2 miles from Perth. It is a rather light and most productive soil, with a moist subsoil. After crossing Perth Bridge by the North Inch, you turn up the left bank of the stream, and presently reach the park, with its timber and Highland cattle by the road-side. A mile further on you pass the Cow Park, and a notable row of black Italian Poplars along the margin of a rivulet. The most curious had a diameter at the base of 11 feet 9 inches at a foot from the ground, that of the largest one could hardly have exceeded 73 inches, which is exactly the circumference of an innkeeper of unusual size who has allowed me to measure and report him—his weight being 23 stone 10 lb. The Poplars will grow bigger yet. There is a wood on the right here, and on the left a glimpse of extensive gardening, hedges without and walls within, and masses of such trees as spring on good ground round a lordly residence. Two or three small substantial houses on the right are rendered attractive by gardens and creepers. The Tropæolum specimen—a lovely, but, I fear, a local trader—drew me to the pretty cottage of the clerk of the works, where a lad—a schoolboy at the "fair city" of Perth—answered my knock, and conveyed me to the house I sought. It does not satisfy a schoolboy of the Highlands, or his mother, to direct and show a visitor the road by pointing and explaining; he takes him to the spot. And there I found Mr. Halliday, who was portrayed in your columns in 1875, and 1876. Mr. Halliday occupies a fit dwelling for a gardener of distinction—a house bordered in Box shrubs, clipped Yews, and Portugal Laurels with ripe berries.

We plunged at once into the midst of groves and gardens, which held us till dark, when we passed near the Palace, and close to a tree planted by Mary Stuart, and arrived at Boot Hill, but could see nothing. A little further on Mr. Halliday rapped something with his stick; it was a stone coffin, invisible, and, I believe, empty. "Here," said Mr. Halliday, at another spot, "is the original gateway to the Abbey;" and he rapped the said gateway, which gave out a sound like Ivy, and some drops were showered about, but we could see nothing. Within the gateway the Palace windows shone across a wide open space, where the Abbey stood. Outside the gateway is an interesting object, which Mr. Halliday rapped. It was the market cross of the village of Scone, which now stands at a distance, and was once clustered here close to the Abbey walls. And here, in the midst of the groves and shrubberies, there is

still a parish graveyard and a right of way thereto. Mr. Halliday with a stick—or it might have been a weeding-hoe—pointed out all these things with his usual vigour that damp, dark night, and I heard his rap, the right of way. We then arranged for my return by daylight, and by daylight we visited the Pinetum, where hundreds of stately specimens of conifers stand on a lawn, forming a terrific acromy for the eye, and I am compelled all that kind of tree to teach in regard to structure, growth, size, and beauty.

There are several remarkable trees here and elsewhere in the grounds, to be noticed hereafter. The Pinetum is entirely enclosed by the kitchen garden wall and by shrubberies. We passed round it to reach an avenue of Sycamores, 300 years old at least, extending each side of the path, called Chantry Gate, which brought us into a spacious flower garden decked with numerous permanent shrubs besides the more ephemeral plants. The west part of the 15 acres of the old Abbey grounds, and it brought us to the Palace slopes or lawn before the windows. When a house stands on ground well elevated above the general level of the park it is sometimes fortified by a wall and terrace, the terrace being narrow and the wall a break-neck affair—or the park may be reached by one uniform slope, or by several. The latter plan is adopted here, and a low wall, handsomely built and ornamented with Ivy and other creepers, divides the park from the open space. The trees in the lawn are, several specimens there, including the Mary Stuart Sycamore, of 13 feet girth at 5 feet. This is on the south-west of the quadrangular Palace, which covers an acre of ground, and facing the park and the Tay. On the opposite side of the building are the principal entrance, the old Abbey gateway, and the avenue of Limes beyond. Round about Scone Palace is a favourable field for either gossip or dignified narration, but it may concern the reader more to know that 10 yards, from row to row, is the distance of the Limes apart, and that the trees are now ten years old, and will interlace and form an arch in ten years, when they will have been sixty years planted. They are now 56 feet high, and 6 feet 7 inches in girth at 5 feet. Thirty years ago they were moved further apart, which may have checked their growth.

There is a Lime tree rather older than the above in the park, south-east of the Palace, 8 feet 6 inches at 5 feet, and 76 feet high. It was planted by the present Earl of Mansfield, and contains a great deal of foliage and a great deal of timber. The tree is a pyramidal one, in the case of some others of this species, but columnar, with a conical top. A still more remarkable tree for the amount of timber produced in a single lifetime, is an Oak of sixty-eight years old, growing in the pleasure grounds. It is 70 feet high, 7 feet 11 inches at 5 feet, and 6 feet 4 inches at 3 feet, and 5 feet at 36 feet. The cubical contents are 120 feet. The grandeur and growth of this young Oak, its exquisite proportions, its expressive trunk, and the abounding life and power of quick expansion which seems to breathe in every branch and twig, are surprising. I have not seen another younger of sixty-eight so big and so full of promise wearing such a marked expression of present and continued growth. What may it not arrive at 500 years hence! Kip Van Winkle was a melancholy man, waking up to find his gun-barrel rusted and his friends gone; and I never envied him his resuscitation until I saw this hopeful Oak, which must be feeding, one would think, on land manured by the mouldering dust of several woods. Of the million Oaks planted by the Earl of Mansfield between 1804-14 this one excels the rest in beauty and in the quantity of timber it has packed beneath its bark in a given period.

In a letter from Mr. Halliday on the subject of the trees of Scone, he mentions that a writer has lately fixed upon a neighbouring and inferior Oak, the same age as the above, in proof of the advantages of pruning. A not uncommon blindness of the eye, Mr. Halliday thinks, prevented his observing that the unpruned tree had done better than the one which had been treated according to the method he recommended.

Next, in point of interest, to this noble native, is the tree which is the special pride and ornament of Scone, as the introduction of Mr. Douglas, who served his apprenticeship in these gardens.

Mr. Halliday informs me that the two specimens of Abies Douglasii of the first importation (1826-7) measured respectively in September, 1844, 31½ feet and 28 feet in height, and 40 inches and 31 inches in

circumference of the stem at the ground. In 1876 the best of these trees measured 9 feet 5 inches at 5 feet, and contains 138 cubic feet of timber, the bole measuring timber up to 7½ feet. The girth of its trunk at 2 feet is 10 feet 21 inches, and at 3 feet 9 feet 61 inches. This timber-producing tree has yielded very little seed; the other tree, the larger of the two, 1844, but not so small, has borne much seed, and its growth has been checked by its fertility. The first cones of this parent tree of 1826-7 were gathered in 1844, but they yielded no seed. During the next eight years £500 were gathered from it in the shape of marketed seed. In 1853 this fruitful tree yielded 20,000 cones, which produced 12,000 stout healthy plants counted at eighteen months old. Twenty good seeds were found in each cone the following season, and this has been the average yield up to the present time. The cone of top from this tree was 16,000 in 1873; the last fruitful year, and has now reached a total yield of about 200,000, or 4,000,000 plants, each worth 1s. when planted out at three years old, and 20s. at twenty years old, when planted on good land. Even if we allow 25 per cent. for losses by accidents, there remains a large balance of wealth, to say nothing of beauty, created from one tree, and widely distributed by Lord Mansfield among his friends.

In the first search at Scone there is a memorial to Mr. Douglas, who lost his life, as my readers will remember, by falling into a trap set for savage animals in the Sandwich Islands. On Lord Mansfield's estate at Lynedoch, the same Mr. Luxurians on the same timber-producing soil. Close to the graves of Bessie Bell and Mary Grey there is a specimen 9 years 5 inches in circumference of the trunk at 5 feet from the ground; and on this interesting site there is a Silver Fir whose trunk measures, at 2 feet, at 3 feet, and at 6 feet from the ground, 14 feet 2 inches, 15 feet 10 inches, and contains, as measured by Mr. Halliday, 4931 cubic feet, including bark and top, which contain together 39 feet or 38 feet of bark, and about 1 foot of top above the point where the trunk diminishes to a girth of 24 inches.

The Pinetum at Scone Palace is a stately plantation of exotic trees, placed at regular and sufficient intervals for their full development. One of its most attractive specimens is the Deodar average, composed of trees 30 to 40 feet high. There are also specimens of Picea nobilis from the first importation of 1846. The one we measured has a trunk 7 feet in girth at 4 inches above the ground. The Picea Finnsapo is one of the ornaments here at 20 feet high. The Wellingtonia is in fruit. The Cryptomeria japonica misses here the western breeze which softens the climate of the west coast of Scotland, and is much cut up by the wind in spring. The only other tree which does not seem quite happy at Scone is the Siberian silver-striped Pinus Cembra, which has shed the leaf in some cases as if something were wrong at the roots. All the other trees are vigorous, including a row of stiff, sturdy Irish Yews, tied and trimmed a little at top so as to give them pointed, conical heads. The variegated Yew at twenty years is here pretty, but small compared with the above, the variegation being a sign of impaired vigour.

To add two more to the large list of trees which luxuriate here, there are two Ashes, 11 feet 9 inches, and 11 feet 8 inches, respectively, at 5 feet. Their height is 100 feet.

In the kitchen garden, the last of the Pines, Peaches, and Pears, drew attention on October 10. In a Peach-house, 182 feet long, the Salway Peach still hung in great numbers on most healthy and fruitful trees in pots, each with a movable zinc rim for holding earth, annually removed. Each tree is shifted once a year. There is a small plant outside, the Gentiana, which will not blossom or live everywhere, and is here every seven on a ribbon, blue, broad, and beautiful, and early 2120 feet long. We are all drawn towards things which are at once simple, clever, and useful, and I should certainly have wished to spend some hours in a very interesting turf house, 70 feet long, in which numberless plants are brought on, till they are brought out and promoted to the conservatory or elsewhere. The walls are 3 feet thick at bottom, and are lined outside with a mixture of gaster and coal-ashes. Inside they have been smoothed and washed, and they are always dry.

In the engraving (fig. 74) which accompanies this article the frontage of the wall, fencing the park from the lawn, shows the gain in height outside by the removal of earth. The apparent extent of the lawn is considerably less than its actual area. *H. Everett.*

Notices of Books.

The British Manufacturing Industries. Edited by G. Phillips Bevan, F.G.S., &c. London: Edward Stanford.

The last issued volume of this most useful series contains articles on salt preserved provisions, and bread, by J. J. Manley, M.A.; sugar refining, by C. Haughton Gill; butter and cheese, by Morgan Evans; and brewing and distilling, by T. Pooley, B.Sc. These articles are scarcely within our province for notice, except perhaps that on sugar refining; nevertheless, we are assured that the subject of the preservation of food as well as the manufacture of bread and biscuits are matters of such general interest and importance that the articles, which are written in a very attractive and instructive form, will

boiling and subsequent refining is, of course, treated of rather fully, this practical portion being illustrated by woodcuts. The statistics are of great interest, showing, as they do, the rapid rise in the production of sugar from the Beet. In 1857 the total produce from this plant was 650,000 tons, while in 1877 it rose to 1,110,000 tons, since which time it has still been increasing.

— Professor Lange, of Copenhagen, has just published, under the title of *Souvenirs de l'ancien Jardin Botanique*, an historical account of the Botanic Garden under his charge. The old garden, it appears, is about to be abandoned, in favour of a new one in a more open part of the city, and which will be more thoroughly representative of the present state of science. The Copenhagen garden dates from 1600, and among its Professors have been Fuiren,

provinces and sub-divisions of our Indian Empire, will be included, as well as those of all the more or less independent States embraced within the limits of our Indian dominion. The book will be divided for convenience into three volumes, which will be issued at intervals of about four months. Each volume will have, on an average, about fifty coloured plates, with their accompanying letterpress.

— The Calcutta Central Press Co. announce the publication of an illustrated book on *Birds' Nesting in India*: a Calendar for Egg-collectors, and a Popular Guide to the Habits and Breeding Seasons of Birds. By Captain G. F. L. Marshall, R.E.

— Messrs. Macmillan announce the publication in eighteen monthly parts of *The Forces of Nature*, a popular introduction to the study of physical phenomena, by Amédée Guillemin, translated from the



FIG. 74.—SCONE PALACE, PERTH, THE SEAT OF THE EARL OF MANSFIELD.

be read with satisfaction by all who purchase this little volume.

It is difficult, perhaps, to tell which is the most important to mankind generally—the production of salt or the production of sugar. The object of our journal, however, leads us to Mr. C. Haughton Gill's article, which we find opens with a very brief history of sugar from the "honey made by the hands of man" of Herodotus, to the discovery and manufacture of Beetroot sugar at the end of the last century, and the estimate of the annual production of sugar from this source at the present time, which amounts to more than 1,000,000 tons. The chemistry of sugar is next briefly treated of, and a description of the manufacture of cane and Beetroot sugars follow. In the first, the canes, after being cut, are passed through rollers, so that the juice is squeezed out. For Beetroot many methods have been adopted, the oldest and most general plan still in use being to rasp the root to a fine pulp, which is placed in woollen cloths and submitted to hydraulic pressure. The system of

Kylling, Oeder, the founder of the *Flora Danica*. In 1778 the site was changed to Charlottenborg, and associated with it were Rottböll, Holmskjöld, Hornemann, Schouw, Oersted, and Vahl, while among the gardeners Hollboell deserves special mention. Among the more remarkable trees in the garden is a tree of the \times *Syringa rothomagensis*, a hybrid between *persica* and *vulgaris*. It is divided at the base into several subdivisions, some of which are very thick. The height is 26 feet, with a diameter of head of 20 feet. It was planted in 1797, twenty years after the raising of the hybrid by Varin at Rouen.

— The *Game Birds of India*, by A. O. Hume and Captains C. H. T. and G. F. L. Marshall, is announced to be published in three volumes in the autumn. The size of the book will be royal 8vo (10½ inches \times 6½ inches), identical with *Stray Fashers* (vol. iii.) and *Shelley's Birds of Egypt*. The game birds of Ceylon, Burmah, and in fact of all the

French by Mrs. Lockyer, and edited, with additions and notes, by J. Norman Lockyer, F.R.S.

PUBLICATIONS RECEIVED.—The Window Observatory, by Captain H. King, R.N. (London: Crosby Lockwood & Co.).—Garden Recipes, by Charles W. Quin (Macmillan & Co.).—The Agricultural Text-book, by Professor Wightton (Wm. Collins, Sons & Co.).—The Indian Forester.—The New Practical Window Gardener, by John R. Mollison (Groombridge & Sons).—Animal Products, by P. L. Symonds (Chapman & Hall).

Florists' Flowers.

THE AURICULAS at LOXFORD HALL.—A recent inspection of Mr. Francis Whitburn's fine collection has convinced us that one, at least, of the Southern growers is likely to hold his own at the great Auricula tournament at the Crystal Palace on Tuesday next, and that if he is much beaten, a rare treat is in store

for the visitors. The collection under Mr. Douglas's care has grown considerably in dimensions during the last few years, and now includes all the modern sorts, as well as the greater portion of the old favourites of the last generation of florists. Right well, too, does Mr. Douglas grow his plants, and though the season has been sadly against the Auricula, the Loxford Hall plants are in wonderful health and vigour, and throwing trusses of fine size and excellent character. It is a rare treat to see how even the "miffy growers" thrive under Mr. Douglas's care; and the comparatively easy manner in which he propagates the "shy" sorts is really a triumph of cultural skill. No oddling treatment does the Auricula receive here, and the result amply attests the soundness of their fare. A good sound loam, with about a fifth part of some sweet rotten manure, is the compost they are grown in, and through the summer months they are freely exposed to air and rain alike. The fancy composts of the older florists (the so many ounces of pigeon's manure, if you like) finds no place on Mr. Douglas's potting-bench; no double distilled essence of goose-gang gets into his water-pot; plain honest fare is what the plants like, and if Mr. Douglas does nothing more for florists' flowers than to expose the fancy compost fallacies, he will at least deserve the hearty thanks of every amateur for doing that.

Mr. Douglas is strong in all the "edges" as well as the selfs, and the breadth and liberality of his floral notions is well testified by his high regard for the show alpines. In the white-edged section of the good and Gay's Glory have fine forms for some weeks, and one somewhat regrets that his best truss was developed a week or two too soon for the Palace show. With a waxy paste, reddish plain body colour and pure white edge, it is a grand flower, and stands second only to Heap's well-named Smiling Beauty, the body colour of which is black, the paste dense, and the tube of beautiful form. It is in all respects a very refined flower, and throws a fine truss of pipes, numbering from a dozen upwards. Hopworth's Tumbler is the last of the white-edged section, with a body colour and dense white paste. A favourite with the Northern men is Summerscales' Catharina, and though small it is a very neat flower, but does not throw a large truss. Annie Smith (Smith) is the purest white of all, and a very pleasing variety, notwithstanding its fault—a somewhat angular past. Amongst the very best, too, in this section is Smith's Ne Plus Ultra, a pure white, with rich chocolate body colour, and rather pointed petals. McDonald's Miss Arkley, a reddish purple body colour, and the good and Gay's Lady Sale, also show up well—the latter especially having nice foliage, and throwing a fine large truss.

In grey edges, Heady's George Lightbody is generally considered the finest, and it is here in grand character. Sykes' Complete, a very old variety with a fine black body colour, is very correct in its markings, and still stands to the fore. Sophia Damaresque is not much known, but it is a grand flower, with a purplish plum-coloured ground, and pipes of fine size. Cunningham's Jon's Stratagem, is a new one, generally appreciated by the Northern men, but it is fine with Mr. Douglas. Lightbody's Robert Trill has a dense paste, bright gold tube, black body colour and fine grey edge, which, however, sometimes comes green. One of the strongest growers, and most handsomely mealed of plants is Turner's Colonel Champey's, the ground colour in which is violet. The points are generally correct, and it is a very showy variety, though our Northern friends do not much exhibit it. Heady's Alderman Charles Brown is of somewhat recent introduction, and an improved flower of the Ring-leader (Kenyon) and General Bolivar (Smith) type. The last named is a fine old variety, that cannot be dispensed with. A good and well-marked flower is Waterhouse's Conqueror of Europe, which has the distinction of producing the largest pipes in its class; and the only variety that matches well with it is Fletcher's Ne Plus Ultra. Other choice varieties in this class are Dickson's Duke of Cambridge, with its rich plum-coloured ground and fine edge, which sometimes comes almost green; Kent's Queen Victoria, a very neat flower, the body colour of which is black, and the tube and paste very regular; Reid's Dr. Horner, which has a black body colour, and has been shown as a white-edged variety, though it certainly belongs to the greys; and Grimes' Privateer, a good old sort, with a fine body colour and very narrow edge, like that of Campbell's Confidence,

which has a fine paste and very dark ground colour. Of new varieties Walker's Peverell of the Peak has fine qualities, and is very promising; and Kay's Alexander Meiklejohn is generally a very refined flower, though it does not throw a large truss and is rather a miffy grower.

The leading varieties in the green-edged section are Leigh's Colonel Taylor, Heady's Alderman Wishey, which has a bright yellow eye and good dark body colour, the single pipe the best of all, but the truss is not large—the best truss here numbers seven; and that may be considered fine; Cunningham's St. Augustine, a new Scotch variety, with a good golden eye, fine black body colour, and well defined dark green edge; Campbell's Admiral Napier, which would stand very high but for its angular paste; Ashton's Prince of Wales, of a pure grass-green, and dense paste; Trill's George Lightbody, a very good green, but deficient in body colour; Oliver's Lovely Ann, of which there are two varieties in cultivation, the best having a fine broad petals and bright green edge; Pollitt's Highland Laddie, and Booth's Freedom, which has an intense black body colour, and a very dark green edge.

Amongst the selfs we noted Puhman's Ellen Lancaster, a new variety, and one of the very best of the dark coloured ones, though not so round a flower as Kay's Topsy, which is a great favourite, and has finely mealed foliage; Campbell's Pizzaro, dark maroon, and one of the best of the Falkirk growers (and one that has raised many good ones but with little regard for convenience of growing so). Amongst the violets nothing can compare with Turner's Charles J. Perry (a worthy memorial of a most worthy man); the colour is rich to a fault, but the tube is not so bright as it might be; however, let that pass: the pipe are of grand size, and it is a free grower. Lightbody's Meteor Flag has finely mealed foliage, but it is not so bright a shade as the last-named, and has a defect in its thin watery paste. Spalding's Metropolitan, too, is not so pure in colour as C. J. Perry, and its flowers are rather thin. Spalding's Royal-poll's tube is the finest in this collection, and a fine flower it is. Sim's Vulcan has black flowers, which form a beautiful contrast with its handsome mealed foliage; Spalding's Blackbird stands well amongst the dark ones; and Sim's Eliza, a reddish maroon, is of fine size, and a showy flower; Lightbody's Lord Clyde, dark maroon, is also fine; and Netherwood's Othello has very dark rose-leaved petals and a fine gold tube.

For the alpines we have left but little space, but we must first of all mention a most interesting one, Mr. Douglas's in Diadem, a beautifully shaded crimson-velvet flower, of fine size and form. Turner's Beatrice, and the same raiser's Bronze Queen, are also flowers of merit, the latter being a prettily shaded flower; and the first-named a bright shaded purple, with very large pipes, which we measured, and found to be 2 inches across. W.

THE NATIONAL CARNATION AND PICOTEÉ SOCIETY'S SOUTH'S SHOW.—You will greatly oblige by permitting me to inform your readers that this show will be held in the Royal Aquarium, Westminster, in conjunction with a display of cut Roses, for which the Aquarium Company offer £55 in prizes, on the 25th of this month, Thursday, July 18th to 20th.

Schedules of these prizes, and those for the Carnations and Picoteés, are in the press; and by the time this notice meets your readers' eyes I shall be ready, and shall most gladly forward them to all persons interested.

The promoters of the Carnation and Picoteé show accept this proposition of the Aquarium Company in the belief that the display of Roses would give an additional attraction to the show of Carnations and Picoteés, and they therefore offer a large sum to those friends who so readily and generously responded to their appeal for the means of offering suitable and adequate prizes.

That response disposed, I presume to believe, of the perverse and absurd statement that "florists' flowers were hopelessly at a discount in the South;" but I shall not think the reputation perfect and complete until the Carnation and Picoteé growers of the South, aided as they may be, and as an assurance of the same, by their brethren in the North, who have convenience for hastening the bloom, have provided a display of these lovely flowers such as Mr. Dombrain never before looked upon, and such as shall elicit universal admiration. I invoke the aid of my fellow florists in this way, and if we succeed, I am sure we shall, I shall be repaid tenfold for the pleasant labour it has entailed upon me. E. S. Donnell, 11, Chatham Terrace, Larkhall Rise, Clapham, S. W.

Natural History.

BIRDS AND FLOWERS.—PIMROSES and Cowslips (especially the latter), where they grow in small quantities on garden banks and like spots, are sadly pecked about by the birds this year. They eat part of the petals off in some instances (pick them like a caged bird does any green plant within its reach), and destroy numberless blossoms in this way. The present winter having been so very mild, no lack of vegetation was so to harden the soil, and a fair proportion of winter berries, one can but feel surprised that the birds should attack spring flowers so vigorously. *Helen E. Watney.*

THE HAWFINCH.—In your notice last week of Shobdon Court, the seat of Lord Bateman, you allude to the hawfinch being a rare bird in the locality, only occasionally visiting this island. In Middlesex and Hertfordshire it certainly now breeds every year. Within 5 miles of the City, in Caen Wood, Highgate, I have frequently seen these birds, and two years ago I picked up a young hawfinch alive in my garden here and kept him for nearly a week before he became tame and a brilliant roosting at the hand and eating heartily Hemp and Millet seed, raw Peas, Beans, or Lettuce. He was kept in the same room with a linnet, whose song he soon learned to mix with his own, and the combination of the two was a strange jargon, unlike anything in bird song I ever heard. *F. Miles, Bourne-side, Southgate, N.*

—I think nearly all the authorities on birds describe the English grosbeak or hawfinch as being of a shy and retiring disposition; I was, therefore, somewhat surprised the other day to see one of them making himself very much at home in a dove's cage which stands open within a few feet of the windows of my house. He comes very regularly, and seems greatly to enjoy his meals. He also objects in a most emphatic manner to the sparrows, chaffinches, greenfinches, &c., who intrude upon him, totally ignoring their prior claims to a share of the good things. Of course they make some show of resistance, but by the aid of his powerful beak all disputes are quickly settled. *Maurice Young, Milford Nurseries, Goldsmithing.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—There are a few small-growing plants that in the general preference for flowering subjects are lost sight of, though sufficiently interesting to deserve a place in the most select collection. Amongst these may be named the Australian Pitcher-plant, *Cephalotus follicularis*, and *Dionea muscipula*, which, although sometimes classed as greenhouse plants, succeed better in a somewhat warmer and closer atmosphere. The present is the best season for propagating the *Cephalotus*, which is increased by division, taking off the small offsets that are formed round the base of strong plants, placing them singly in the smallest sized pots, well drained and filled with an equal mixture of fibrous peat and sphagnum, both chopped quite fine, to which add a fourth of sand; keep them moist, and in a cool shade, shading slightly until they have rooted, after which give more air, standing them as near the glass as possible, potting on as required; but, as it is a small rooting subject, it must never have too much room. It is now time to pot the *Dioneas*; these plants increase naturally, much in the manner of Lilies, by the crowns sprouting up where the flower-stems have been produced the previous year; they succeed well in a similar compost to the *Cephalotus*, singly in small pots kept a little close, and watered rather warmer than an ordinary greenhouse. The pots in which both the above plants are grown, when in either a small or full sized state, should be kept plunged in larger pots or pans filled with sphagnum, which helps to keep them equally moist, neither of them being able to bear any approach to a dry condition at the roots, nor do they like the atmosphere being too dry. There are few flowering subjects that do not attain a large size more effective for decorative purposes, than *Anturium Scherzerianum*, but those who desire to increase slow growth with inability to be increased quickly by division, and the general reluctance felt to breaking up large specimens, there are few plants in which it exists in sufficient numbers to admit of its being used to the extent it deserves. I have now the one found to succeed the best in a much lower temperature than it was generally subjected to when it was first introduced, it can when in flower,

THE Gardeners' Chronicle.

SATURDAY, APRIL 21, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, April 23	Sale of Imported Orchids, at Stevens' Rooms.
TUESDAY, April 24	Crystal Palace's National Auricula Society's Show.
WEDNESDAY, April 25	Sale of Herbaceous Plants, Shrubs, Roses, &c., at Stevens' Rooms.
THURSDAY, April 26	Royal Horticultural Society of Ireland: Sale of Imported East Indian Orchids, at Stevens' Rooms.
FRIDAY, April 27	National Auricula Society's Show at Manchester.

IN December of last year a correspondent, who signed himself merely as a "Constant Reader," sent us a very handsome DOUBLE LAPAGERIA ROSEA, the merits of which were such as strongly to attract our attention, and induce us to recommend that the fortunate owner should take means to propagate it by layering. The flower in question appeared as a sport upon a branch, and doubtless if that branch were duly layered it would in due time produce these much-to-be-desired flowers. But apart from its beauty as a double flower of unusual symmetry and regularity, it presented certain peculiarities of structure to which it may be useful to advert. It is not indeed necessary to enter into details which would be of interest mainly to botanists, but the principles involved were such as to afford useful lessons in the way of practical cultivation. They do not, indeed, offer any particular novelty, but their importance is such that repetition becomes excusable.

Briefly, then, the peculiarities of the flower in question depended upon variations in the processes of growth and of development respectively. Sometimes the one must have been active while the other was passive, and *vice versa*. Sometimes both had manifested themselves in an equal degree, at other times both had been temporarily suspended or arrested. Before we go further we must define clearly what we mean by growth and development. By growth, then, we mean the formation of new or additional tissues, by which means the bulk, substance, or weight of the plant are necessarily increased. Development is merely the change or progressive modification of tissues or structures already formed, a change intimately connected with the adaptation of that tissue or of that structure to fulfil particular purposes.

The two processes are indeed not always easily distinguishable as they pass one into the other, but as a rule they are easily recognised, and we need not stay to consider exceptions. Growth must precede development, and it may proceed without it. Growth may and generally does accompany development, but development need not necessarily accompany growth. Growth and development may go on at the same time in the same flower or at different times. If a proper balance be maintained between growth and development, then the flower or other organ is normal according to its kind or type. But, if the balance between the two processes be disturbed, then the flower or other organ becomes necessarily abnormal or distorted. Again, the question of time has to be considered: the two processes must not only be symmetrical as to form, so to speak, but they must preserve a correct rhythm. Growth and development must take place at certain times, and last a certain time. What that time is, and what its duration, depend, of course, on circumstances. All that we are concerned with now is the fact that in symmetry, as well as in rhythm, and in both together, the just equilibrium must be maintained, or the flower or other organism becomes distorted and abnormal. Thus, in any flower there are natural periods of growth, alter-

nating with periods of no growth or arrest, and periods of development, alternating with intervals of non-development or arrest. In the flower of Lapageria, for instance, which has served as a text for these remarks, the sepals, petals, and stamens were normal, the balance of growth and development normal to the flower, and the time at which those processes had taken place had not been interfered with, but, after the formation of the stamens, at a period when undisturbed ordinary circumstances the growth and development should go on in the formation of the pistil, four additional rows (one within the other) of petals were formed. Growth was clearly not arrested, but rather exaggerated, unduly manifested; development, on the other hand, was checked, or at least it showed itself in the formation of petals instead of running on into the construction of the pistil with its ovules or rudimentary seeds.

The importance of a clear conception of the facts we have been alluding to will be admitted by every gardener. In the culture of Cauliflowers, for instance, the tendency to "bolt," that is, to develop flower-stalks and flowers, is not one which the gardener looks on with complacency, nor does he regard with any greater satisfaction the tendency which his Pelargoniums have in some seasons, or when over-watered, to run to leaf, at the expense of the flowers—growth in the latter case predominates over development. The swelling of Strawberries, of Pines, of Grapes, is a process of growth; the ripening of the wood, the setting, the stoning, the colouring of fruits, are matters of development. Between the two processes there is sometimes an antagonism, as every gardener knows to his cost. Again, though general principles remain unaltered, there is much room for individual variation even among plants of the same kind. What is so conveniently called the "habit" often varies materially even in seedlings from the same pod. Such things test the power of observation and the tact of the gardener, and serve to distinguish the intelligent workman from the man of routine, who owns no rule but that of his thumb. The conditions which are favourable to growth, are not always the same as those which are beneficial in the case of development; indeed, as we have seen, the two processes are often antagonistic. Practically the matter resolves itself mainly into a proper regulation of the amount of light, heat, air, and water to be given to plants at different times, according to varying outward circumstances and in accordance with the individual requirements of particular plants. As many plants of varying habits have often to be grown together in the same house, it is evident that in most cases a compromise must be hit on, and this again tests the ability of the gardener, who has to produce the greatest amount or best quality of produce compatible with circumstances.

If we had to point out wherein young inexperienced gardeners and amateurs most usually fail, it would be in the due regulation of the amount and time of watering plants in relation to light and heat. More failures we believe occur from negligence or carelessness in this particular than from any other breach of the laws by which plant culture is regulated.

— THE illustration on the next page, fig. 75, represents a very fine specimen of *CHOROZEMA CORDATUS SPLENENSIS* belonging to Mrs. J. H. VIVIAN, Singleton, Somerset, whose gardener, Mr. JAMES BIRLEY, kindly favoured us with the photograph. The plant measures 24 feet 6 inches in circumference, and is about 8 feet in height. It was struck from a cutting five years ago. This variety of *Chorozema* lasts in flower from Christmas to the middle of March, is invaluable for cutting, and when grown in small pots comes in most useful for table decoration.

— We are by no means sure—or, if the expression be preferred—we entertain a strong feeling that the best thing in the recent Amsterdam Exhibition was one which finds no place in the catalogue, and of which,

up to the time we left, we were unable to discover the exhibitor. It consisted of an exhibition of a very large number of BOOKS, &c., of various dates and languages, relating to the history of the gardening with books of the seventeenth century, and including Mr. BAKER'S recent monographs. Amongst them was a list in Dutch of an auction sale (February 5, 1637) of Tulip bulbs, in which one was knocked down for 4200 guilders (a guilder = 1*s.* 8*d.*). Another, a mother and her child—that is to say, a bulb with an offset, sold together for 5000 guilders. The total amount realised by the sale was 90,000 guilders. Tulips were at that time sold by weight, and in one engraving here exhibited, there is a sarcasm pointed up to speculative florists, which might not be inapplicable in some cases at the present day. A huge fool's-cap, Florus Gecks Kap, is shown serving as a tent, in which Tulips are being weighed and sold. A figure, which may represent Good Taste or Common Sense, is blinded, and her hands tied behind her, while Flora is shown in the distance on a donkey surrounded by mocking small boys and others, who chastise the unfortunate goddess with birch rods, &c.

The managers of the South-Western Railway are to be complimented on their appreciative preservation of some NATURAL CHAINS, the night, in less grovelling hands, have been converted into hard cash. On the steep sides of the slopes that border the railway cuttings in North Hants the wild Primrose is seen growing in great abundance, and just now affords no small amount of pleasure to the swift-passing traveller. It will be well if the out-of-the-way *locale* of these charming spring flowers should remain undiscovered by those thieving vandals who rob our hedgerows and woods of myriads of wild flowers, almost exterminating some kinds in various localities, as the unfortunate plants are soon killed by the ungenial surroundings of the metropolis. Probably it will not long hence ere we awake to the fact that such wild flowers, as well as wild birds, need special legislation for their preservation.

— THE WOOD ANEMONES are just now very charming indeed at the sides of the pleasant woodland walks at CASTLE ASHBY, Northampton, the seat of the Marquis of NORTHAMPTON. In many semi-wild nooks and corners the visitor comes upon patches of the single rose, *A. nemoralis*, and its double variety, the common rose, which is this season quite highly coloured, and here and there the scarce double rose variety. For years past a rich bed of decayed leaves has been accumulating, and in this these Anemones flourish with native freedom and vernal loveliness. It is curious to note that in some places the single rose variety has leaves of quite a bronzy hue, in others the leaves are quite green; peculiarities of soil or exposure may have something to do with this. The yellow *A. ranunculoides* and the pretty pale blue *A. pennina* are also present and very gay indeed. It simply requires the gorgeous *A. fulgens* to give completion to a group of spring plants that are highly attractive. While the woodland walks are aglow with floral life, the terrace spring flower garden is quite backward, owing to the wet dull season; during May and June it will be very effective, and about the second week in July the present occupants have to give place to the summer bedding plants, and they are planted out in nursery beds till autumn comes round once more.

— There are about the country some plants that may be said to possess a kind of historical interest. One of these is the grand old *CAMELLIA RETICULATA* AT CHISWICK HOUSE. Planted by Mr. CHARLES EDMONDS in 1829—very nearly half a century ago—it has proved this season as splendidly floriferous as at any period of its career. It has been literally clothed with flowers, and a considerable number of buds were removed, so thickly were the trees studded with them. The average diameter of the flowers was 7 inches. The measurement of a few of them was specially made by Mr. EDMONDS. The plant is so confined in the narrow dome in the centre of the large Camellia-house at Chiswick that it is a pity a new habitation was not built over it, to give it ample space in which to develop its branches. Bushels of flowers have this season been cut from it for Marlborough House. Close by it are the remains of a fine hybrid *Elæagnodendron* named Metropolitana, raised many years ago by the late Mr. JOHN RONALDS, of Brentford. The specimen at Chiswick



FIG. 75.—SPECIMEN OF CHOROZEMA CORDATUM SPLENDENS.

House is the original plant, and it is a very fine variety, with large heads of well-formed bright red flowers. It is so robust in constitution as to be nearly hardy, and is of a different habit to most Rhododendrons, growing strongly and flowering freely at the points of the shoots every year. This Rhododendron is becoming much crowded, and, unhappily, is dying in some of its parts, perhaps from old age. Perhaps with the demise of this plant it may become utterly lost to cultivation.

— Not long ago we gave an Austrian's opinion of gardening in France and England, and the state of horticulture in Austria as compared to that of our own country. The comparison was perhaps too favourable to our gardens and gardeners, and having reproduced that, it is no more than fair to hear what there is to be said on the other side by a more patriotic writer. M. CZULICK, in a recent number of the *Wiener Gartenfreund*, "On the GARDENS AND

GARDENERS OF GREAT BRITAIN," certainly goes to the extreme in the opposite direction. After admitting that our gardens exceed all Continental gardens in richness and beauty, he suggests that it is possible that this superiority is not due to the skill of our gardeners, but is simply the consequence of favourable climatal conditions, and the cheap way in which whole shiploads of plants are obtained from our various possessions. Many ships that would otherwise return empty are laden with valuable plants. Our winter is not worth mentioning, and our summers moderately hot and moist: hence the construction of our glass-houses is cheaper and better adapted for plant-growing than any that can be adopted in Austria. If Austrian gardeners took no more care of their plants than English gardeners, there would not be a plant left alive at the end of the year. Besides, Austrian gardeners have other difficulties to contend against, of which their English colleagues can form no conception; and

it has been repeatedly proved that Englishmen can do anything else in Austria except gardening. Then look at the money the English spend on their gardens, often paying several hundred pounds for a new plant, though this must be regarded as arrogance, whereas the Austrian gardeners have almost nothing. And so the writer goes on. Of course there is a good bit of truth in his exaggerated statements, but he appears to have lost his temper and prudence, to put it no stronger, because his wealthy countrymen spend their money wastefully on horses, instead of encouraging horticulture, and because English gardeners have been held up as a pattern. He thinks Austrian gardeners would beat their English compeers, if they only had the chance. Well, perhaps they might in their own country; but transfer them hither, and give them three months' dull, foggy weather for fruit and flower forcing, and they would find that English gardeners have their difficulties, and that success on their part is the triumph of skill in their profession.

appears is known as "Douglas Fir, Red Fir, Black Fir, Douglas Spruce, Red Spruce, Black Spruce, Hemlock, Oregon Pine, Western Pitch, Bear River Pine, Swamp Pine, and perhaps others. Moreover, nearly all of the names are also applied to other species."

Home Correspondence.

Royal Horticultural Society.—A good many of the would-be guinea Followers on lists and others, have sent in their names here, or direct to the Society, as willing to become guinea members, but many have not yet decided how to act; perhaps the best hope of influencing them by trying to show the present position of the Society. The nurserymen at and near London can, if they please, make the fortnightly shows at South Kensington beautiful ones; it will be worth their while to do so if enough of Fellows and of the public see the plants they exhibit. All the shows held this year have been, whether notwithstanding, good ones. When the beauty of these shows becomes generally known, there is little fear of their not being sufficiently well attended and so continued; there will be more interest in the guinea subscriptions of all living near London, and so it may be expected that very good new subscribers will join the Society. If this be so, whatever may have been the case in the past, it is probable that the South Kensington garden will pay both its direct cost and that of furnishing it with plants grown at Chiswick. Therefore there is no reason why all money subscribed by horticulturists, in order to promote horticultural science, should not be applied to purchase horticultural processes at a small profit where, and that South Kensington, instead of being a charge, should be a benefit, as providing gratis a good place for committee meetings and shows. Of course, among the nurserymen who make the shows there are some really good horticulturists, and a wish to do so is now be a great object to induce as many as possible of the best scientific horticulturists of the country to join the Society, as until they do so it will never be the great representative Society it should be. The guinea membership, with hope of a guinea in the future hereinafter, will help this. Some of the very best country horticulturists, among them the Rev. H. Harpur-Crewe and Mr. George Maw, have already become guinea members; and last, but not least, Mr. Isaac Anderson-Henry, of Edinburgh, has sent me his name to go in as a guinea member, with the hope of greater privileges hereafter. It is now of the greatest importance that as many of our best horticultural science as possible should join the Society. It was feared by some that guinea Fellowship or membership would stand in the way of the higher subscriptions, this appears to have not been the case. I may perhaps give one instance in proof of this: an old friend sent me his name for our guinea list, but when the time of joining the Society came he, for the sake probably of the transferable ticket, not only became a £2 2s. Fellow himself, but made his wife and daughter-in-law £2 2s. Fellows also. *George F. Wilson, April 11, 1877.* E.S. April 14. I had written the above before Dr. Clifford Alibant's letter, p. 472, appeared. He is wrong about the Chiswick work, which has been really useful. I think there is much that is right in his criticisms on the same, and his aspirations to a Society of the future, but the difficulty is, who is to bring about this good new state of things? We seem travelling in a circle. The Society, while it has to trade with South Kensington and to show visitors for its funds, will look Mr. Wilson's charge of front and country horticulturists will not join till the Society becomes more purely horticultural, and the Society will not become more horticultural till the country horticulturists join the Society. I have not yet any forwarder? No one has come forward to start a new society on a more scientific basis; so surely it is our wisest present course, to try and improve and strengthen the existing society, and the way to do this is to think to me the horticulturists, and to give by a great influx of new good country garden members, to become guinea Followers hereafter. *George F. Wilson.*

—Permit me to thank Dr. Clifford Alibant, of Leeds, for his outspoken letter in last week's *Gardeners' Chronicle*. I agree with him in the main. I may also add that since Mr. Wilson's charge of front and the extraordinary letters of Messrs. Veitch and Gilbert, I should assuredly decline to accept a guinea Fellowship under the proposed conditions. To give up the best of quality of our plants, and to go to the aid of dishonour, with a view of forcing equality afterwards, looks amazingly like securing a Fellowship under false pretences, and is a course which I trust will receive no support from honourable men. *D. T. Fish.*

—I have fighting, scolding, or arguing in a newspaper, but I found it impossible for me, as an old and attached member of the Royal Horticultural

Society, to read the letter in your last issue, by Dr. Clifford Alibant, and hold my tongue. Anything more unkind, unjust, and untimely than your correspondent's remarks I never remember reading, even among the many attacks made upon the Society during the irritation of our most troubled times. Can your correspondent have made himself acquainted with his subject, made sure of his facts, or studied the history of the great institution upon which he is about to condemn? It seems incredible. Dr. Alibant's programme of work proper for a horticultural society is excellently well drawn, and is, with a few immaterial exceptions, an accurate description of what every great center of horticultural science has been well and truly carrying out year after year, decade after decade, from her birth until now. Hot, strong, and unlikable as is the language of your correspondent, there are a few signs of every earnestness worth of better things. Will he excuse me for saying that such qualities are much needed at the present time, and would be well employed in furthering the efforts of those who are now, with daily increasing energy, in rallying round their Society, and determined, if possible, to succour and save her? The Royal Horticultural Society has been too long a butt for the arrows of ill-natured and ungenerous criticism; neglected by those who should have stood by her in her distress, and who like the shepherd, were hawked at by every mouthing wolf. We want now sympathy and support, and I have every reason to believe both are at hand. I have picked every correspondent to hang to, to plead for, to lengthen it out, very unwillingly believing that such objections as these in it must have arisen from imperfect information. *A Country Fellow.*

Dendrobium pulchellum.—Having noticed Mr. Payne's eulogium on *Dendrobium Fierarii* in your issue of the 13th inst. in your columns, it was a pleasure to state that there is very fine specimen of the latter at Ashted Park Gardens, which had 700 flowers fully expanded when I was there a week ago. It was suspended in a basket in the greenhouse, and was so crowded with blossoms that not a vestige of the basket was visible; it was literally one ball of yellow and pink, and this plant in particular fully deserved the praise Mr. Payne lavished upon it. *Wallace Morris, Epom.*

The "May" for Church Decoration.—I think Mr. Fish has never helped in church decorations, or he would not recommend any of the cut blossom of the May for the purpose, and as to "lettering" it had need be executed by fairies half an hour before the sun sets, and as to its beauty, it would be more quickly or loses its form more completely. Plants may answer, but certainly not the blossoms cut. *B. T., Clifton Rectory, April 11.*

Decorative Plants: Hardy Ferns.—Amongst the many kinds of plants used for conservatory decoration this season, none in its way surpasses the many fine forms of the Lady Fern. They are of such a beautiful green and so delicate in their appearance, that nowhere scarcely can they be said to be out of place. Some of the plain varieties of *Athyrium Filix femina* are very pretty, but some of them are so finely tasselled that for decoration they may be said to surpass the common forms. These Ferns are of the most easy culture, and indeed where favourable they will grow on themselves on the borders of any of the plants that stand. The great kinds also do this, so that they could be used again (lifted, potted, and grown on) to better advantage if desired. For the summer decoration of the conservatory, when there is plenty of open ground-out-of-doors, we find varieties such as *Ferns* very useful for conservatory work amongst *Fuchias*, *Liliums*, &c. Though they are common, or varieties of hardy plants, they are none the less beautiful. Another very fine form of British Fern is the crested *Osmunda regalis*; in a gentle heat it is also now in fine foliage. Then there is the *Polystichum angulare proliferum*, which is interesting at all seasons for its profliferous character; it may be termed a perennial for conservatory work, as it keeps in good appearance all the year. Many make a speciality of growing fine forms of hardy Ferns alone, but when grown or set amongst other fine flowering plants, such as Azaleas, they show to the best advantage, as the fine green and the rich coloring agree so well together. *R. M.*

The Double Poinsettia.—My employer purchased a small plant in a thumb-pot last April, and I kept it in a dormant state for three months in a cold house. It commenced to grow about the end of August, and in the beginning of September, and showed its buds in the beginning of December. I measured it to-day (April 16), and found that its height is 21 inches. The head is divided into four branches, which are again divided into ten distinct heads, from 4 to 5 inches in diameter, the entire head being 12 inches in diameter, and of brilliant scarlet; and from its appear-

ance I should say it will last quite another fortnight, making the Poinsettia season of six months' duration. This is a grand specimen, and as far as I can see, will be long before it will be grown as plentifully as the old one. It cannot be said of this as of many new things—that we have to get rid of an old friend to make room for the new one. One great recommendation of the new variety is that it comes in at the time the old one sheds its bracts, and its great value as a decorative plant has become more apparent daily up to this date. Another year, when we have strong plants to start with, and we have no doubt that such beautiful specimens will be raised, we will not argue with the old one. *Richard Shore, Gr. to Kez, James Hogworth.*

LOBELIA PUMILA MAGNIFICA, or Emperor William.—Mr. Morgan's strange letter on p. 473 induces me to trouble you with a few more last words. Mr. Brownell told me he raised his *Lobelia* from seed procured from me; I may have been mistaken about having given it him, but that is of no great importance. As far as I know I did not pretend to have seen it at Mr. Brownell's till the autumn of 1874, previous to which time I had received the two First-class Certificates I spoke of in my previous letter. I had had my plant about a year and a half in the nursery, and it was before I exhibited it, and claim priority of possession; at all events I took the first steps to make it known to the public, and now three years after it is rather late in the day to set up a counter claim, even were it done at the moment of its issue. I am on the other party; not that so small a matter is of any importance to me, still I feel bound to defend myself from Mr. Morgan's charge of having made a false statement in the matter. *John Beter.* [The subject may well be allowed to drop now. Eds.]

Selborne and Gilbert White's Grave.—On visiting Selborne churchyard last Saturday, for the purpose of seeing the famed old naturalist's grave, I was much shocked to find it entirely covered over with mortar, broken bricks, pieces of slate, &c., the top of the headstone alone being visible. They are repairing the church, but surely a finer spot may be found whereon to throw the rubbish than Gilbert White's last earthly resting-place. One Selborne I spoke to informed me, with considerable pride in his own opinion, that the grave was the property of "strangers." "Because of Gilbert White's writing about it," I replied; adding, "I am sorry to see his grave so little cared for." "Oh, I don't know him," was the answer I *Hein Watson.*

Eucalyptus globulus in Lancashire.—It may be a matter of interest to many people to know that the *Eucalyptus* has stood a winter out-of-doors in Lancashire. From its conduct here I am disposed to think that it ought to live and thrive in the South of England in warm, sheltered situations. My plan here was planted out about the end of last May, and it would perhaps be very difficult to find a more favourable situation out-of-doors than the one the plant occupies. It is planted on a sloping bank, where its roots are comfortable and dry, and protected on all sides by tall-growing trees, but not crowded so as to be injurious to growth. I think it seems reasonable to suppose that a rather elevated, dry position like this will be conducive to the formation of hardy plants in winter situations. I have seen a very milky character than plants which are treated to a liberal compost. The latter treatment is a means of procuring inevitable death from the first visit of sharp frosts in November, whilst the former leaves a long-hope of escape, in a somewhat moderate and moderate growth to be harder, better ripened, and better able to withstand the effects of our changeable climate. I have no faith in any one succeeding to grow the *Eucalyptus* out-of-doors as far north as we are, except under peculiarly favourable circumstances. I also think that the soil cannot be too poor, and I am much mistaken if restriction of the roots would not have a tendency to promote growth a character that would give some hope of preparing it to stand an average English winter. With the exception of a little pains in selecting a proper situation, in giving poor soil and limited root-room, and in protecting for a winter or two, and then chronicle results? *W. Lind, Otterpool.*

An Extraordinary Set of Peaches.—On a recent visit to Clumber I was astonished at the enormous quantity of fruit just set in the early Peach-houses, the Nectarines being equally heavily laden. The bearing wood, which is equally distributed from the lower part of the tree to the top, is literally clothed with fruit from base to point, the trees themselves being in the most robust health and fine examples of skilful management. Mr. Miller will require to exercise no small amount of care in the entire head of the tree, and the quantity of fruit to prevent over-ripening, although I

dare say the task will be a pleasant one. These results have been obtained, I am informed, without artificial fertilisation in any form. What will the advocates of the syringe say to this? Will Mr. Simpson avow that, had Mr. Miller syringed the trees when in flower, the soil would have been heavier? If not, why use the syringe, or the camel-hair pencil, or bunch of feathers, at all? If all other conditions are equal, and the flowers are perfectly developed, is artificial fertilisation necessary? *Vitis*.

Primroses Indoors.—Where these beautiful spring flowers are found in our woods they are usually in such profusion, and increase so fast from seed, that no objection need be raised to the plan which I pursue, and which I recommend to others when it is proposed to decorate rooms with Primroses. I cut off the whole plant above the roots and below the leaves, and place it in a saucer of water. The effect is improved by an edging of five or six plants of the Dog Violet treated in the same way. *W. T. T.*

Adiantum Capillus-Veneris var. cornubiense.—Amongst the many beautiful species and varieties of British Ferns the Maidenhair has no rival, and one might doubt if it were possible that any abnormal form could surpass the parent form in graceful elegance, but the var. *cornubiense*, represented by the annexed woodcut (fig. 76), occupies the same relative position to *A. Capillus-Veneris* that the beautiful *farleyense* does to *A. tenerum*. Like that variety, it is much larger in all its parts, the large wedge-shaped pinnules being divided into numerous and deeply parted lobes; and, like that, it does not produce seeds. The fronds are from 12 to 15 inches long, very delicately membranaceous; the pinnules an inch or more broad and an inch long, deeply multifid, the margins dentate-lobate. Both indusium and sori are wanting. As in the var. *farleyense*, the involucre, instead of taking the form of *indusium* and becoming reflexed, are extended in continuation with the free-fered veins, and subdivided into numerous slightly dentate and rounded lobes. The honour of discovering this beautiful Fern and introducing it to cultivation is due to Mr. H. H. Trevithick, of Hayle, who found it growing on the rocks by the sea, and near his home. The name I have chosen for it will mark it as one more, and not the least valuable, of the many beautiful Fern sports found in this county. *T. J. Jermans*.

Foreign Correspondence.

RETROSPECTIVE VIEW OF A JOURNEY THROUGH NATAL.—After having travelled the length and breadth of Natal, visited its most important places of business and interest, wandered along the banks of its principal rivers, and received hospitality from many of its adopted children, I can now at my leisure look back upon all the various scenes which have passed before my eyes, and combining them all together in taking a comprehensive view of the whole colony, come to the conclusion that with all the drawbacks possessed by Natal, it is a pleasing country to the eye, and holds out many temptations, in spite of difficulties, to intending settlers. The natural scenery of the country does not possess that awful grandeur to be witnessed in the Himalayas or Andes, but it is pleasing and picturesque. The long flats on the coast land, the undulating, broken, and often rugged country inland, with here and there small plains and elevated plateaus, the whole interspersed with a complete network of rivulets and rivers, make a favourable impression upon the mind of the casual observer.

The climate is not at all disagreeable, rather warm on the coast, but very pleasant and suitable for Europeans up-country in fact; and, although in the middle of the hottest time of the year, I have fairly shivered with cold during the night, especially towards morning. Rain is plentiful during the summer months, as a rule, and a sufficient quantity of dew falls in the dry season, or what we would call winter; and it is a common occurrence to have frosts, even ice, after 30 miles from the port of Durban. The geological formation is very peculiar, and the various phenomena to be seen in passing across country is striking and often difficult to account for. Travelling from Durban to the foot of the Drakensberg Mountain, the strata, which are for the most part horizontal and undisturbed, appear in regular succession from the Zuluian, now forming the coast, to the gneiss and shale of the Drakensberg. After leaving the coast alternate beds of claystone, porphyry, gneiss, and silurian sandstone make their appearance, until, after passing Pieter Maritzburg, greenstone and a shale containing numerous fossilis,

principally reptilian, and the remains of a bygone and vast vegetation appear. In places where now for miles and miles a bush or a tree cannot be seen, one spit deep reveals a rank vegetation, which must, geologically speaking, be of recent extinction. In general the flats and valleys possess a deep and fertile alluvial soil, but for the most part the hills are horribly stony, and fit only for sheep. Several important minerals and earthy products have been discovered, and gold was found a few years since on the Tugela River; indications of coal are numerous, and a few mines are now working at Newcastle, in

there is but a poor demand—and I believe in the best of times the markets are easily flooded; so that until there is a crying demand agriculturally, Natal will never rank as an important and prosperous colony.

A great deal of land is taken up and cultivated to a certain extent by the Kaffirs, who are yearly increasing at a rapid rate; and now numerous Kaffir kraals are to be seen, with patches of cultivation and small herds of goats and cattle, where a few years ago none were to be seen. A great many of the old colonists apprehend an imminent danger from what they call the meditated and gradual encroachment of the Kaffirs,

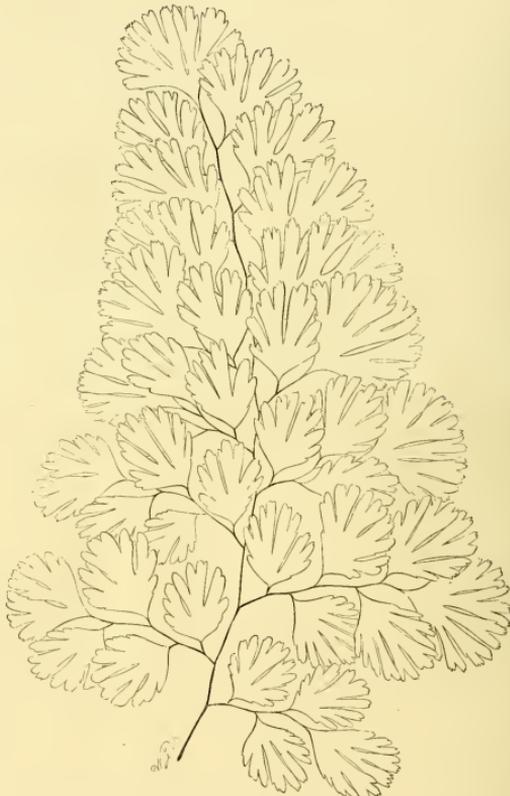


FIG. 76.—ADIANTUM CAPILLUS-VENERIS VAR. CORNUBIENSE.

the north of the colony, but, judging from what I have seen of coal indications and of exposed strata, clearly showing forth the fact that the whole formation of Natal seems to have undergone a vast amount of heat and destruction from Plutonic agency; in fact, everything seems to have been thoroughly baked, and yet there are barely any indications of volcanic action.

The agricultural and horticultural departments of the colony are but in their infancy, and at present stopped from developing, by innumerable difficulties—horse sickness, cattle disease, dry summer, want of transport, and the unsettled affairs in the Transvaal. This last difficulty seems to have thrown a gloom over the whole colony, and caused a complete stagnation of trade; the markets are full, and

but from all my observations I believe the danger is imaginary and groundless. They have a perfect right to take up land when, complying with the demands of Government, they cultivate Meales (Indian Corn), breed goats and cattle sufficient for their own consumption, and generally some for the markets; moreover, they are the original occupants of the soil, and no Christian people or Government would ever take measures to prevent them from settling down amongst a white community, whose influence, if for good, would soon tend to elevate the Kaffir to a fit and proper standard of life; but, alas! it is too often the contrary, for the great thirst for wealth and possession prevalent in this colony generally transforms the so-called Christian man into a would-be aggressor, held

in subjection by the philanthropic part of the community.

The principal articles of cultivation amongst the farmers are Meales, forage (Oats), Yams, and Tobacco. For these four products there is always a good demand, and this year (owing to the unusually dry season) especially. Tobacco is about the most paying crop when grown successfully, but it cannot be depended upon, for droughts, heavy storms, and insects have often a pernicious effect upon the plants. The mode in which the farmers, both Dutch and English, prepare the Tobacco for the markets is rather strange, and I believe peculiar to South Africa. The plants on coming to perfection are cut and stripped of their leaves, the leaves are separately strung on twine and suspended in long rows in a dry shed; afterwards they are sweated or fermented in a box, then by a slow process they are twisted, leaf by leaf, into large coils resembling rope, generally three-quarters of an inch in diameter; the rope Tobacco is then measured out and rolled into 3 lb. and 4 lb. twists, which are at once ready for the market.

Botanically speaking, the vegetation of Natal is rich, not that it possesses the teeming beauties of a South American forest, the umbrageous occupants of a Ceylon jungle, or the majestic ornaments of the Australian bush; these, to my mind, would here be out of place, that is, they would not agree with the geological features of the country; nor the stunted jungle coast, the scattered trees often on the interior, with the plateaus and plains covered with all its descriptions, is in perfect accordance with all surrounding things. Acacias, with a few other Leguminosae, are the almost universal occupants of the bush inland, and the farms and settlements have all a surrounding vegetation of *Eucalyptus globulus* and *Melia Azadirachta*, which have been introduced and thrive remarkably well. Down on the coast the low forests possess a much greater variety, and a more floriferous class of plants. *Ficus* are well and abundantly represented, comprising upwards of a hundred species to my knowledge. Amongst the Tree Ferns are *Cyathea Dregelii*, frequently seen between Durban and the Drakensberg; it is of small habit, but rather graceful; *Alsophila capensis*, very plentiful in damp ravines, often with a caudex to feet high, and fronds 7 to 8 feet long by 3 feet broad. It has a very scaly and compact appearance, and having seen it growing at an altitude of 3000 feet, I am certain that it would grow in sheltered positions at home. *Davallia nitida*, *D. thalictifera*, *Asplenium obliquum*, *A. varians*, *Phymatodes elongata*, *Polypodium lanceolatum*, *P. trioides*, *P. Phymatodes*, *Stenochloa tenuifolia*, and a few *Elaphoglossum* are more or less abundant on trees and moist rocks from the coast to the Drakensberg; a few of them are strangely limited to certain altitudes. *Gleichenia polypodifolia*, *G. umbraculifera*, *Hymenophyllum tubridigense*, *Trichomanes pusillum*, *T. psylliferum*, *Cyrtopteris fragilis*, confined to the Drakensberg; *Adiantum Capillare*; *Veneris* in abundance. *A. zebicoides* we saw in splendid condition at Karkloof, a good collecting place about 30 miles from Maritzburg; *Hypolepis Bergiana*, *Cheltonia capensis*, *C. hirta*, *Pteris geraniifolia*, *Platyloma hastata*, *P. Calomalensis*, *Pteris cretica*, *P. flabellata*, *P. aquilina*, *Lomaria discolor*, *L. attenuata*, *L. prostrata*, *Blechnum australe*, *Asplenium Kraussii*, *A. monanthemum*, *A. eburneum*, *A. humulatum*, *A. ceratophyllum*, *A. hecidioides*, *A. Adiantum-nigrum*, *A. cucullatum*, *A. fucoides*, *A. foveolatum*, *A. Filix-femina*, *A. aspidifolium*, *Didymochloa lunulata*, *Aspidium aculeatum*, *A. purgens*, *A. capense*, *A. falcatum*, *Nephrodium Bergianum*, *N. Thelypteris*, *N. athamanticum*, *N. inaequale*, *N. unitum*, *N. molle*, *Oleandra articulata*, *Polypodium vulgare*, *P. incanum*, *Nothochloa Eckloniana*, *Gymnogramma totta*, *G. argentea*, *G. aurea*, *G. lanceolata*, *Acrostichum conforme*, *A. spatulatum*, *Osmunda regalis*, and *Todea africana*. These are but a few of the common species met with in a run through the colony; several others I have not as yet been able to identify.

Flowering shrubs and trees are very scarce and possess very little beauty, except the *Erythrina*s, of which I have met with at least ten different species, some of exquisite beauty and well worth cultivation at home; in fact, the finest sight of bloom ever witnessed by myself and party was a plant of *Erythrina*, growing at the foot of the Umgeni Falls. The herbaceous plants are numerous, and in their representations embrace a good many of the natural

orders, the chief of which are *Asclepiadaceae*, *Leguminosae*, *Scrophulariaceae*, *Compositae*, and *Malvaceae*. There are *Lobelia*s in all varieties of colour, and magnificent climbers in abundance, generally *Cucurbitaceae*. The most pleasing and striking part of the Natal flora is the vast amount of bulbs, &c., distributed all over the grass lands of the interior. Being rather a bad time of the year for bulb flowering, I was more or less disappointed in this respect. *Homalium pubescens* was growing luxuriantly on the Moor River, and three other species had past recognition; *Crimum aquaticum* was in abundance; two *Strumaris*, *Nerines*, and some magnificent *Amaryllis* adorned the plain and hill-sides, with their massive umbels of brilliant-coloured flowers; also what I took to be two *Pancretium*s, *Agapanthus umbellatus* and *A. precox*; a small *Aloe* with a deep salmon-coloured flowers, elegant; a deep scarlet and double-flowered *Triton*, also a *Medea*, *Saxifraga paniculata*, *Ecomis pinctata*, *E. striata*, and one with very broad racemes of purple-tinted flowers; *Ornithogalum* and *Masonias*, *Asparagus ethiopicus* and *A. flexuosus*; *Gladioli*, embracing at least twelve distinct species, not considering the numerous variations of colour to be seen on all sides; some of the *Gladioli* are extremely rich in colour, and found at a considerable altitude. *Tritonias* are abundant, one especially fine in its bloom, producing large panicles of bright scarlet flowers, and forming a wondrous contrast with the old wood of the mountains, and numerous *Convolvulus* occur in all directions. *Calla ethiopicus* grows everywhere, and one species with variegated leaves has a cream-coloured spathe with a deep purple centre. The epiphyllous *Orchids* are scarce, but the terrestrial ones plentiful. *Phajus*, *Disa*, *Lissochilus*, and *Satyrium* are well represented families. *Christypher Muddi*.

Reports of Societies.

Amsterdam International Horticultural Exhibition.—Unless we gave a catalogue and a list of what we saw of our own country, it is impossible for us to do more than to say that we do not know that we can add much of interest to the hurried report which we gave of the Amsterdam Exhibition in our last issue. Of course, order was excited of course at last, but up to Saturday, the time of writing this, no list of prizes had been issued. The scattered manner in which the exhibits were disposed, some in sheds, some in stoves, and relatively few in the Palace, where sassage-machines, garden tools, and steam engines were exhibited, prevented anything like a fine pictorial effect, such as was given in 1865. In fact, without unduly depreciating the Exhibition as a whole, and without overlooking the merits of sundry exhibits, it may be said that it has been, as an exhibition, the least successful of any of the International series, and gives rise to the doubt whether exhibitors are not getting tired of them, making them mere bazaars rather than exhibitions of superior cultivation, or of new, rare, or interesting plants.

Mr. Williams' success, telegraphed to you, was fairly earned. The extraordinary prize, granted to M. Linden for his miscellaneous exhibition, shown not for competition, was also richly deserved. An extra gold medal was given by the City of Hamme to Messrs. Broet and Van der Vliet, of Haarlem, for the best collection of Dutch plants. This firm also took the lion's share of the first prizes in the classes open for competition; Messrs. E. H. Krelage, J. van Waveren, Co., B. van Waveren, & Co., Mr. A. F. Byvoet, and others also taking prizes. Later on we shall doubtless be in a position to speak more at length as to the awards, as the Palms of M. Lemonnier, of Brussels, the *Cacti* of Von der Heiden, various collections of hardy Conifers, besides those who have already mentioned, must certainly not have been overlooked by the jury, whose principle of action seems to have been to give a prize of some sort to every exhibit no matter how small.

Four large span-roof sheds were erected for the exhibitions of *Hyacinths*, *Tulips*, &c., but were not half filled; much better displays of bulbs have been frequently made by London nurserymen at various horticultural exhibitions in London.

We noted the following as among the best of the *Hyacinths* :—Dark purple to black: *General Have-lock*, very fine; *Uncle Tom*, *La Negresse*, *Rake*, *Ferack Khan*. Dark blue and purple: *Hadyn*, *King of the Blues*, *St. Henry Have-lock*, *Sarkit*, *Black and Blue*, *Black and Blue*. Crisp Petals: very fine: *Lord Palmerston*, light eye; *Prince Talleyrand*, *Lord Derby*, *Blondie*, very fine; *Voltaire*, light eye. Dark red: *Vuurbaak*, *Incomparable*, *Linnaeus*, *Pellissier*. *Chabry*, *Chabry*, *Chabry*, *Chabry*, *Chabry*, *Chabry*, *Schiller*, *Mazouly*, *Josephine*. *Royal red* or pink:

Garibaldi, *Cavagnac*, *Cosmos*, *Lina*, *Koh-in-noor*. *Blush*: *Wellington*, *Anna Paulowna*, *Princesse Amelie*. *White*: *La Grandesse*, *fine*; *La Belle Blanchisseuse*, *Anna*. *Yellow*: *Ida*, very fine; *Chelidonium*, *Chelidonium*, *Chelidonium*. *Falcons* and *Hyacinths* was not equal to what we expected. The show was held in the immediate vicinity of the *Hyacinth* country, and it was natural to suppose that all the principal growers would be represented. We saw many fine flowers, but it seems that many of the principal growers are satisfied with growing, and even a national movement of this kind was not sufficiently enticing to induce them to depart from their recognised line of business. There were some fine flowers in the sheds, but they certainly were not equal to what we are accustomed to see at the flower shows in England, and not superior, if equal, to what we saw by hundreds and thousands in the grounds at Haarlem and Overveen.

A series of sheds open in front were arranged on the outside of the Exhibition grounds. These were filled with miscellaneous collections of plants of very little merit, the following being the only exceptions. The *Acacia* was the best of the evergreen trees exhibited. In collection No. 133 were splendidly grown plants of *A. verticillata*; *A. ulcifolia*, a grand specimen, with fine robust habit and splendidly bloomed; *A. pendula*, with its graceful form of golden-yellow flowers; *A. saligna*, forming a fine mass; *A. farnesiana*, and the plant a perfect specimen; *A. spiralis*, shown in excellent condition; *A. pentadenia*, *A. ovata*, *A. Drummondii* and *A. armata*. If specimens like the above were to be seen at our own exhibitions, they would be so much neglected by English gardeners as they are. There were also some pretty good pyramidal *Camelias* and some medium collections of *Azaleas* from several exhibitors, but nothing extra. The fine collections we have seen exhibited in Belgium and elsewhere.

Several groups of standard Tea and Hybrid Perpetual Roses were very creditably shown, but fearfully handled by the people who were arranging them. The roses were very fine, and many of them, and some of our other Rose growers, watching their plants being handled so roughly: probably the Dutch artists would have speedily come to grief; we never saw Roses so handled before. The most interesting being kept before the opening day, as well as many other things. The Dutch have much to learn yet before they can compete with Belgian and English horticulturalists with any hope of success.

Orange trees, curiously trained as fans, *Yuccas*, *Aloes*, and other additional plants, *Ficus*, *Follage plants*, *Rhododendrons*, &c., were displayed among the plants mentioned above, but were not of sufficient merit to be described individually.

The Congress meetings were very numerously attended by botanists and horticulturists of all nations, our own being relatively very meagrely represented. The arrangements were such that a great deal of valuable time was lost, and a great deal of unprofitable talk made use of. The Congress itself was opened by Prince Alexander of the Netherlands, who throughout the whole exhibition has shown himself most sympathetic, and anxious to make the stay of the visitors agreeable. The Baronister, the Minister of Finance, and other officials followed, and then Professor Rauwenhoff of Utrecht read a paper on the subject of the exhibition, and abstract of which we may give at another time. Vice-Presidents from various nations were chosen, and the Congress subsequently divided into three sections for botany, horticulture, and economic products respectively.

At the first meeting of the botanical section M. de Dary was elected chairman, with Professor Deketoff, M. Morren, and M. Masters as Vice-Presidents. Various papers were read, amongst others by Mr. Weddell, who showed a new species of *Populus*, *Populus caudata*, from which the cell tissue had rotted away, and which assumed the form above mentioned. Dr. Ascherion showed the rachis of a palm (*Phoenix dactylifera*) from which a bluish colour, from the oasis of Jupiter Ammon. Dr. Engler read a communication on the *Araceae*, Dr. Radlkofler on the *Sapindaceae*. In the horticultural section M. Delevalerich showed specimens of the *Hama* cotton seedling mentioned in our last issue, and which it is asserted is the result of a cross between *Gossypium vitifolium* and *Albimoschus esculentus*. There is nothing impossible about it, but the evidence, as far as we could make out, was not very conclusive; at any rate it is not a very important matter, and of doubtful commercial value. But the question of most interest, and for which a conjoint meeting of both sections, under the presidency of Professor Rauwenhoff, was held on Saturday evening, was that relating to all those countries, and especially *Kaimosi* of cultivated plants. The subject was started last year at Brussels, under the auspices of the *Fédération Belge*, and it was hoped that in the interval something practical would have been arrived at; but this seemed far from having been accomplished,

and after some discussion a resolution was passed, that Mr. Moren be requested to prepare a model sheet to be exhibited and discussed at the next Congress.

If we have felt it obligatory to comment on the needless loss of time and imperfect arrangements for the Exhibition and Congress—for which none are in a position to be more than thankful to ourselves, and which will be readily accorded by those who know the amount of forethought and vexation and labour required to bring these matters to a successful issue, it is more compulsory on us to acknowledge in the warmest terms the cordial hospitality of the Dutch. Our Dutch friends in this particular do not make much ado about nothing. They are a quiet and unostentatious folk, but there is in their hospitality a sense of good will and truly heartfelt welcome more satisfactory than any professionaliveness characteristic of some other nations. The Burgomaster's reception, the banquet presided over by Prince Henry, were good illustrations of this. But, as we have occasion to speak of some indifferent arrangements, it behoves us to speak of one entertainment provided by the municipality and bulb growers of Haarlem, which was a perfect model of orderly methodical arrangement, well planned, well carried out, affording the greatest amount of pleasure and interest, with the least amount of confusion and fatigue. This comprised within a space of four or five hours a visit to the museums of the town, an inspection of one or two bulb grounds, an organ concert, in which the quality of the musical organ was particularly marked, a rich treat to the hearer, then a light luncheon and a speech of welcome from the Burgomaster, and then a drive through the woods and bulb fields and back to the *table d'hôte* train to Amsterdam. The whole was done without tedium or confusion. The kind of excursions to be taken are those to the palace and gardens of Prince Henry at Soestdijk (where is a fine collection of Agaves and other plants), and to the new North Sea Canal, which by its length and its importance to the shipping of Amsterdam, is as noteworthy as the Suez Canal.

Royal Horticultural: April 18.—H. Webb, Esq., in the chair.—The only business transacted at the general meeting at 3 P.M. was the election of nineteen Fellows, and fifty gynaecum members.

SCIENTIFIC COMMITTEE.—Dr. J. D. Hooker, C.B., Pres. R.S., in the chair.

Dammara robusta.—The Chairman exhibited some branches of this Conifer, illustrating their deciduous nature. A large specimen of this species, which under the most favourable conditions in one of the large public buildings in London first shed its leaves, and afterwards branches, from 2 to 3 feet in length, fell off, much as *Taxodium distichum* and some other deciduous Conifers throw off their ultimate branches in autumn. As in the petioles of some large pinnate leaves, there is an immense mass of cellular tissue surrounding the vascular portion at the articulation with the main stem.

Injured *Rhododendron Leaves*.—On behalf of Lieutenant-Colonel C. L. Cooke, Tiverton, Devon, Dr. Hooker showed injured foliage of various Himalayan *Rhododendrons*. A letter was read explaining that the injury could not be due to cold, any particular soil, or any cultural conditions. The leaves eventually fall away, the shoots perish, and the plant dies. It was the opinion of some members of the committee that the injury was caused by the action of the sun on hot floors. The leaves were infested with a fungus, but which, according to Dr. Cooke, is never destructive.

Fritillaria and other Bulbous Plants in Flower.—Both Mr. Elwes and Mr. Harpur-Cree exhibited some interesting and rare species of *Fritillaria*, *Muscari*, *Tulipa*, &c. The most gentlemanly and the most beautiful many-flowered *Fritillaria* from California, which in its dull green and purple-tinged flowers resembled a *Helicopsis*; it was probably a luxuriant state of *F. incandens*, *Hort.* *Bot. Am.* t. 193. Mr. Elwes had also a fine *Muscari* from Sicily, possibly *M. maximum*. Mr. Harpur-Cree exhibited *Tulipa pulchella*, perhaps a variety of *T. sibirica*, a very elegant anemone species; and a *Muscari*, supposed to be a new species, with dark purple, highly pinnate segments. Also *Fritillaria latifolia*, *Tulipa græca*, & a species collected by Mr. Elwes in Asia Minor, *Muscari Strangwayi commutatum*, &c.

Diseased Vine Leaves.—Mr. Henley, on behalf of Mr. Moren, read the original report, which was committed to the cause of the spotting and gradual decay of Vine leaves taken from a Vine under gentle forcing. No traces of insect or fungus agency could be seen, and it was suggested that it might be owing to defective nutrition or defective energy.

Rhododendron.—The Hon. and Rev. J. T. Boswell exhibited a splendid truss of flowers of a Himalayan *Rhododendron*, which Dr. Hooker thought was a cross between *R. argenteum* and *R. græcum*. The flowers were of a most beautiful red bell-shaped. It was cut from a fine tree growing at

Tregothan, Lord Falmouth's Cornish residence. Mr. Boswell also showed a seedling variety, named Mrs. Townsend Boswell, the flowers of which are bluish white with pink buds.

Life-size Portrait of the Rev. M. J. Berkeley.—Mr. Worthington G. Smith sent a sketch of the head and part of the bust of the Rev. M. J. Berkeley, which was intended to be an excellent likeness, and several members expressed the wish that the original or a copy should some day be found in the Library.

FLORAL COMMITTEE.—W. B. Kellogg, Esq., in the chair. First-class Certificates were awarded on this occasion to H. J. Elwes, Esq., Preston, Cirencester, for the beautiful *Tulipa Griegii*—a fine bold flower of a rich scarlet colour; to Mr. R. Dean, Reading, for three new and distinct varieties of *Primula cortusoides*, distinguished respectively under the names of *corœula* alba, purpurea, and maxima—the first named being a very fine white, purpurea rich purple-lilac, and maxima a beautiful flower, rose, lilac, underneath and white in front; to Mr. G. Smith, Hedge Lane, Edmonton, for a fine gold-laced dark maroon *Polyanthus* named Duke of Wellington—a novelty at these meetings, such an award has never before been conferred; to Mr. R. Dean, Reading, and to Messrs. G. Beckwith & Son, for fancy *Pergaronium* Duchess of Bedford, as a decorative plant. It is a free grower, and remarkably floriferous, the trusses being of good size, and the flowers white, with a yellow eye and purple spots. It must prove a grand market and decorative plant. Silver medals were awarded to Messrs. Wm. Kollinson & Sons, Tooting, for a group of standard *Azaleas*, numbering some two dozen, all of which carried fine heads of bloom, and were of rich colour; to Mr. R. Dean, Reading, Berkhamestead, for a large group of admirably flowered *Rhododendrons*, and small collections of *Azaleas* and *Roses* in pots; to Mr. B. S. Williams, and Mr. John Wills, South Kensington, for admirable groups of *Rhododendrons* and fine flowering house plants; and to Messrs. Osborn & Sons, Fulham, for an attractive collection of fine-foliage subjects. Bronze medals were voted to Mr. R. Dean, Ealing, for a choice assortment of hardy spring-flowering plants; to Mr. Turner, Slough, for a good display of show and alpine *Auriculas*; and to Messrs. Croucher & Bolter, Kewal New Town, for a small collection of miniature succulents. Several new plants were exhibited by Mr. R. S. Williams, and Messrs. Brook & Co., and a choice sample of a fine new hybrid *Mignonette*, a vigorous but somewhat coarse variety. A group of decorative plants shown by Mr. Aldous, Gloucester Road, South Kensington, was accorded a vote of thanks.

FRUIT COMMITTEE.—H. Webb, Esq., in the chair. A Cultural Commendation was awarded by this body for a good brace of *Telegraph Cucumbers* by Mr. R. Cooper, gr. to R. S. Taylor, Clapham Common; and a vote of thanks was passed to Mr. Tillery, gr. to the Duke of Portland, for examples of late kept Grapes, which included Lady Downe's, Royal Vineyard, and a black seedling variety of Lady Downe and W. S. P. The latter. A remarkable instance of fasciation in the stem of a Cucumber was shown by Mr. Bennett, of Rabley; and samples of a small seedling Apple, named Baron Liebig, came from Mr. James Pink, gr. to Lord Sondes, Lees Court, Faversham.

THE EXHIBITION OF COVENT GARDEN PRODUCE was held in the arcades on either side of the Royal Exchange, and a most beautiful display of flowers it proved to be, notwithstanding the shortness of the notice that the growers had. There were not quite so many exhibitors taking part in the show as we expected to have seen, but the arcades would hold no more, and the exhibitors who did come did so very largely, and deserve all praise for their efforts to make the show a success. The Society was very liberal in its acknowledgment of the more meritorious collections, and all seemed well pleased with the results of the judging, but one individual, who, being aggrieved at having a silver medal only awarded to him, rejected the prize, and marked his cards "not for competition." To act in this way is unbecoming a grower of flowers. We shall do him the favour this year of not awarding him a medal, but we shall urge the gentleman to learn to accept defeat more cheerfully before he enters a competition again.

We are glad to say that the attendance of visitors was very good, the conservatory and arcades being well filled to the utmost. It is to be regretted that we have not had the pleasure of recording for some time. In the morning the exhibition was visited by the Duke and Duchess of Bedford, who carefully inspected the various collections, and appeared to be well pleased with the show. The afternoon was spent in the general exhibition, and the exhibitors themselves, desire that a similar exhibition should be made annually, and that a sum of money should be raised for the purchase of cups and other suitable prizes. This was mentioned by the Hon. and Rev. J. T. Boswell, and we are glad. Not the least of the good results likely to accrue from

this exhibition is the promotion of a good understanding between the Duke and his tenants in the market, the better to be met, the more the Duke spoke to all his tenants who were present, and asked for any suggestions that they could make with a view to improving the market, or the convenience of the standstill, and the more the Duke's tenants were reasonable alterations that were required should be attended to. Shortly before 2 o'clock the Duke of Teck arrived in company with Her Royal Highness the Princess Mary, Duchess of Teck, and two of the children, and the most distinguished visitors were attended in their tour round the show by the President, Lord Aberdeen, and other members of the Council. In the conservatory the Duchess of Teck accepted from a young lady—Miss March—a handsome bouquet prepared by the exhibitors.

Turning now to the exhibition proper, we commence our notes with Class 1, which was for "A collection of plants," and in which gold medals were awarded to Messrs. G. Beckwith & Son, Tottenham; Mr. John Reeves, Acton; Mr. Herbert, Kew Nursery; Richmond; Messrs. J. & J. Hayes, Lower Edmonton; Messrs. Hawkins & Bennett, Lily Garden, Twickenham; and Messrs. H. R. & G. Wright, Turner Road, Lee. Messrs. G. Beckwith & Son made the most splendid display of show and fancy *Pergaronium*, the space occupied by their plants being 10 feet in length and 10 feet in width. The whole of the plants were in the regulation market pots, of fine proportions and development, with an abundance of flowers of various colours, and a good variety of colours. The same firm also showed a very valuable new *Heliotropium*, raised from the variety known under the name of *Florence Nightingale*. Plants of the new sort, which is a good one at all points, have been sold in the market for some time, but it was not named until today when it was introduced from Scotland. Mr. John Reeves also put up a grand group of plants, which included very showy masses of *Hydrangeas*, such *Pergaronium*, *Mignonette*, the Lily of the Valley, *Richardias*, and double white *Primulas*, effectively mixed with Maidenhair Ferns, *Helicopsis*, *Gardenias*, *Fuchsias*, *Roses*, *Spiræas*, and *Crotons*, *Dracænas*, *Coleus*, and small *Falms*, &c. Mr. Herbert's large, richly furnished, and most tastefully arranged group of plants consisted of *Palmæ*, small *Yuccas*, and *Spiræas*, grand masses of Lily of the Valley, the culture of which Mr. Herbert is a master; *Azalea rosea punctata*, an old and wonderfully free flowering plant of pleasing colour; *Primula cortusoides* anemosa, small *Telegraph Cucumbers*, and a fine group from Bourton, in the way of a *Telegraph Cucumber*. Messrs. J. & J. Hayes, of Lower Edmonton, contributed very largely, filling a stage about 80 feet long and 6 feet wide, the whole forming a dense mass of flowers. The subjects exhibited were *Telegraph Spiræas*, Show, Zonal, and Tricolor *Pergaronium*, *Cinerarias*, *Fuchsias*, *Fairy Roses*, *Cytisus*, *Azaleas*, *Ericas* and *Verbenas*, all being well grown and thoroughly well bloomed. Messrs. Hawkins & Bennett, Lily Garden, Twickenham, had a fine group of *Pergaronium*, arranged in pink, white, and scarlet, and in colour, all in small pots, and well grown and flowered. The same firm also showed large bunches of cut flowers of *Pergaronium* and Maidenhair Ferns, and Messrs. H. R. & G. Wright, Turner Road, Lee, staged a fine and effective group of *Palmæ* mixed with *Ferns*, *Anthuriums*, *Dracænas*, and a few *Orchids*, consisting principally of *Dendrobium nobile*. Silver medals were awarded to Messrs. W. & A. Brown, of Covent Garden, for a choice group of *Palmæ*, Zonal and *Pergaronium*, *Fairy Roses*, and *Fuchsias*, together with numerous examples of a compact and very free-flowering variety of *Silene* and of *Myosotis disciflora*. The *Silene* is evidently a new plant, and we are glad to see it in the hands of many a gardener. To Mr. James Puttick, Park Road, Acton, for a beautiful display of Show and Zonal *Pergaronium*, neatly grown and admirably flowered, and *Helicopsis* magenta and purple Stock, &c. To Mr. G. Poulton, Fountain Nursery, Ainger Road, Edmonton, for a group of *Spiræa japonica*, consisting of over 130 plants in 48-pots, splendidly grown and flowered. To Mr. H. B. Smith, Ealing Green, for a fine group of *Telegraph Cucumbers*, and other fine-foliage plants, *Ferns*, *Scalaginellas*, &c. To Messrs. Hooper & Co., Covent Garden, for an effective group of *Palmæ* and *Ferns*, *Caladiums*, *Polka Coleus*, and other fine-foliage subjects. To Mr. Thomas Paget, Clapham, S.W., for a large group of plants, mostly *Cytisus racemosa*, mixed with *Spiræa japonica*, *Palmæ* and *Dracænas*, *Ferns*, &c., and to Messrs. Barr & Sugden, King Street, Covent Garden, for a large group of cut blooms of *Narcissus* in a dozen varieties. In this last group of plants in display of these showy hardy flowers which has ever been seen, and was especially rich in variety.

Cut flowers of choice quality being still scarce and valuable, was perhaps the reason why bouquets, and to some extent sprays of flowers, were rather poorly represented. But certainly the present tasteful fashion

of using enormous masses of costly flowers gave the makers no inducement to exercise their ingenuity, as the sacrifice would have been too great." The great inducement to this vulgar profession is that both the exhibitors and purchasers suffer, and the result of a bridal or ball-room bouquet of the present form is inconveniences, as many flowers being laid up together in one bouquet as would make at least two far prettier than we do now, and the bride or the bridegroom, who profit little by this extravagance. It is the old story of a display of wealth. In spite of this difficulty one or two of the exhibitors were very successful; but we were gratified to see that the same inducement the acquisition of butterfly and humming birds on bouquets. For a bridal bouquet Messrs. Walter Wood, Parnley & Co., Knightsbridge, were awarded a silver medal. It was the least objectionable as regards size, but it was almost overdone with Fern, and the wiring of orange blossom on small-leaved Myrtle rather spoiled the otherwise natural effect. A bouquet of the same class exhibited by Mr. James Brownich, Buckingham Palace Road, was highly Commended. As a tasteful arrangement of flowers it did not suffer by comparison; but *Hoteia japonica* is now a common plant, and flowers of this were largely used. The same florist, deservedly as the fagon goes, gained a silver medal for his ball-room bouquet. A bronze medal was also given to Mr. Dickson, of Covent Garden, for a group of three bouquets, and Mr. J. Aldous received a similar reward.

Messrs. Wood & Parnley exhibited the only set of table decorations, for which they obtained a bronze medal. Though rather heavy, and the central flower being the objectionable addition of the evergreen humming birds, they had the merit of not being overdone with flowers. *Rhodante Mangliesi* and *Jonquils* were the most conspicuous flowers, interspersed with Ferns and variegated foliage.

Dried and dyed flowers should not be altogether desired, especially in a city where fresh flowers are so plentiful. Indeed, if they were not dyed unnatural colours there would be nothing to say against them, for are they not next to fresh ones? Messrs. Hooper & Co., of Covent Garden, had a great display of such things, and were rewarded with a bronze medal.

Fern cases (filled) were exhibited by Messrs. Barr & Sugen, Bromwich, and Dick Radclyffe, taking prizes in the order named. The great blemish in the two latter exhibits was the great display of ferns, which contrasted very unfavourably with the graceful, elegant, and sober-coloured foliage of the Ferns and other plants contained in the cases. The plain bronzed cases of Messrs. Barr & Sugen showed nothing disagreeable, and the ferns were of the best plants. Window cases and boxes filled with plants were exhibited by Messrs. Barr & Sugen only, and very pretty they were, but pots of *Rhodante Mangliesi* alternating with *Tulips* in a window-box struck us as a little incongruous.

The only exhibitors of collections of fruit were Messrs. Webber & Co., and Messrs. J. & W. Draper, both of the Central Avenue, and gold medals were awarded to both firms. The collection shown by Messrs. Webber & Co. consisted of fine examples of Smooth Cayenne Pine from the Azores, and also from home growers, the former being more dumpy in shape than the English grown specimens. Large Pear-shaped Shadocks from the West Indies, fresh Broad Turkey Figs from Guernsey, new and old figs, grapes, Large Black Currants, and a collection of English grown Early Beatrice Peaches and Strawberries, Blood Oranges from Valencia, Bananas from Madeira, Cob Nuts from Kent, Easter Beurré Pears from California, English grown Pineapple de Lez ears, a beautiful coloured English Apple of name unknown; and Mandarin Oranges from Sicily, &c. In the Messrs. Draper's collection we noticed Pomeles of fine size from the West Indies; Lemons and Tangier Oranges from Palermo; and Blood Oranges from Valencia; Lady Apples in fine condition, from Montreuil; white Grapes from Fontainebleau, Calville Blanc, Golden Russet, and Dieu D'onne Apples from Montreuil, Easter Beurré Pears from Meaux, and Tomatos from Toulouse, &c.

In a class for Vegetables and salading materials, the Messrs. Draper also took a silver medal with a capital collection, which included numerous examples of Cos and Cabbage Lettuces, fine curled Endive, long white Turnips, short Horn Carrots, Cardoon, green Peas, and Spanish Asparagus grown in the neighbourhood of Paris; Giant Asparagus from Argenteuil, Cauliflowers from Angers, Globe Artichokes from Avignon, and French Beans from Toulouse. A similar award was also made to Mr. Parnley, Covent Garden, for a capital collection of home-grown produce, consisting of Rhubarb, Cabbages, Seakale, Parsley, Beet, Mint, spring Onions, long and round Radishes, Cabbage and Cos Lettuces, &c., all of fine quality, and put up in the best market style. Mr. M. Aldous, of Guernsey, had a bronze medal for a good sample of Myatt's Ashleaf Kidney Potatos; and from Messrs.

Beer & Sons, Cheswood Gardens, Worthing, came seven brace of fine Telegraph Cucumbers.

The exhibitors and their friends, to the number of about 25, dined together in the evening at the "Crown Tavern," under the presidency of the Marquis of Tavistock, who was supported by several members of the Council of the Royal Horticultural Society. The usual royal toasts were proposed by the Chairman, and these were followed by "The Health of the Duke and Duchess of Bedford," proposed by the Vice-Chairman, Mr. John Hayes, and acknowledged by the Chairman, who spoke briefly and to the point, and then stated that it was his desire to assist in every way that he could the progress of the horticulture, and the welfare of the tenants in Covent Garden. Mr. T. Rollison proposed "The Royal Horticultural Society," and Lord Alfred Churchill, responding, said the Council of the Society were grateful for the services that had been rendered by the exhibitors in making such a fine display, and remarked that the Society was becoming more prosperous. Mr. Willis proposed "The Exhibitors," and the toast was acknowledged by Mr. Herbst, Mr. Webber, and Mr. Brownich. "The Market Gardeners" was then given, and responded to by Mr. Ponnart, of Twickenham; and "The Press," acknowledged by Dr. Hogg. The able services rendered by Messrs. Barron, Howard, and Dickson, and the prompt and efficient manner in which the arrangements for the exhibition, were next suitably acknowledged, and the meeting broke up at a late hour.

Royal Botanic, April 18.—The show on this occasion was somewhat limited as to quantity, but the subjects were mostly above the average quality, so that a very good effect was produced. The principal subjects consisted of groups of nine pot Roses, for which Messrs. Barron, of Cheswood, and Mr. Turner, of Slough, showed in competition, the 1st prize going to the former, for dwarf stocky well-bloomed specimens of rather small size, those from the latter exhibitor having apparently during the late fall weather been rather more neglected, and got them into blossom. Indeed, in this respect, neither collection was quite at its best. A bank of about fifty exceedingly well-grown and profusely bloomed fresh-looking plants from the Messrs. Veitch & Sons, of Exeter, with the prettiest and most numerous of new Roses of 1875-1876, consisting mostly of his own seedlings, shown by Mr. Turner, gave quite a character to the show, which may be regarded as mainly a show of spring or early Roses. In this latter collection Messrs. Barron and Turner were very noticeable. In the nurserymen's classes for Azaleas Mr. Turner and Messrs. Ivery & Son, of Dorking, showed good collections of six, Mr. Turner having one two splendid examples of high cultivation, Apollo and Duc de Nassau, being especially good. The amateurs' Azaleas, contributed by Mr. Katty, gr. to R. Thornton, Esq., The Hoe, Sydenham Hill, Mr. James, and Mr. Wheeler, were also creditable examples. Messrs. James and Sons, of Exeter, showed a dwarf well-bloomed plant of variety of his fine strains, which quite eclipsed a competing collection from Mr. Ford, gr. to J. G. Mega, Esq., in which, though the plants were good, the varieties were very inferior in quality. One collection of twelve Auriculars was staged by Mr. Turner. Miscellaneous groups were shown by Mr. B. S. Williams, Messrs. Veitch & Sons, and Mr. Wheeler. Mr. James had a fine bank of Cyclamens, still fresh and in flower, with two groups of plants, well-flowered, of *Clerodendron biflorum*—Mr. Walker, of Thame, had two boxes of cut Roses, one consisting of good blooms of *Maréchal Niel*; and last, but not least, a very effective and creditable group of *Orchids*, by Messrs. Barron, gr. to J. G. Mega, Esq.

A few interesting novelties were shown. Messrs. Veitch & Sons had Botanical Certificates awarded for *Acalypha muscica*—a plant in the way of A. tricolor, with cordate-ovate, serrated leaves of a yellowish green, flecked with dark green, and flushed with a copper red hue; for *Coleus multicolor*, from the South Sea Isles, a distinct-looking plant, with ovate acuminate, incise-serrate leaves, in which maroon and copper bronze replace the ordinary green colour on the leaflets; for *Chrysanthemum*, a very distinct and a bright-looking variety with long drooping leaves, of very variable form, some being linear-oblong nearly normal in outline, and others more or less depressed, and in the upper half, but all marked with a clear bright yellow variegation; and for *Pulsatilla* from Hoflontium (figured at p. 365, vol. vi.), which has large deflexed clear green smooth three-parted leaves on longish erect petioles. They had also *Calceolarias*, by Messrs. Veitch & Sons, with green edge; and *Croton* variegated with longish irregular-shaped leaves variegated with creamy yellow and rose, and coarse-looking. Mr. B. S. Williams, of Holloway, had a Botanical Certificate for *Adiantum neo-guineense*, by Messrs. Barron, gr. to J. G. Mega, Esq., W. Terry, Esq., Peterborough House, Fulham, and another for *Hemanthus Terryi*, a plant with dark

purplish red stem-sheaths, green leaves, later than the flowers, and a globose head of flowers, consisting of narrow pink spreading perianth segments, and erect filaments tipped with yellow anthers—a pretty plant, related to *H. multibras* and *tenudioris*, but apparently distinct. Mr. Williams showed also *Croton* Prince of Wales, with long broadly linear leaves, which are here spiralled twisted, rather irregular at the base, and are marked with a pale yellowish green; it will probably improve in colour as the season advances.

Among florist's flowers the only awards were to Messrs. Fair & Son, for a splendid H.P. Rose Margaret Bessant—a refined, full, smooth-petalled deep crimson shaded with maroon, and to Mr. James for two of his splendid *Cinerarias*, Lord George Hamilton, magenta-rose, very smooth and rich, with grey disk; and Sarah Winter, a large purple-rose, with broad white ring around the dark purple centre. Messrs. Ivery & Son exhibit a rose-coloured Azalea, called Rose Ivery, of which there was too little to judge. Mr. Turner also showed an Azalea called Bon jour de Commerce, a compact free-blooming, semi-double, fiery orange, with rather small flowers, but no doubt good as a market or decorative plant.

The Villa Garden.

OUTSIDE WINDOW BOXES.—During the prevalence of these terrible east winds, tender plants in outside window boxes are having a sad time of it. The east wind is in a terrible rage, and there is no mercy in it; for the last few days it has been blowing with the force of a northern hurricane chilled with frost blasts, and sending messages from the winter that its power was being made manifest by Hyacinths across the way, which receives the full force of the dry, harsh, biting wind, presents a sad appearance, for the flowers are damaged beyond hope of recovery, and the prostrate blossoms are rapidly withering.

Some side protection would have saved the flowers. A kind of wooden shutter the width of the box, 9 inches in height, painted green, and securely fixed, would have effectually screened the flowers on the east side. A handy carpenter could soon contrive to construct and fix such a side-screen, which should be removable at will. Window gardeners seldom think of the necessity for providing against emergencies of weather, notwithstanding they have a great fondness for flowers, and will cheerfully undergo some expense to beautify their boxes. And then comes a time of blustering east winds in April, and lo! a few hours lay low all the floral beauty of an arrangement that, during the prevalence of sunny, genial spring weather, was charming to look upon.

To-day, as we write, while a chilling east wind is thus raging, in some of the most aristocratic parts of London there are many external window-boxes filled with pretty flowers, generally far too fragile to cope with such weather, that are rendered almost worthless in one short day. It is, however, a matter of small concern in many instances, for the boxes are filled by contract, and injuries are remedied as soon as they are received. But there are hundreds of flower-loving spirits who give their boxes a careful and undeviating attention, because they are difficult to obtain, costing money, that cannot always be spared. To such it is of some moment that their plants be preserved to them as long as possible, and various shifts are resorted to to ensure their well-being. They are sometimes devoid of artistic merit, but they serve the end for which they were constructed.

A screen formed of some permanently growing plant is the best that can be extended to them. The best form is that of a stout wire frame fitted to the window, but arching slightly at the top. It should be made of a sufficient width to protrude some 3 inches beyond the width of the box at the bottom on either side, so as to afford a screen from side winds. It matters but little from which quarter the wind blows, there will be certain to be a strong current of air passing up or down the street, sometimes both ways at once, so erratic is the course of the wind on a gusty day. This wirework can be fastened securely to the wall of the box, and also to the brickwork forming the frame of the window, and then it would be secure against the action of east winds. It should be painted of a cheerful hue of green. By planting the Irish or some other suitable Ivy at each end of the box it can be trained up and over the wire framework, and eventually it becomes a green frame to the window. A

piece of wirework might be fitted along the front of the box, and to this the wirework might be fastened; or the front of the box might be reserved for flowering plants to hang over during summer, such as *Trochilium*, *Convolvulus mauritanicus*, Ivy-leaved *Pelargoniums*, &c.

The box should be spacious enough to afford room for the Ivy and also room-space for plants. During the winter it might be filled with *Hippuritan* evergreen or variegated plants, such as *Eucrymus*, *Asclepias*, *Reticospora*, *Thapsi* sempervirens; and with these might be mingled *Laurestinus*, and anything that would flower. Such plants as these bear removal once or twice a year; and the plants could be lifted from the box at the beginning or middle of May, potted, and stood by in the shade till October or November, and then be planted in the boxes, without disturbing the ball of roots in doing so, but pressing some soil firmly about them at the time of planting. During times of severe frost such plants would gain little or no harm if kept dry at the roots. There is no reason why the plants should not be taken out of the box at the beginning or middle of March, and the box again filled with any pretty hardy spring plants, such as *Primroses*, *Daisies*, *Fancies*, *Abutilons*, &c.; or some of the plants at least could remain in the box, and the spaces be filled up with the plants above-named.

If the front of a house were fitted up with window boxes with wire-screens, there is no reason why Ivy alone should be used in all cases. Some delicious creepers might also be employed, such as *Virginia Creeper*, *Clematis*, *Hops*, *Jasmine*, *Lonicera*, &c., to give a different shade of foliage, mingling with which would be pleasant flowers. But the Ivy is certain to suggest itself; for it is so easily managed, can exist in a dry soil for a time without injury, does not readily shed its leaves, always affords green foliage, and defies sun and wind. How appropriate are Mrs. Hemans' chery lines:—

"It changes not as seasons flow
In changeless silent course along:
Spring finds it verdant, leaves it so—
It outlives summer want."

"Autumn wean on rusted stain
Upon its fadeful glory flings;
And winter o'er it sweeps in vain,
With tempest on his wings."

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, APRIL 18, 1877.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.		Hypocenters directions and force.	Wind. Glaisher's Fathoms Edition.	Wind. Direction.	Rainfall.
	Mean Reading at 9 A.M.	State of Sky at 9 A.M.	Range of 24 Hours.	Direction of 24 Hours.				
April 13	30.06	b	51.0	51.0	W	10	N.E.	0.00
14	30.06	b	51.0	51.0	W	10	N.E.	0.00
15	30.05	b	51.0	51.0	W	10	N.E.	0.00
16	30.05	b	51.0	51.0	W	10	N.E.	0.00
17	30.05	b	51.0	51.0	W	10	N.E.	0.00
18	30.05	b	51.0	51.0	W	10	N.E.	0.00
19	30.05	b	51.0	51.0	W	10	N.E.	0.00
20	30.05	b	51.0	51.0	W	10	N.E.	0.00
21	30.05	b	51.0	51.0	W	10	N.E.	0.00
22	30.05	b	51.0	51.0	W	10	N.E.	0.00
23	30.05	b	51.0	51.0	W	10	N.E.	0.00
24	30.05	b	51.0	51.0	W	10	N.E.	0.00
25	30.05	b	51.0	51.0	W	10	N.E.	0.00
26	30.05	b	51.0	51.0	W	10	N.E.	0.00
27	30.05	b	51.0	51.0	W	10	N.E.	0.00
28	30.05	b	51.0	51.0	W	10	N.E.	0.00
29	30.05	b	51.0	51.0	W	10	N.E.	0.00
30	30.05	b	51.0	51.0	W	10	N.E.	0.00
Mean	30.05	b	51.0	51.0	W	10	N.E.	0.00

April 13.—A fine day, partially cloudy. Cool.
14.—A dull cloudy day. Fresh breeze from S.W.
15.—A fine but dull and cloudy day. Rain fell in early morning.
16.—Fine, but generally cloudy and cool.
17.—A fine day, cloudy. Gale. Cloudless at night.
18.—A very cloudy, but clear, day, with frequent showers of hail and rain. Gale of wind.
19.—Overcast, dull, cold, and windy throughout. A little rain fell at 9 P.M.

LONDON: *Barometer*.—During the week ending Saturday, April 14, in the vicinity of London the reading of the barometer at the beginning of the sea increased from 29.66 inches at the beginning of the week to 29.71 inches by the morning of the 8th, decreased to 29.52 inches by the morning of the 10th increased to 30.07 inches by mid-day on the 12th, de-

creased to 29.08 inches by the afternoon of the 13th, and increased to 30.18 inches by the end of the week. The mean reading for the week at sea level was 29.81 inches, being 0.25 inch above that of the preceding week, and 0.12 inch above the average.

Temperature.—The highest temperatures of the air observed by day ranged from 58° on the 10th to 52° on the 12th; the mean value for the week was 55°. The lowest temperatures of the air observed by night varied from 24° on the 12th to 43° on the 10th; the mean for the week was 41°. The mean daily range of temperature in the week was 14°, the greatest range in the day being 18° on the 13th, and the least 11° on the 9th.

The mean temperatures of the air and the departures from their respective averages were as follows:—8th, 48° 3', +2.9; 9th, 48° 9', +3.3; 10th, 50°, +4.3; 11th, 47° 9', +2.1; 12th, 41° 8', -4.1; 13th, 45° 5', -0.6; 14th, 45° 6', -0.7. The mean temperature of the air for the week was 46° 9', being 1° above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb *in vacuo*, placed in sun's rays, were 114° on the 12th, and 103° on the 11th; on the 8th the reading did not rise above 73°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 33° on the 12th, 35° on the 13th, and 36° on the 10th; the mean for the seven low readings was 32° 15'.

Wind.—The direction of the wind was variable, and its strength gentle. The weather during the week was dull and showery, and the sky cloudy. A slight *thunderstorm* occurred during the afternoon of the 11th, and fell on six days during the week; the amount collected was 1.57 inch.

ENGLAND: *Temperature*.—The highest temperatures of the air observed by day were 63° at Truro, and 61° at Bristol; at Sunderland 48° was the highest temperature; the mean value from all stations was 57°. The lowest temperature of the air observed by night was 30° at Eccles; at Portsmouth 40° was the lowest temperature; the general mean from all stations was 36°. The range of temperature in the week was the greatest at Truro, 28°, and the least at Sunderland, 12°; the mean range of temperature from all stations was 27°.

The mean of the seven high day temperatures was the highest at Truro, 58°, and the lowest at Sunderland, 46°; the mean value from all stations was 52°. The mean of the seven low night temperatures was the lowest at Eccles, 37°, and at Portsmouth 40° was the lowest temperature; the general mean from all stations was 41°. The mean daily range of temperature was the greatest at Blackheath, Leicester, and Cambridge, all 14°, and the least at Liverpool and Sunderland, both 7°; the mean daily range of temperature from all stations was 11°.

The mean temperature of the air for the week from all stations was 45½°, being 4° higher than the value for the corresponding week in 1876. The highest occurred at Truro, 63°, and the lowest at Sheffield and Sunderland, both 41°.

Rain fell on five days in the week at most places, at Sunderland 1½ inch was measured, and at Blackheath 1¼ inch, while at Truro and Plymouth a quarter of an inch only was recorded; the average fall over the country was nine-tenths of an inch. The weather during the week was dull and showery, and the sky generally was cloudy. *Thunderstorms* occurred at Leicester during the evening of the 10th, and at Blackheath during the afternoon of the 11th.

SCOTLAND: *Temperature*.—The highest temperatures of the air ranged from 50° at Paisley and Leith, to 40° at Glasgow; the mean value from all stations was 48°. The lowest temperatures of the air varied from 27° at Paisley and Perth to 30° at Greenock; the general mean from all stations was 29°. The mean range of temperature from all stations was 19°. The mean temperature of the air for the week from all stations was 38½, being 1½° lower than the value for the corresponding week in 1876. The highest was at Greenock, 40°, and the lowest at Edinburgh, 35°.

Rain.—The amount of rain measured during the week was 1.10 inch at Edinburgh, 1¼ inch at Aberdeen, to a quarter of an inch at Greenock. The average fall over the country was nine-tenths of an inch.

DUBLIN.—The highest temperature of the air was 61°, the lowest 34°, the range 27°, the mean 47°, and the fall of rain 1.10 inch.

JAMES GLAISHER.

Obituary.

We regret to announce the death, on March 31, of Mr. WILLIAM FOSTER, nurseryman and seedsman, of Strood, Gloucestershire. The deceased gentleman, who was in his 78th year, was placed at the age of 15 years (about the close of the Peninsular War) in Hank's nursery, at Pontefract, at that time perhaps

the most important establishment of its kind in the North of England; and from that time he had depended solely on his own industry for a livelihood, for home he had none to return to. When he had gained some knowledge and experience here, he came to London, and entered the service of Messrs. Gray & Sons, of the Brompton Park Nursery. At the close of the three principal nurseries, namely, those of Lee's, Malcolm's, and Gray's, and the *employés* were known respectively as Lee's gentlemen, Malcolm's lions, and Gray's slaves. Of these nurseries, Lee's is the only one now in existence. With the Messrs. Gray Mr. Foster stayed for some years, the latter part of which he represented them in the country, travelling for nine months every year on horseback. In this way he travelled through most parts of England, and over a great portion of Scotland. He left London about forty-five years ago, and after a short engagement in Cirencester, commenced the business, at Stroud, in the management of which he took an active interest until within a few weeks of his death.

Equities.

He that questeth shall learn much.—BACON.

182. JUSTUS HEURNIS.—Can any of your readers give information concerning the collector, Justus Heurnis, mentioned in the preface to *Thunberg's Flora Capensis*, p. 5, as to the vessel in which he sailed to the Cape, &c.? I shall be greatly obliged for any communication through the medium of this paper. *N. E. Brown, Herbarium, Kew.*

Answers to Correspondents.

ALOCASIA MACROPHLEA VARIEGATA: *A Constant Reader*.—To grow *Alocasia macrorrhiza* variegata successfully it is necessary in the first instance to choose young plants that have a right balance of colour in the leaves.

If when the plants are small they are green, they generally are too delicate to grow freely; if too green they rarely, if ever, afterwards attain sufficient colour, although a plant that is almost wholly green will produce flowers varying from green to a pale yellowish white. Those should be selected that are about half green and half green, taking them off with some roots attached; when they have got three or four leaves each, put singly in small pots and cover with a bell-glass till they have got established; give more room-room as they require it through the summer, and about February they may be moved into 20 or 30 inch pots. The plants like very rich soil, equal parts rotten dung and good loam will answer the best for it; in this it will grow strong and colour beautifully. Confine the roots but rarely any influence in inducing it to colour, in the case of a vigorous subject like this it will prevent its making satisfactory progress.

ARAUCARIA GUNCELSA GLAUDIA: *F. E. N. Aruacaria* excoela glauca is certainly a greenhouse plant, and therefore admissible in a collection of stone and greenhouse fine-foliated plants; but what comparative value a judge would attach to a handsome specimen we cannot tell, but he would probably give precedence to an equally fine specimen of a Croton or Palm.

AZALEAS: *F. Calvert*. There is nothing in the schedule restricting the twelve *Azaleas* to single blooms of each. Such an exhibition would be a very poor one as compared with your exhibit in trusses of three.

BLUE GUM TREE: *A Country Subscriber*. If you should have any more of them the protection of a greenhouse or frame, there should be no difficulty in getting seedlings, but they would, of course, germinate quicker and grow better in a house than in the open sheltered localities, but whether, in your case, it would require protection during winter, we cannot say, as you have given no data to form an opinion on.

CATERPILLAR: *A Country Subscriber*, p. 478. It is difficult to find a remedy for the first stage of attack of the Apple moth when it affects the buds of orchard growth on such a large scale, but something may be done for the prevention of it, and burning all attacked buds that are in reach. For future preservation, as soon as the caterpillars begin to spin their webs, they may be easily destroyed by the hatch shaking the boughs on which they sit quiet during the day, so as to make them fall on a sheet spread beneath, and then to see that they do not escape. Apple moth, *Gardener's Chronicle*, 1849, p. 560. Lime dusting, burning fires of rubbish near, or anything that would make the smell annoying to the work, the grub disposition would be then of service, but probably at present there is nothing to be done but what little can be managed in the way of picking off buds.

GUN LICENCE: *Walsley*. If you use the gun for any other purpose than scaring birds you must take out a licence.

INSECTS: *K. Julius guttatus*. No absolute remedy known. Try traps made of hollow Potatoes, &c., into which the Jull may come. *A. M.—Constant Reader*. Larva of the Daddy Longlegs? Try sprinkling with blue-green.

NAMES OF PLANTS: *W. D. F.* *F. Polystichum angulare proferum*.—*G. O. C.* *F. Polystichum caucasicum lobatum*.—*Walsley*, 1, *Erica carnea*; 2, *Helicoborus scutellariifolius*.

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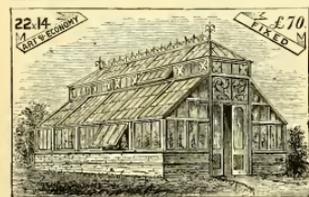
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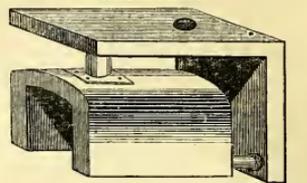
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24 in.	24 in.	30 in.	800	14 0 0
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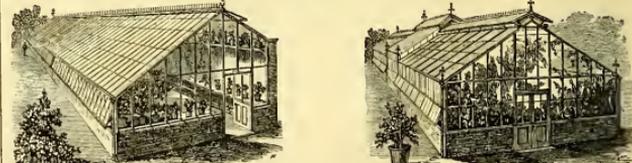
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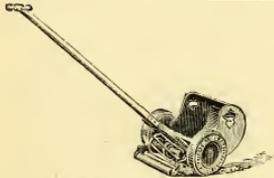
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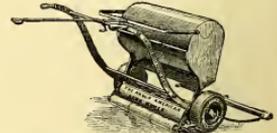
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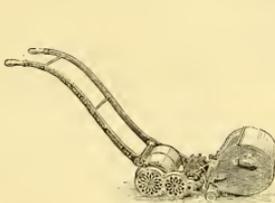
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Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW, & CO., Lombard Street, Precinct of Whittierians, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, April 21, 1877. Agents for Scotland—Messrs. J. MENZIES & CO., Edinburgh and Glasgow.

THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 174.—VOL. VII. { NEW SERIES }

SATURDAY, APRIL 28, 1877.

Registered at the General Post Office as a Newspaper. Price 5d. POST FREE, 5 1/2d.

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THE INTERNATIONAL POTATO EXHIBITION will be held at the Royal Aquarium, Westminster, S.W., on October 3, 4, and 5, when Prizes amounting to awards of ONE HUNDRED AND TWENTY POUNDS will be awarded. SCHEDULES are now ready, and may be had on application.

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HARRISON'S NEW MUSK.—For full description and particulars, see p. 466 of *Gardener's Chronicle*, or apply to

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Centaurea andidissima or ragulina.
PACKAGE FREE.

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WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, Lion's Bond, Charles, London, W.

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WILLIAM CLIBRAN AND SON can now supply plants of this fine double sport of Vesuvius, at 6s. and 9s. per dozen, free for Cash with order.

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Scarlet Runners. English-saved.

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THE GARDENERS' CHRONICLE

VOLUME FOR JULY TO DECEMBER, 1876.

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FIRST GREAT SUMMER SHOW OF ROSES, AZALEA, ORCHIDS, RHODODENDRONS, TABLE PRODUCTIONS, FRUITS, and VEGETABLES, in honor of

HER MAJESTY THE QUEEN'S VISIT.

On WEDNESDAY, May 2. Doors open at 4 o'clock.

Admission, at 6d. or by tickets bought before the day, 2s.

Band of the Royal Horse Guards from 4 o'clock, &c.

* The Competition for Bouquets and Table Decorations is open to all.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—SCIENTIFIC, FRUIT, and FLORAL COMMITTEE'S MEETINGS, on WEDNESDAY NEXT, 11 o'clock, at the GENERAL MEETING and ELECTION of FELLOWS at 4 o'clock.

The Fruit and Floral Committees will meet in the CONSERVATORY, where Exhibits will also be shown.

ROYAL BOTANICAL SOCIETY, Gardens, Regents Park, N.W.

FIRST SUMMER EXHIBITION of PLANTS and FLOWERS, WEDNESDAY, May 2. Tickets to be obtained at the Gardens, only by vouchers from Fellows of the Society.

Price, before May 3, 4s. each; after that date, 5s. each. Schedules of Prices, &c., may be had by post.

CRYSTAL PALACE.—GREAT FLOWER SHOW, May 22. Schedules, now ready, can be had on application to

GENERAL MANAGER.

ROSE FLOWER SHOW will be held by

the Oldens House Club, Twickenham, on FRIDAY and SATURDAY, May 23 and 24. The Show will be under the entire superintendence of Mr. Thomas R. Hollison.

Schedules and full particulars can be had of Mr. WILLIAM ROLLISON and SONS, The Nurseries, Tooting S.W.

Captain H. WOMBWELL, Manager and Secretary.

Office, 14, Waterloo Place, S.W.

TORBAY HORTICULTURAL SOCIETY, Torquay, JUNE 29 to JULY 1.

SUMMER SHOW of PLANTS, FRUIT, VEGETABLES, and ONE HUNDRED POUNDS and a Grand ROSE SHOW, Money Prizes upwards of £1000, and Five Silver Cups. For 74 varieties, one truss each, 1st Prize 5s. value; 2d, 4s.; 3d, 3s.; 4th, 2s. For 225 and Ninette Roses, one truss each (Amateurs), 1st prize, presented by Messrs. Currier, Sandford & Co., Cup, value five guineas. Entries close Thursday, June 28. Schedule, &c. ready.

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FOR 1877.

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BEGS TO ANNOUNCE THAT HE IS NOW SENDING OUT FOR THE FIRST TIME
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ABUTILON, "PRINCE OF ORANGE."

A garden hybrid of free branching habit, and a most profuse bloomer, producing a succession of bloom nearly all the year. The colour is of a pale orange, richly veined with orange-scarlet. This will make a fine plant for conservatory decoration.

Price 10s. 6d. each.

*** ABUTILON ROSEFLORUM.**

A garden hybrid raised in this establishment, the result of a cross between A. Darwiniell and A. Boule de Neige; it has the dwarf free branching habit of the first-named parent, and the fine bold well-shaped flower of the second; the blossoms are produced in great profusion, and are rosy pink, shaded and veined with a richer tint of the same colour.

The *Gardener's Chronicle* says of this plant:—"Year new hybrid Abutilon is a very pretty and distinct variety, with bell-shaped drooping flowers of a pleasing salmon-tinted rose colour veined with rosy crimson. It will no doubt make a very useful decorative plant."

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AGALYPHA MUSAICA.

A very handsome species, imported by us from the South Sea Islands. The leaves are large and deeply serrated, of a bronzy green, richly variegated with various shades of orange, coppery red and crimson. This plant was one of the twelve New Plants which obtained the Gold Medal at Amsterdam, April, 1877.

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*** ADIANTUM PALMATUM (Moore).**

This handsome and distinct species, now offered for the first time, will make an excellent companion to A. farleyense, owing to the large size of its pinnae and the length of its fronds. It was discovered by M. Roel at an altitude varying from 50,000 to 11,000 feet, in Peru—a fact of great importance, as it may be cultivated in a greenhouse at temperature. Mr. Moore says of this beautiful Fern:—"The rhizome is creeping, and the fronds are of an indefinitely elongate form. A very noticeable feature in the plant is the flexuose or zigzag character of the rachides, most marked near the apex of the fronds and the rachides of the primary pinnae. The pinnales are herbaceous in texture, smooth, large, from 1 to 1½ inch in breadth, distant and very distinctly stalked, the stalks varying from ¼ to ½ of an inch; the terminal ones are usually wedge-shaped, while the lateral ones are usually truncate at the base, so as to become semicircular in outline; they are deeply cut down into from three to five large lobes, which are again more or less parted; an oblong sorus terminating each of the divisions in the fertile portions." This has received a First-class Certificate.

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AGERATUM, "LADY JANE."

A very superior distinct and compact form of Ageratum, with dense green foliage and robust constitution, growing from 12 to 14 inches high. The flowers when fully expanded are a bright blue, produced in abundance throughout the season. It is admirably adapted for either beds or lines.

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The Anthuriums comprise a very large family, many of them are unsurpassed for the beauty and usefulness of their flowers, and others for the magnificence of their foliage; but the one now offered combines both these features in well-grown plants. The petioles are about 3 feet long, leaves light green and cordate in shape, from 9 to 12 inches broad, slightly veined with white; the flowers are thrown well above the foliage on stout flower-stalks; the spathe, which is pure white, is from 6 to 8 inches in length, and 2½ in breadth, tapering towards the apex; the spadix, which is about 6 inches in length, stands up very conspicuous, being nearly black, but covered with a violet hue, slightly dotted with white. This most interesting plant should find a place in every collection.

Price 42s. to 63s. each.

ARALIA FILICIFOLIA (Ch. Moore).

This is a very elegant foliage plant, suitable when small for table decoration. The stems are of a deep olive colour, blotched with pale green; the leaves are dark green, glabrous, twice pinnately divided, with a single lobe at the end; the pinnae are about eight in number on each side of the midrib, each one being divided nearly to the base into linear, minutely saw-toothed and spine-pointed segments. The younger leaves are more finely cut than those first formed. It forms a pretty subject for dinner-table decoration an account of its extreme elegance. This plant was introduced by us from the South Sea Islands.

Price 21s. to 42s. each.

ARECA FLAVA.

This elegant and distinct species was raised from the same importation of seed as A. purpurea, but is totally distinct from that plant. The stem and petioles in this species are orange-yellow; leaves pinnate, pale green in colour.

Price 21s. each.

ARECA PURPUREA.

An elegant, neat growing Palm. Leaves pinnate; the stem and petioles are of a bronzy purple colour, which makes a very striking contrast to the pleasing green colour of the leaves. We have only at present seen this Palm in a young state, having raised it from seed received from Madagascar. It is very distinct, at least in the small state, from any Palm in cultivation; and on account of its dwarf and compact habit, and its graceful appearance, will be found to be admirably adapted for dinner-table decoration.

Price 21s. each.

*** CROTON CAMPTOPHYLLUS (Masters).**

A very narrow leaved form. Leafstalk ½ to ¾ inch, green in the centre, paler at both ends. Leaves 6 to 8 inches long by ½ inch wide, in form linear-oblong, dilated at the base, and with a central yellow stripe. The apex of the leaf is obtuse or shortly pointed. The leaves are variously twisted and curved. This species makes a good dinner-table plant. One of our introductions from the South Sea Islands.

Price 21s. each.

CROTON FALCATUS (Masters).

A loose form of habit; leaves 12 to 18 inches by 9 to 3 inches, leafstalk 1 inch long, pink in the centre, paler at each end. The leaves are strap-shaped, dilated and rounded at the base, sword-shaped, or sickle-shaped, with a dark purple midrib and margins, and with irregular blotches of yellow. The under surface is pale purple with green veins. This will make a splendid and distinct exhibition plant. Also one of our introductions from the South Sea Islands.

Price 21s. to 42s. each.

*** CROTON FASCIATUS (Masters).**

A bold, broad-leaved form; leaves 9 to 10 by 4 to 5 inches; leafstalk about 1 inch long brownish in the centre, paler at either end. The blade of the leaf is inversely egg-shaped, tailed rounded at the base, of a lively green colour, traversed by bright yellow veins, and marked with a few irregular spots and blotches. It is a fine variegated kind, of bold habit, and will prove a fine plant for exhibition purposes. One of our introductions from the South Sea Islands.

Price 31s. 6d. each.

CROTON MICROPHYLLUS.

This pretty graceful growing Croton is a garden hybrid raised in this establishment; the leaves are from 9 to 13 inches in length, and ½ an inch in breadth, lanceolate in shape; the stem and petioles are yellow, tinged with crimson; the leaves are sometimes half coloured, whilst in others the costa is marked with crimson, surrounded with a band of rich yellow—the margin pale green, splashed and speckled with the same colour. Will make a pretty table plant.

Price 21s. each.

CROTON NOBILIS.

This is a very elegant and distinct species, of free branching habit, with drooping leaves 18 to 24 inches in length, and about ½ an inch to 1 inch wide; ground colour dark green, the midrib being in the young state orange-yellow, changing with age to bright crimson; the remainder of the leaf is beautifully blotched and marbled with orange-yellow and crimson. This plant will be found invaluable as a decorative plant on account of its rich markings, and the graceful habit of growth. This was discovered by our collector, Mr. Goldie, in New Guinea, who says it is one of the most beautiful species he has seen.

Price 21s. each.

*** CROTON PARADOXUS (Masters).**

A narrow-leaved form, with short foot-stalks, purplish in the middle, paler at either end. The blade of the leaves measures 10 to 12 inches in length by ½ inch in width, the leaves are in form linear-oblong, with a spiny point. They are at first green, but subsequently become variegated with yellow or cream-coloured stripes and spots, especially in the centre, on either side of the pink midrib. The under surface is paler, and the central portion of a pale pinkish tint. Some of the leaves are twisted in the centre, others are "interrupted," the blade not being continuous throughout. This will form a compact plant for table decoration. Introduced from the South Sea Islands.

Price 21s. each.

*** CROTON, "QUEEN VICTORIA."**

We have great pleasure in offering the first hybrid Croton that has been raised in this country. It is the result of a cross between C. Weismanni and C. interruptum. It far exceeds in beauty any of the imported species offered up to the present time. It is of medium growth and free branching habit, a most desirable feature in the formation of good specimens; the leaves when well matured are from 9 to 14 inches long, and about 2 inches broad, oblong-lanceolate the ground colour of the leaf is rich golden yellow, beautifully mottled with green; the midrib and the primary veins are of a rich magenta colour, changing with age to a vivid crimson; the margin of the leaf is unevenly handed with crimson, often extending as far as the midrib; and so harmonising with the rich yellow as to produce a gorgeous effect. It has received a First-class Certificate.

Price 42s. each. Also a few extra-sized plants, prices on application.

B. S. WILLIAMS' NEW PLANTS, 1877—(Continued).

DENNSTÆDIA DAVALLIOIDES YOUNGII (Moore).

The following description of this beautiful plant is taken from the *Gardener's Chronicle* of March 24, 1877:—"This new garden Fern comes to us from Australia. It is no doubt very nearly related to the old *Dicksonia davallioides*, *Adiantum davallioides*, now referred to the genus *Dennstaedtia*, but it is much larger in its growth than we have ever seen that plant, of which for practical purposes it may therefore be regarded as a giant form. In its native state it is said to produce fronds 7½ feet in length, and so seen in this country, under pot culture, it has caudices as thick as one's finger, and fronds of 7 or 8 feet in length. To this stout and vigorous constitution it adds the elegance and gracefulness of minute subdivision, so that its roots, though large, are utterly devoid of coarseness, and it is, in fact, a remarkably ornamental plant, well adapted for occupying any bold and prominent position in a stove rocky, or even as a pot plant in a collection of stove or greenhouse Ferns it will always hold its position. The caudex, as already described, is as stout as one's finger, and of creeping habit, progressing forward somewhat freely, and throwing up its airy spreading fronds at intervals. The stipes is stout, nearly ½ inch in diameter, and of a dark brown colour, green-brown above, and quite smooth. The fronds are nearly ovate in outline, and decoupanate, the pinnae 1½ foot long, the pinnules 2 to 6 inches long, lanceolate-acuminate, and the ultimate pinnules, those of the third order, ½ to ¾ inch long; these ultimate pinnules are obliquely obovate, deeply cut into blunt toothed lobes, of which those at the base of the anterior side are the largest. The sori are small, placed near the base of these ultimate lobes in the sinus of one of the anterior marginal teeth. The fronds are herbaceous in texture. It will thus be seen that this Fern, while growing to a large size, is one of the most finely cut of all the large-growing sora, of herbaceous texture, and when throwing out its boldly arching fronds, from an elevated position on rockwork, or from a large pot set up on a pedestal, it will have a very fine effect. It was unanimously awarded a First-class Certificate by the Floral Committee when exhibited at South Kensington on the 7th inst., and gained a similar award at the spring show of the Royal Botanic Society on Wednesday last."

Price 10s. 6d. to 21s. each.

DIFFENBACHIA MARMORATA.

The leaves of this fine variety are from 2 to 18 inches in length, and about 6 inches broad, ovate in shape; the colour is light green, unevenly splashed and spotted with creamy white, representing a variety of caricatures; the leaves are of a thick leathery texture. It is one of the handsomest and most distinct species we have seen.

Introduced by our collector, M. Paris, from New Grenada. This plant was one of the twelve New Plants which obtained the Gold Medal at Amsterdam, April, 1877.

Price 42s. each.

ERANTHEMUM, "EL DORADO."

This is a very fine species, with ovate leaves, from 4 to 6 inches long, and from 3 to 4 inches broad; the ground colour is a bright golden yellow, slightly smoky and tinted with pale green. This species will make a charming addition to this ornamental group of plants.

One of our introductions from the South Sea Islands. This plant was one of the twelve New Plants which obtained the Gold Medal at Amsterdam, April, 1877.

Price 10s. 6d. each.

NEW FIG, "HARDY PROLIFIC."

The fruit of this hardy Fig is about the medium size, pear-shaped, rather tapering towards the stalk. The flesh is very sweet and luscious. It was introduced from France some few years ago, and has proved itself perfectly reliable. It must become a general favourite, as it is a very abundant bearer either in pots or in a cold house, as well as on an open wall; it is also pens rather than any other variety we know of.

Price 10s. 6d. each. Extra-sized Fruiting Plants, 21s. each.

NEW FUCHSIAS FOR 1877.

FUCHSIA "BEATRICE."—This is a single variety, the tube is rather short and stout, sepals deep crimson; corolla reddish-purple, good-shaped flower. Price 7s. 6d. each.

FUCHSIA "MONSTROSITY."—The tube of this flower is rather short and stout, also the sepals; these are of great thickness, and instead of reflexing in the usual way, peculiarly clasp the corolla, which is purely shaded with violet. This variety is of good habit, and must become a splendid exhibition flower. Price 7s. 6d. each.

FUCHSIA "CLIPPER."—Tube and sepals carmine-scarlet, broad and well reflexed; corolla deep purple shaded with violet. This is a single variety, and will make a good exhibition plant. Price 7s. 6d. each.

FUCHSIA "IMPROVEMENT."—The tube and sepals of this variety are pure white, the latter well reflexed, of good substance, the corolla carmine shading to rose. This is a seedling raised from the old *Duchess of Lancaster*. Price 7s. 6d. each.

FUCHSIA CARMINATA.—Tube and sepals bright carmine, the latter very broad and well reflexed, showing well the corolla, which is a deep violet; the petals are very round and smooth. This will become a favourite for exhibition and general purposes. Price 7s. 6d. each.

FUCHSIA "MRS. BURROUGHS."—The tube of this variety is long and stout, pure white; the sepals are also white, and much reflexed; the corolla, which is barrel-shaped, is a crimson-lake. Price 7s. 6d. each.

* FUCHSIA PENDULÆFLORA.

The character and growth of this hybrid species is quite distinct, and being of rather a robust growth will become valuable for pillars or trelliswork for the conservatory; the leaves are from 2 to 4 inches long, ovate, acuminate, and glabrous, having a violet midrib; the flowers are produced in clusters from the axils of the leaves and the terminal shoots; the tubes are from 3 to 4 inches in length, trumpet shape, rich crimson shaded with maroon.

Price 10s. 6d. each.

* GLADIOLUS PAPILO (Butterfly-flowered Gladiolus).

This beautiful species was introduced from Cape Colony some few years ago in the *Key Gardens*, where it flowered, and was figured; and the following are a few extracts taken from the *Botanical Magazine*:—"The Cape Colony abounds in species of *Gladiolus*, amongst which that now figured appears the most beautiful, though not the most gorgeous, but has hitherto been much known. Nothing can well exceed the delicacy of the pale purple of the upper petals or the vividness of the deep purple and golden yellow markings of the lower ones." We received this from one of our correspondents at the Cape.

Price 10s. 6d. to 21s. each.

NEW LATE KEEPING BLACK GRAPE, "ALNWICK SEEDLING."

This Grape was exhibited before the Fruit Committee, South Kensington, February 6, 1876, under the name of "Clive Hones Seedling," a name the committee have since thought fit to alter. The following is the description given by the Fruit Committee:—"It is a seedling between the Black Morocco and an unnamed variety raised at Worsley. The bunch shown was of fair size and well shoudered, and the berries large, oval in form, and jet-black in colour, with a thick skin; the flavour was decidedly good, partaking of the rich sparkling flavour of the Black Morocco, but much sweeter." It has kept well till February, and will, no doubt, keep longer and prove a better Grape for general cultivation than the "Black Alicante." This has been awarded a First-class Certificate.

B. S. W. has much pleasure in offering this fine Grape, believing it to be a decided acquisition; the stock offered is from the original plant. Early orders are respectfully solicited, as the stock is limited.

To be sent out in October. Price will be duly advertised.

* HIBISCUS DENNISONII.

The habit and character of this *Hibiscus* is quite distinct to any other species; being very dense and compact with thick glossy leathery ovate-shaped leaves; the flowers are large, of a creamy white, and very handsome; admirably adapted for pot culture.

Price 10s. 6d. each.

IRIS ROBINSONIANA.

(The Wedding Flower of Lord Howe's Island.)

A gigantic species, attaining a height of 6 feet or more, with proportionately large sword-shaped leaves, and large pure white flowers marked with golden yellow on the outer petals. The flowers are about 4 inches in diameter, and very evanescent, but as they are numerous and quickly succeed each other, the plant retains its beauty for a long time, and is one of the most beautiful species ever imported. It is a native of Lord Howe's Island.

Price 21s. each.

LOBELIA, "BLUE GEM."

This variety grows about 6 inches high, and is of medium growth, a little more spreading than "Compacta"; it produces an abundance of large coral-blue flowers, with a white eye. This *Lobelia* is a splendid bedder, and cannot fail to become a general favourite for bedding purposes.

Price 5s. each, 42s. per dozen.

NEW PORCING PINK, "DUCHESS" (Clarke).

There are few plants to excel the Pink, especially in the months of March and April; this can only be obtained by having such habit of growth that will withstand a little excitement in the early months; the variety now offered is by the same raiser as "Lord Lyons," "Derby Day," &c. This will be found quite distinct to any previously offered. The colour is of delicate and beautiful tint of lilac-pink, with faint rosy lilac blotches in the centre, the petals large, stout, and finely rounded, with a rich perfume; the flowers are large and solid, without the bursting of the pods which is a defect in most Pinks. The habit is robust and vigorous, and blooms in great profusion. A valuable early forcing variety.

Price 10s. 6d. each.

* PANAX LACINIATUS.

This very elegant plant will be a valuable addition to a class much in request for table decoration; it is of medium growth, and when about 2 or 3 inches in height its elegance can scarcely be surpassed. The stem is smooth and slender, slightly notched with brown, the leaves are alternate, and the leaflets deeply cut or lacinated, of a light or pleasing green colour. Native of the South Sea Islands. Awarded a First-class Certificate.

Price 10s. 6d.; extra sized plants, 21s.

* PÆLAGONIUM, "DR. MASTERS."

A splendid forcing variety, belonging to the group of "Capt. Fisker" and others. It is of dwarf stumpy habit, a most important feature in a Forcing *Pælagonium*; the trusses, which are large, are thrown well above the foliage in great profusion, it is semi-double, the upper petals having large blue blotches in the centre, with a narrow margin of rich crimson, the lower petals having a smaller blotch, with a broader margin of the same colour as the upper; this will prove most invaluable for market purposes and for bouquets.

Price 10s. 6d. each.

PHOTINIA SERRULATA VARIËGATA.

A pretty variegated shrubby growing plant, its habit of growth is more branching than the original type; the leaves are striped and spotted, at first with creamy white, changing when matured to a rich golden yellow, with an uneven margin of the same colour; will do well in cold house or conservatory; we expect it will prove hardy in some parts of England.

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- MIMULUS**, superb strains, same as exhibited every year at the Royal Horticultural Society, 1s. 6d.
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TWO NEW ENGLISH SEEDLING ROSES.

H.P. EMILY LAXTON (Laxton), a large full flower with globular, pointed bud, opening into large globular flower. In the way of Monsieur Noman, but of a rich cherry-rose, deeper and fuller than that kind, and with strong vigorous habit, making a grand pillar Rose.

First-class Certificate at the Leeds and Crystal Palace Rose Shows, and 1st Prize at Exeter for twenty-four of any one kind.

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Plants in pots of the above, 7s. 6d. each, 14s. the two varieties; Blooming Plants, in 24-pots, 10s. 6d. each, 20s. the two varieties.

The two kinds described above have been proved two seasons at Cheshunt, and can be recommended as continuing the race begun by this raiser with H.P. Annie Laxton.

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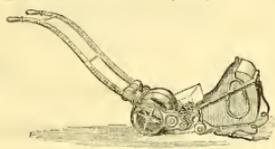
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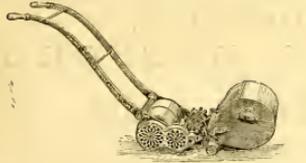
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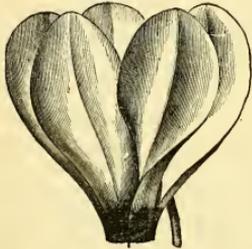
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BALSAM, Williams' Superb Strain	Per packet.—s. d.
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BEGONIA SEDETI SEMI-PLENA 2 6
BEGONIA, Hybrid, finest mixed.. 2 6



CYCLAMEN PERSICUM GIGANTEUM.—This is a great improvement on the old type, the flowers being thrown well above the foliage, each flower measuring from 2 to 2½ inches in length; pure white, with a fine bold violet-purple eye 2 6

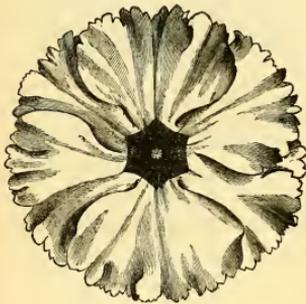
CYCLAMEN PERSICUM, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and 1 6

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GLOXINIA, Finest Drooping Varieties 1 6

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

SOLANUM, Williams' Improved Hybrids 1 6

STOCK, Williams' Improved Giant Scramlet Brompton WALLFLOWER, Harbinger, Autumn and Winter flowering 1 6

Packets of Flower-Seed, excepting heavy kinds, Free by Post.



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Perhaps the Finest Rose for Bedding ever sent out.

COLOUR OF "CHARLES LEFEBVRE."

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that a plant 18 inches high had 84 Buds and expanded Roses upon it on the 6th September, 1876, and flowered continuously from June until November, on the 20th of which month (1876) it was still in bloom.

Good Plants will be sent out, in strict rotation, at 10s. 6d. each, COMMENCING FIRST WEEK IN MAY.

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DR. DENNY'S PELARGONIUMS.

Messrs. JAMES VEITCH & SONS

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IRENE, price 7s. 6d. each.

CLEOPATRA, price 7s. 6d. each.
NYANZA, price 5s. each.
EGERIA, price 5s. each.

GLOBOSA MAJOR, price 5s. each.

Price of the above set of seven, one plant of each, 42s.

DISTINGUÉ, a double bluish white, 7s. 6d. each. | EDELWEISS, double, nearly pure white, 7s. 6d. each.

Full descriptions of the above are given in J. VEITCH & SONS' CATALOGUE OF BEDDING PLANTS, which will be forwarded free on application.

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STRAWBERRY, THE DUKE OF EDINBURGH (MOFFAT).

THE LAWSON SEED AND NURSERY COMPANY (LIMITED), EDINBURGH and LONDON,

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Trade Price on application.

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NEW PELARGONIUM, DUCHESS OF BEDFORD.

MESSRS. BECKWITH & SON, TOTTENHAM, N.,

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It has received a First-class Certificate from the Royal Horticultural Society.

Price for Strong Plants, in 5-inch pots, coming into flower, 7s. 6d. and 10s. 6d. each; a few Large Specimens, in 24-size pots, 2 guineas each.

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At unprecedentedly low prices.

MR. WILLIAM BULL

Is constantly receiving Importations from his Collectors and Correspondents abroad, and offers the following at the low prices annexed:—

ODONTOGLOSSUM CRISPUM (Alexandreus) ..	Lo 15 0
MESOPHINDIUM SANGUINEUM ..	5 0
SCOLLABIUM BLUMI MAJUS ..	7 6
CELOYNE BARBATA ..	10 6
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ODONTOGLOSSUM GRANDE ..	5 0
MACULATA ..	15 0
ONCIDIUM FUSCATUM ..	15 0
DENDROBIUM HASTILARIUM ..	10 6
LILIA PURPURATA ..	15 0
EPHORBIUM MAMMILLIFERUM ..	15 0
CYPRIPEDIUM CAUDATUM ..	10 6
DENDROBIUM PIERARDII ..	10 6
CYPRIPEDIUM VILLOSUM ..	15 0
CELOYNE CRISTATA ..	1 0
CATLEYA MENDELLI ..	1 0
WARNERI ..	1 0
BATEMANNIA COLLEVII ..	10 6
CATLEYA LEOPOLDII ..	15 0
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CATLEYA CITRINA ..	5 0
AFRIDES CRISPUM ..	10 6
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ODONTOGLOSSUM CERVANTESHII DECORUM ..	15 0

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made, at 2, 3, and 4 guineas per dozen.

By sending names of those already possessed, different varieties can be given, and purchasers will have a good selection made for them.

NEW PLANTS for 1877.

Mr. Wm. BULL'S Illustrated CATALOGUE is now in the Press, and will be issued in a few days, and can be had on application, price 1s. It contains Names, Descriptions, and Prices of a quantity of New Plants, now being sent out for the first time.

Establishment for New and Rare Plants,
KING'S ROAD, CHELSEA, LONDON, S.W.

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CHOICE FLOWER SEEDS,
FREE BY POST OR RAIL.



Sutton's Improved Miniature Aster.
A profuse flowering variety, of dwarf compact habit, remaining in bloom for a considerable period, hence it is invaluable for growing in pots for conservatory or drawing-room decoration. We have this season succeeded in saving six distinct colours, which greatly increases the value of this beautiful Aster for bedding purposes.

Price per Packet, mixed, 2s. 6d.
Six varieties, separate, 5s.

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COLLECTIONS of CHOICE FLOWER SEEDS,

To produce a beautiful and continuous display during Summer and Autumn.

Free by Post or Rail. £ s. d.

No. 1. Collection of Flower Seeds ..	2 6
No. 2. Collection Ditto ..	2 0
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Small and useful Collections can also be had, from 2s. 6d. to 7s. 6d., free by post, on application.

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SUTTON'S
LAWN GRASS MIXTURE,

Which forms a close velvety turf in a very short time.

For making New Lawns or Croquet Grounds 3 bushels, or 6 1/2 lbs., is required per acre, or 1 gallon to every six rods (or perches) of ground.

For improving those already in turf, 20 lb. should be sown per acre.

March, April, and May are the best months for sowing.

Prices, 1s. 3d. per lb., 22s. 6d. per bushel, cartage free.

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds
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THE QUEEN'S SEEDSMEN,
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SATURDAY, APRIL 28, 1877.

SOOCIETY OF PAINTERS IN WATER COLOURS.

A FEW hours may be pleasantly and profitably spent in the exhibition-room of this Society at 5, Pall Mall East. The exhibition contains several excellent figure subjects, manylandscapes of uncommon truth and beauty, and a few pictures illustrative of flowers and fruit. To our thinking (especially at the water-colour exhibitions), the landscape painters are always in the ascendant. 15, "The First Snow of Autumn on the Sea Fell Range," H. Moore, is an admirable picture. 17, "Loch Marce—a Lifting of the Mists at Sunset," Alfred W. Hunt, is extremely natural and beautiful: the rising mists and the effects of distance are excellent. 20, "Snowdon" (or as the catalogue gives it, "Snowdon"), Thomas Danby, appears to us to be far too hard and harsh, and to fail in the good qualities of the last; and in those of 47, "The Unveiling of the Mountain," Alfred P. Newton; in this, the effect of mist being blown off a snow-clad mountain is finely rendered. 51, "On the Way to School," R. Thorne Waite, is a beautifully painted group of happy English rustic children going to school; one child carries a few plants of ripe corn; it is harvest time, the golden corn-fields are seen in the distance, and the field-labourers of autumn are busy at work: strange to say, the artist has introduced Irises in full flower by the brook side, forgetting that these plants belong to the spring and summer, and not to the autumn, moreover the plants painted belong to the gorgeous purple Irises of our gardens, which do not grow wild by English brook sides at any season.

64, "A Golden Swarm," E. K. Johnson, is a large and elaborate picture, containing several excellently painted figures grouped in a garden full of flowers of all sorts, as Roses, Poppies, Campanulas, Scabious, Cloves, Nasturtiums, Sweet-Williams, Larkspurs, Violas, &c., all evidently studied from Nature with great care; by an oversight of the artist, most of the Violas are made to face the spectator. 119, "View from the Orme's Head—Sunset," Robert Barnes, is a finely executed and admirable landscape, painted by the famous figure-artist who has so long delighted us with his excellent paintings of children, and his equally excellent drawings on wood of similar subjects for the *British Workman* and *Band of Hope Review*. A man of true genius succeeds in all he undertakes 126, "A Break in the Clouds," Francis Powell, is remarkable as a painstaking study of sea and sky only. 151, "Spring Flowers," Maria Harrison, is a study of Acacias, Camellias, and Anemones, and much better than previous efforts by this artist; the picture is, however, weak and poor both in drawing and colour. 178, "Yellow Water Lilies and Rushes" (i.e., Bulbushes), by the same artist, is better than the last, but lacking the truth and spirit of Nature. 183, "Fruit," by the same artist, is far more ambitious, and in the same degree less successful than the two former; the drawing is poor throughout, especially in the Vine leaves, and no rose-orn could endure to look upon the red Roses on the left of the picture. 182 and 147 are unworthy of a place on the walls; the drawing in both is that of a mere beginner, and

the colour belongs to the Berlin-wool school. 199, "Geraniums and Wallflowers," E. F. Brentnall, is a richly painted picture of these flowers, grouped together with one or two white Anemals in a formal vase; the combination of rich red-brown colour in the Wallflowers and the scarlet of the Geraniums is remarkable, and suggestive for future efforts. The principal flower of the scarlet Geranium is shown with four only instead of five petals, the fifth having fallen on to the table at the base of the vase, where it may be seen. 274, "Peaches," Maria Harrison—the fruits are well painted, but the foliage is bad in drawing and colour; the admirable and ubiquitous moth puts in his usual appearance. 209, "The Rock Rose, &c.—Mountain Flowers," by the same artist, is a group of Helianthemum with a spray of some little wild Geranium, moderately well executed. 218, "An Interesting Scroll," F. Alma Tadema, A.R.A., a small classic picture of a young man seated amongst marble columns, and intently reading a scroll; the drawing, perspective, and colour, are perfect, and every portion of the picture is the result of ripe study and correct knowledge; the classic feeling extends to the ivory-inlaid frame. 277, "Hiding," Robert Barnes, is in its way a gem of drawing and colour. 289, "Blackberries, and the Blossoms," Maria Harrison, has the merits and defects of the other pictures by this artist; the flowers of the Musk Mallow are shown in the background, but no leaves or stems are visible.

There is a complete flood of Venetian subjects in this year's Exhibition. For a time the Grand Canal has been deserted, and the slums have been selected for illustration. Possibly these Venetian holes and corners may have great æsthetic merits, but we have similar side alleys in plenty and equally curious, bordering our English Grand Junction Canal. There are several figure subjects of the first class, especially two by Sir John Gilbert, which have all the solidity of oil, with the brilliant transparency of water. Birket Foster has two conscientiously-painted pictures, less in size than usual (as is now frequent with this artist), being figure subjects set in excellently painted landscape.

As we said before, the transcripts of English landscape bear the palm; the works of this nature are numerous and thoroughly well executed. Whenever we see these mimic running brooks, sunlit meadows and leafy glades, the opening bars of the never-dying "Pastoral Symphony" sound in our ears, and make us long for the unbounded pleasures of a country life.

HAARLEM AND ITS BULB FIELDS.

A VISIT to Haarlem and its bulb fields, together with an inspection of the numerous and spacious warehouses where the bulbs are stored, can alone serve to furnish a reply to the question—Where do all the bulbs come from? Hyacinths and Tulips constitute the chief field crops of the immediate vicinity of Haarlem; Crocuses are grown elsewhere; while Narcissi, Frithyllarias, Spixes japonica, Anemones, and Ranunculi, though grown in considerable, may, large quantities, are still quite subsidiary to Hyacinths and Tulips. At a short distance from the sea, protected from the severer blasts by low dunes or sand-hills, but still wrapped in an atmosphere laden with saline moisture, the Hyacinths and Tulips are grown in oblong rectangular beds, about 4 feet in width, each containing about 500 bulbs more or less. The soil is almost pure sand, with little or no "heart" in it; indeed, it seems only to serve as a means for diffusing coarse manure, which is applied in enormous quantities. In the spring the land is dug, if such a term can be applied to the mere stirring which so light a soil demands; the manure is dug in in profuse abundance, and Potatos are planted. When these are removed in August, the land is deemed fit for the planting of the Hyacinth bulbs. In the German agricultural col-

leges the method of water-culture is largely adopted for experimental purposes. Particular plants are grown in water, to which, according to circumstances, definite quantities of particular salts are added. In this manner, by careful observation and experiment, the exact proportion of any particular ingredient that may be requisite as food is ascertained. Now the bulb culture at Haarlem reminds us every much of the method of water-culture just alluded to. The sand in which the bulbs are grown corresponds to the water, the manure to the particular salt added to the water for feeding purposes. How little cohesiveness there is in the soil is shown by the circumstance that the workmen aforesaid their heavy wooden sabots flat pieces of board wherewith they beat down the loose soil pretty much as the natives of Dungeness on the shores of Romney Marsh employ "backsters" to enable them to walk the more easily on the loose shifting shingle of that locality. Even horses are provided with similar "sand shoes." The flowers are carefully cut ere they wither, in order that the bulbs may not be too much exhausted, and in order to prevent the attacks of mildew, which would endanger the foliage and proper ripening of the bulb. Hence one sees in the canals boatloads of cut Hyacinth spikes, the pathways and roads are strewn with the fragrant blossoms, rubbish heaps are made beautiful to the eye and pleasant to the nose by the mounds of parti-coloured blooms. Children come staggering along bearing huge bunches of the flowers, just as English children do with Cowslips or Primroses, and dainty young ladies trip along with their more select assortment,

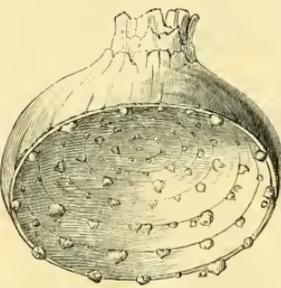


FIG. 77.—HYACINTH PREPARED FOR PROPAGATION.

the final destination of which may be seen as one passes the windows of the residents. But the bulk of the "spoils," if we may so call it, is returned to the land. Fancy manuring with Hyacinth flowers: and yet this is what is done, just as English farmers plough in their green crops or their stubble. No doubt this is a profitable practice, but on the spot the visitor is apt to wonder why the perfume manure does not utilize the flowers for the manufacture of perfume as they do about Nice.

The multiplication of Hyacinths has been described in these columns on frequent occasions, so that it may suffice to say, that it depends on the great tendency that the bulbs and bulb-scales have to throw off adventitious buds or offsets. By slicing the base of the bulb or by scooping out the central portions (see fig. 77) a large crop of small bulbs is formed along the injured edges. Particular varieties differ much in their power of producing these offsets, but it may serve to give some idea of the quantities required, and of the time occupied in getting up a stock, when we say that on the average a period of five years is required to get up a stock of a new variety. As may be imagined the land is extremely valuable, so that not an inch of space is wasted, and only those bulbs which can be grown profitably are cultivated. Crocuses, for instance, do not pay for cultivation on such highly rented land.

The warehouses in which the bulbs are stored after lifting, resemble fruit-rooms on a large scale. They are solid, well-built substantial structures of two or three storeys. Every acre is taken to ensure an equable temperature and freedom from damp. The bulbs are placed on wooden trays, ranged one

above another, and every means taken to secure thorough ventilation. Single varieties, and we think with justice, are the most in demand in England, but the French still prefer the double ones. Among the single white varieties, La Grandesse was this season particularly fine; Snowball is another very fine white, and Belle Blanchissime is another; while among double whites La Tour d'Auvergne may be mentioned. Schiller is a fine pink variety; Noble par Merit is of a similar colour, but double. J. van de Meer is also a good rose-pink colour, of dwarf habit. Tubifera, of similar colour, is remarkable for its large bells; while Romeo is to be admired for its deep rose colour. Macaulay is perhaps the best red. Among blues, King of the Blues deserves special mention, for its colour and nice dwarf habit. Biensenk (P) is a single blue with a noble spike; General Javelock is a dark blue flower of much merit; Sol-faterre, when seen in quantities, is very striking, presenting a mass of pink flowers with yellow tips. Hayden is one of the best lilacs.

Narcissi were a little past their best at the time of our visit, the poeiticus section not being yet in bloom. Among the Polyanthus section, Bazelman major (white) and Newton are among the best, while of the bicolor group the form known as Horsfield is even an improvement upon Empress. The variegated Crown Imperial is not very popular in England, but here, seen in quantities, it is remarkably effective.

One bulb farm is very much like another, though they vary in extent, and notably in clean cultivation and general keeping. Our notes were principally taken in the establishments of Messrs. Bijvoet, Krelage, and Polman Moij, to whose kindness we are indebted for much of the information contained in these cursory notes.

BELSFIELD GARDENS, WINDERMERE.

A DETAILED account is given of this fine place, the seat of H. W. Schneider, Esq., by your able correspondent, Mr. Baines, at p. 743, December 12, 1874, and as I had the pleasure a week or two ago of calling upon Mr. Chaplin, Mr. Schneider's efficient gardener, I have thought that a few notes, respecting the very fine collection of specimen and half-specimen plants at Belsfield, would prove interesting. On entering the kitchen garden, where the principal ranges of glasshouses are erected, and which is situated on a nice slope facing south and south-west, we come to the Azalea-house, where there is a good collection. We next come to the hard-wooded plant-house; the centre stage is occupied with a considerable number of huge specimens and also numbers of half specimens in the best of health. The plant-stove is a commodious structure, where there are many plants of great dimensions, comprising *Medinilla magnifica*, 11 feet high and 9 feet through, with 17 bunches of flowers; *Allamanda Hendersoni*, *Cheloni*, and *nobilis*, 4 feet high and 6 feet through; two nice plants of *Freesia calycina* major, 4 feet high and 4½ feet through; several pairs of *Eucharis amarantha*, 4 feet high and 3½ feet through; *Clorodendron Balfourianum*, 4 feet high and 6 feet through; *Gardenia florida* and *G. radicans*, by the dozen, from 3 to 4 feet high and 3 to 3½ feet through, well set with flower-buds. In the same house there is a nice healthy stock of small plants for decorative purposes.

The Camellia-house is occupied with a good collection of Camellias, which are planted out, and looking remarkably well—hundreds of flowers, and fine leathery foliage. In a small house of Orchids, which are growing vigorously, are several pairs of *Dendrobium nobilis*, 4 feet high and 6 feet through, all of which had flowered well; fine pots of *Calanthe Veitchii* and *C. vestita rubro-oculata*, the bulbs of which were very strong; good examples of *Oncotoglossum*, *Lycastes*, &c.

There is a good propagating house, with a pathway down the centre. On one side is a clean and healthy stock of small plants for decorative purposes, consisting of *Crotons*, *Dracenas*, *Aralias*, *Palms*, *Coleus*, &c., in variety. On the opposite side are the propagating cases, all full with the various bedding plants and cuttings of the case is a good example of *Bertolonia superbumis*, 15 inches through.

The fernery reached, we were much struck with a wonderful specimen of *Davallia Mooreana*, 6 feet high and 11 feet through, a very fine plant. In the same house are large specimens of *Cibotium Schiedei*, *Cyathea Smithii*, *C. dealbata*, *Todea superba*, *Lomaria zamiatifolia*, *L. gibba*, *Adiantum farleyense*,

A. gracillimum, and numbers of small plants in variety of Adiantums, Peris, Davallias, Lycopods, &c.

The conservatory, which is a noble structure, was very gay with flowering and fine-foliage plants, conspicuous amongst which are plants of *Monochlamis eucifera*, 4 feet high and 1/2 feet through, covered with bloom—a good old plant very seldom seen grown well; *Azalea mollis* and *A. sinensis* (the best variety of the latter), Lily of the Valley, *Spiraea japonica*, *S. palmata*, Lilacs, Hyacinths, Tulips, and Narcissus, in quantities, and a complete mass of bloom. The house, on the whole, was a fine sight, and the plants were arranged with good taste. There are numbers of frames, most of them heated with two rows of 4-inch piping, the occupants of which are Cinerarias, Calceolarias, Polyanthus, Pansies, Violets, bedding plants, &c., all in good health. Vines, Pines, and Peaches are grown extensively, and in all the different houses showing fruit most satisfactorily; there are Strawberries in all stages of growth, and promising for a good crop.

It is gratifying to know that Mr. Chaplin has not only worked up a most creditable collection of plants at Belsfield, but has, through the kind permission of Mr. Schneider, erected a commodious house for the young men to live in; the house is pleasantly situated on an elevated site close to Lake Windermere, and is fitted up with the best accommodation, comprising kitchen and back kitchens, mess and sitting-rooms, with nice bedrooms on the second flight, where all is furnished in the most comfortable manner, with wardrobes, drawers, beds, bedding, carpets, &c. I feel sure that nothing has been spared to make everything comfortable for the young men at Belsfield; and I think were head gardeners only to place the matter reasonably before their employers the dilapidated and out-of-the-way places too often met with in which young gardeners have to live, would in most cases be replaced and made comfortable homes for them. [A very good suggestion. Ed.] Any one who may feel disposed will find Belsfield well worthy of a visit, and I know will receive, as I did, the utmost kindness from Mr. Chaplin. The gardens throughout speak for themselves as to Mr. Chaplin's good management and general abilities as a gardener. R. Greenfold, Warwick.

GUERNSEY FRUIT.

BEFORE the end of this month most fruit shelves will be empty, and it is time to look forward to the new year's produce. There are, however, a few Apples and Pears whose late-keeping properties deserve notice. With me the best Apples now, and which will keep well into May, are decidedly Baldwin (the American Woodpecker) and the too little grown Pomme d'Api (Lody Apple). A dish of these two Apples intermixed is not to be beaten just now, as the Baldwin has become of a rich tawny brown, and the Pomme d'Api, having had some leaves removed in August, is richly coloured with flames of scarlet. Neither Apple has, of course, the favour of an earlier fruit, but they are firm and good. Reineette du Canada is kept in the best manner, and is as usual a Duke of Devonshire and Court Penda-Penda. I have, like, but neither in good condition. The last—such a favourite of our youth—hardly thrives on the Paradise stock in strong soil, but thrives. Many fine sorts were gone by the end of March, among these White Nonpareil, Ueiller's Golden Reineette, and Lodgemoor Nonpareil. Sykehouse Russet is a splendid Apple. The kitchen varieties did not keep well this winter. Rymer was exhausted during March. As to late Pears, I have now but two sorts remaining, of which very few, but I doubt if they will ever ripen.

The last Covent Garden produce show did not, I see, bring forward anything remarkable in Apples and Pears—at least, of English growth. Presently native produce will be superseded by that from California and the South of Europe, unless we plant more good sorts, and thin out more of the crop so as to get finer fruit.

The Guernsey produce has done well at the show in the early Fothergill, the best receiving a bronze medal. It should be remembered that the island is considerably smaller than Jersey, and has an inferior exposition, being also loftier generally. Both islands, however, have many rivals, and increasingly so, in early growths.

Among the numerous catalogues sent me the best

foreign one is certainly that of one of Messrs. Simon-Louis (near Metz), which is painstaking, and aspires to be a good fruit manual, very cheap, and worthy of being studied. In it the famous Chaumontel Pear is styled the "Guernsey Chaumontel," an honour which will be disputed. Among the nineteen synonyms attached is that of "Bûche de Chaumontel," which the late M. André Leroy, of Angers, told me he considered to be the original designation. A German friend of mine who has spent several summers in this island took this winter some very good specimens of the Chaumontel Pear from me to Prince Bismarck, whom he knows well, and has just brought me the message that the great Chancellor considered them the "most delicious Pears he had ever eaten," adding that "he had always heard that Guernsey—not Jersey but it here solemnly remarked—was noted for its Pears." This is a new feature in fruit history, it being generally customary to rank all Channel Island produce as "Jersey growth." In the midst of impending misery and bloodshed how strangely does this sound, but it also speaks well for the Prince's sense of right, and shows, at least, does not approve of the Channel Islands being classed with France at the last London shows! T. C. Brabant.

M. CHARLES VAN GEERT'S NURSERY, ANTWERP.

ON the out-kits of Antwerp, surrounded, indeed, on all sides by houses, is the nursery of M. Charles Van Geert. It is of considerable extent, flat in surface, alluded to as a hill, and situated in a fine collection of hardy trees and shrubs, destined for ornamental purposes, and for the fruit garden. A small but choice collection of herbaceous plants is also to be seen here, and in the houses a collection of the most useful and popular greenhouse and window-garden plants. The nursery in question serves as a kind of show-card for the larger establishment belonging to the same proprietor at some little distance from the town. The plants are for the most part grown in oblong rectangular beds, or quarters, nearly square in all but one end, and contrast in variety being grown side by side for the purposes of comparison and study—a plan as advantageous to the vendor as to the purchaser. Hornbeam hedges and arcades, such as are common in the Low Countries, but which have been for the most part discarded in England, traverse the garden in various directions. For training fruit trees the following very simple method is adopted:

—Poles some 9 or 10 feet long, previously creosoted, are plunged into the ground, and made to incline one to the other at the top—say, A—the pairs of poles being connected together at the top by a cross-bar. The trunks of the trees are placed along the poles, and the shoots trained, as may be desired, by training-sticks affixed in various directions. The plan is simple and efficacious. The durability of the kyanised poles is shown by the circumstance that some put up in 1866 seem as sound now as when first erected. Flax refuse, under the name *sluis*, is largely used for bottom-heat in the same manner as is the similar material known in the Edinburgh nurseries as "pok."

The special features of the nursery consist in the excellent collections of conifers, viz. Hollies, Boxes, and other evergreens being for the most part tender for the climate. The plant lately sent out as *Othera japonica* seems to be the same as *Ilex japonica*, at any rate it is here grafted on the Holly. *Ilex camellifolia* is a particularly handsome form, which does well here, while *I. crenata* major is interesting from its close resemblance to *Rhododendron ferrugineum*. Among deciduous shrubs noticeable early in April were bushes of *Forstythia suspensa*, all albae with flower, and the beautiful *Cercas sinensis pendula* roseo, which, grafted on a clean stem of a common Cherry like a standard Rose, makes a most ornamental shrub for the lawn or margin of the shrubbery. The red-leaved Peach is also effective, not only for its blood-red leaves but for its flowers. It was interesting also to notice the change of habit in *Cephalotaxa drupacea*. The original branches ascend so as to give the shrub a fastigiata form, but as the bush grows older the lowermost branches assume more or less of a horizontal direction, thus forming a cup round the central mass. Without writing a catalogue we cannot enter into further details as to this nursery, but it is one which the connoisseur in hardy plants will do well to visit when the opportunity presents itself.

THE GENUS AGAVE.

(Continued from p. 56.)

9. *A. (Littia) xylantha*, S. Lindley; Jacobi, Monogr. pp. 45 and 209; Nacht., p. 157. Bot. Mag., t. 5660-1 (fig. 84) — *Aculeatus*. Leaves not more than twenty in a rosette, ensiform, diverging irregularly and often curving, 1½–3 feet long, 2–3 or even 4 inches broad at the middle, scarcely at the narrowed distal ends, towards the apex 1½ inch wide, and 1½ inches from the point 1 inch long, ¼ inch thick in the centre, a slightly glaucous dead green, not vittate on the face, marked with a few darker green lines on the back, furnished with a broad continuous horny border and few very large irregular hooked denticle often containing teeth, which reach a length of 1½ inch, and a breadth of ¾–1 inch, with the green of the blade running into that at the base in a semicircle. Scape 5–6 feet long, its bracts subulate, all ascending, the lower ones 6–8 inches long. Spike dense, rather shorter than the scape, its bracts linear subulate, 1½ inch long; peduncles round, and teeth each ½–1 inch long. Perianth green, 1½ inch long; ovary oblong-cylindrical, 2 inch long; tube campanulate, very short; segments lanceolate, ascending, ½–1 inch long. Filaments inserted at the throat of the tube, 2–3 times the length of the segments; anthers above ¼ inch long.

A native of Mexico, long known, and now widely spread in collections. A full colour figure will be found in the *Botanical Magazine*. The broad horny border of the leaf, and the broad irregular teeth, distinguish it at a glance from all the other species of the section. *A. Vanderdonckii* of gardens belongs to a *Pertulla* (fig. 82), hybrid, and *xylantha vittata* (fig. 80), are three garden names for a striking dwarf variety with vittate leaves and smaller, more crowded deoid-cuspidate prickles than in the type. I cannot by the description distinguish from the dwarf forms of this species *A. amaranensis*, Jacobi, Monogr., p. 46; *A. Kochii*, Jacobi, Monogr., p. 211.

** PARVIFOLIE.

10. *A. (Littia) Possegerii*, Salmädy; Jacobi, Monogr., pp. 40 and 205; *A. Leckwigiella*, Torrey, in Bot. Mex. Founds., p. 113; *A. hemisphaerica* Engelm. Notes, p. 18, in part.—*Trifida*. Leaves 6–12 inches long, 2½–3½ inches broad at the middle, narrowed gradually from the base to a brown pungent point 1 inch long, ¼ inch thick in the centre, ½ inch thick at the base, dull green, with a broad pale midrib and a few dark lines, the face marked with numerous distinct green lines down the back, the margin furnished with a continuous straight moderately broad edge, the teeth moderately close, lanceolate, uncinata, 2–3 lines long. Scape, including the spike, reaching a length of 6–10 feet. Perianth 15–18 lines long. Ovary oblong or oblong-cylindrical; tube very short; segments purplish, ½ inch long. Filaments quite twice as long as the segments; anthers 1½ inch long. Capsule oblong, 8–12 lines long.

A native of Texas and the North of Mexico, gathered by Karwinski, Wright, and others. My description of the leaves is taken from the plant as grown in the London collections, and of the flowers from Dr. Engelman's notes and the numerous specimens in the Kew herbarium. There is no published figure, and I am not aware that has flowered on this side of the Atlantic. The English name is *mitis*, with *A. heteracantha*, but the two plants as grown in the English collections are, I think, distinct. *A. Possegerii* is much dwarfer than *heteracantha*, with not more than half as many leaves, which are narrowed gradually from the base to the point, and few larger more spreading prickles.

11. *A. Kerchovei*, Lemaire; Jacobi, Monogr., p. 213 (fig. 78); *A. Beauvernei*, Lemaire; Jacobi, Monogr., p. 215.—*Aculeatus*. Leaves 20–30 in a rosette, stiff, rigid, typically ensiform, 6–12 inches long, 1½–2 inches broad above the dilated base, narrowed gradually to a pungent spine 1 inch long, dull green, with a distinct pale central band, ½ inch thick at the centre, ¼ inch thick at the base, rounded on the back without any stripes of dark green, the margin with a continuous moderately broad grey border, the irregular grey lanceolate curved teeth ½–1 inch long. Inflorescence unknown.

Introduced from Mexico about 1864 by Verschaffel, and named by Lemaire in compliment to the Baron Kerchove von Osselghem. It is now widely spread in our collections. I saw at least half a dozen different forms in Mr. Peacock's in 1872. The most striking varieties are *incarnis*, distributed by Orgueil, dwarf, with spines entirely obsolete; *pedunculata*, leaf 1 foot long, 2½ inches broad above the dilated base, without any central band; *macrodonata*, Lemaire, figured in Mr. Saunders's set of photographs, and the same plant

now at Kew, [leaves 1½ foot long, 1 inch thick at the base, ½ inch thick in the middle, without any distinct central band and with copious irregular grey lanceolate prickles 3-4 lines long; and *diplocantha*, Lemaire, with very few distant, small, often geminate teeth. Judging from the description, *A. rigidissima*, Jacobi, Nachtrag, ii, p. 66, differs only

A native of Mexico, introduced recently by Verschaffelt. I have seen it only at Mr. Peacock's. It comes nearest Kerchovi, but the leaves are more numerous, thinner and narrower, and the border is narrower and the teeth smaller. Perhaps it may be, as suggested by Baron Von Ellemeet, a dwarf form of *lophanta*.

This also is probably a Mexican species, but I do not know its history; and although it is now widely spread in our collections, I do not find any account of it in print. It is marked by its dwarf habit, bright green vitiate leaves, of which both the edge and prickles remain brown longer than usual. I take a plant which I examined in Mr. Peacock's collection



FIG. 78.—AGAVE KERCHOVEL.

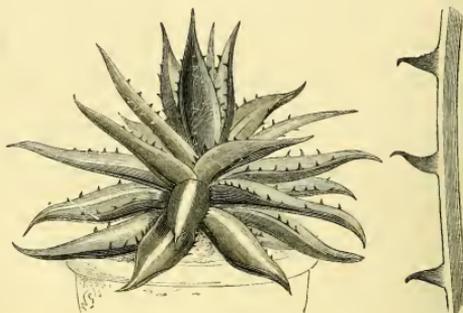


FIG. 79.—AGAVE ROELIANA.



FIG. 81.—AGAVE XYLACANTHA.



FIG. 80.—AGAVE XYLACANTHA VITTATA, HORT. = TERBELLA, HORT.



FIG. 82.—AGAVE FERBELLA, HORT.

from Kerchovi by its more minute distant detoid teeth.

19. *A. Niswoni*, Hort. Verschaffelt.—Acaulescent. Leaves 30-40 in a rosette, stiff, rigid, typically ensiform, 5-6 inches long, ¼-½ inch broad above the dilated base, narrowed gradually to a pungent spine ½ inch long, ½ inch thick at the base, ¼ inch thick in the centre, glaucous green, with a distinct pale central band, margin with a continuous very narrow grey border, furnished with copious linear spines ½ inch long. Inflorescence unknown.

13. *A. Rozliana*, Hort. (fig. 79).—Acaulescent. Leaves 20-30 to a rosette, stiff, ensiform, 6-7 inches long, 1-1½ inch broad at the middle, narrowed to a bright reddish brown, pungent spine ½-¾ inch long, bright glossy green, with a distinct pale band down the centre, ¼ inch thick at the base, ¼ inch thick at the middle, broadly rounded on the back without any darker green lines, margined with a continuous moderately broad border, red-brown at first, fading into grey when old, furnished with copious spreading lanceolate little curved teeth 3-4 lines long. Inflorescence unknown.

under the name of *Agave Inghamii* to be a variety of the same species with broader leaves, 1½-2 inches broad at the middle, 1-1½ inch above the dilated base. Even the typical plant, as will be seen from the figure, has leaves much less ensiform than those of Kerchovi.

14. *A. Victoria-Regino*, T. Moore, in Gard. Chron., n.s., vol. iv., p. 485, with woodcut; Flore des Serres, xli., p. 169, with woodcut; *A. Consideranti*, Carrière, in Rev. Hort. 1875, p. 499, fig. 68.—Acaulescent.

Leaves 40—50 to a rosette, stiff, rigid, lanceolate, $\frac{1}{2}$ foot long, 18—21 lines broad above the dilated base, narrowed gradually to a rather obtuse point, which is tipped by a black persistent spine $\frac{1}{2}$ inch long, which has usually 2—3 small denticled cuspidate spines on each side of it, $\frac{1}{4}$ inch thick in the centre, dead green, margined with a continuous white border, like that of filifera, not splitting up into threads, but leaving distinct white vertical bands where it is pressed against the neighbouring leaves. Inflorescence unknown.

A native of Monterey. My notes were taken upon Mr. Mason's specimen at the exhibition of the Royal Horticultural Society in October, 1875. It is a most striking and curious species, and doubtless should be regarded as forming a distinct group.

Erratum, p. 369.—The leaves of *Agave splendens* are 2 feet long, not 12 feet, as printed. *J. G. Baker.*

BRITISH GARDENERS.

ALEXANDER ANDERSON.

MR. ANDERSON, the subject of the present illustration, was born in the parish of Redgorton, in Perthshire, on July 24, 1820, soon after which his parents removed to the parish of Kinnoull, in the vicinity of Perth, and in the parish school there he received the greater part of his education.

When sixteen years of age he was apprenticed for three years to the Messrs. Dickson & Turnbull, nurserymen, Perth, to learn the profession of a gardener. The nurseries at that time were under the superintendence of Mr. Anderson, the present proprietor, and those who know him will bear out the statement that a more energetic man could not have been found for drilling his pupil into active habits in the acquirement of his profession. After going through the usual initiation in digging, raking, pruning, &c., for a time, he was transferred to the glass department, where the propagating of choice and ornamental plants was extensively carried on. Here he began to learn the names of plants, the remembering of which proved to be somewhat difficult at first, but he found that by writing them over once or twice they were impressed on the memory with little trouble, and this practice he has often recommended to young men since. The collections of herbaceous, bulbous, and exotic plants were extensive, and afforded an excellent opportunity of getting familiar with their names and characters, and by drying specimens, and forming a herbarium of alpine and exotic plants, he made fair progress in gaining knowledge. During the summer season he devoted his spare time to making, on those occasions in search of alpinists, collecting, drying, or arranging specimens, as circumstances required, and by the end of his apprenticeship had thus acquired a rather bulky collection. In winter he devoted the time to improving his education, by attending evening school, from which, it is his desire to record, that he gained much advantage, his elementary training being thus kept in practice, and a better appreciation of the value of the same made him more the more industrious. In this respect he was happily situated, as the "Fair City" afforded ample opportunities for young men improving themselves.

"During my last year of apprenticeship," he writes, "I was afforded the opportunity of seeing a little of the first part of forestry, by being sent out in charge of some contract planting, which the firm had undertaken, the produce of which are now large trees. My engagement having now been fulfilled, I was sent as a journeyman to Invermay Gardens, then under the care of the veteran Mr. Nichol, a renowned Pine and Grape grower in those days. Here I found a rich locality for alpine plants, many of which were new to me; but I only remained a short time. I next went to Kinnaird Castle, in Forfarshire, under Mr. Howell, who, after I had been some time there, promoted me to the charge of the forcing department. I remained here for two years, when I was recommended to Mr. Easson, of Camperdown, Forfarshire; at that date one of the best-managed gardens in the country. Mr. Easson (now factor on the estate) was a most exemplary man and a good gardener. The first Earl of Camperdown used to say of him that 'he

did more good than the parish minister.' After being here for some time I was placed in charge of the houses, which were pretty extensive, though Pine growing was being abandoned. I spent over two years here, and profited not a little, as a better managed place I have never seen, taking the allowance for doing so into account.

"I had been engaged for three months before I left to go to Oxenford Castle, Edinburgh, as foreman under the gardener, a man of most indomitable energy and tact, fond of landscape work. His time being fully occupied with the changes and improvements in the park and grounds, the management of the garden and houses consequently devolved a good deal upon me. Sir John Dalrymple had succeeded to the Earldom of Stair shortly before this as eighth Earl, and had set about remodelling the place.

"After seeing a good deal of rough work gone through in road-making, terracing, pulling down and building up, when nearly 20 years here I was recommended by the late Mr. M'Nab of the Royal Botanic Gardens, Edinburgh, as gardener to Lord Southampton, Whitebury Lodge, Northamptonshire, where I stayed two years. Having saved a few pounds in money, I took the advice of the late Mr. J. C. Loudon to some extent, and spent £40 in travelling and ac-



ing all the principal gardens in and around London. I never regretted this outlay, and though not on the Continent, as Mr. Loudon advised, I profited considerably by seeing many of the best places in England.

"I was then offered the remodelling of a fine old place in Dorsetshire (Kingston House), once the residence of the famous Mr. Pitt, by Mr. Ferguson, of Aylesbury, who had undertaken the work and the supplying of the plants. I had to come to London before it was quite finished, and did not return; and being asked at this time to become a candidate for my present situation, I did so, and being successful in my application I entered upon my duties in September, 1848.

"I have had the honour to serve three successive Earls of Stair during the time I have been here—over twenty-eight years. They have all been great patrons of horticulture, and I have received every encouragement from them, and most of all from the present Earl, who has authorised me from time to time to renew the whole of the glass structures on the place upon more modern principles than hitherto, and otherwise permitted me to effect improvements in the place when necessary. During my gardening career I have endeavoured to have as few hobbies as possible (we all have some), dividing and devoting my energies as equally to all subjects under my care as circumstances

would permit. I never was a keen competitor in the general acceptance of the word, but I have entered the lists occasionally, with what results the records of the Royal Horticultural and London and Royal Caledonian Horticultural Societies will testify. Certificates of merit and money prizes from the former, and medals from the latter, for collections of fruit and vegetables, at various times have been won. My great aim through life has been to make two blades of grass to grow where one grew before, and sometimes I have succeeded."

On the occasion of the fruit show at South Kensington on Nov. 6 and 7, 1861, we find, on reference to the *Proceedings of the Royal Horticultural Society*, i. 707, that Mr. Anderson carried off the first prize for a collection (twenty-two dishes) of Pears, thereby beating all England, though, as the *Scottish Farmer* observes, "Oxenford is by no means a land of Goshen, either as regards soil or climate." To him, "therefore, belongs the greater meed of credit for producing under the circumstances better Pears than those with which they were brought into competition, although grown in some of the very best gardens in England"—to wit, Frogmore and Heckfield. "Mr. Anderson, opening his mind to the subject, is to be checked enough upon over-luxuriance and late and imperfect ripening. The sorts of Pears exhibited as above, as we learn from Mr. Anderson, were these:—Beurré d'Areberg, Beurré Diel, Beurré de Capiaumont, Beurré Clairgeau, Buchanan's Spring Beurré, Colmar, Colmar d'Areberg, Crassane, Doyné Grits, Duchesse d'Angoulême, Easter Beurré, Flemish Beauty, Glou Morcean, King Edward's Louise, Louise of Jersey, Marichal à la Cour, Marie Louise, Napoleon, Poire Neill, Rouisse Louch, Suseite de Bayar, Winter Nellis.

Forestry.

ERECTING and maintaining cheap, substantial and efficient FENCES around plantations is a department of work connected with forest operations which has hitherto received but little attention. The question of fencing is a primary consideration, if for no other than this reason, that the money so expended is sunk for such a length of time that, whether with or without interest, it amounts to a very large sum by the time the plantation is ripe either for cutting down or laying open for pasture. Indeed it is frequently found that the principal and interest of the money laid out upon fencing a plantation has amounted to a sum exceeding that of the value of the trees it was erected to protect. I shall not attempt here to enumerate, describe, or specify the different kinds of plantation fences in common use, but assume that a plain, substantial common iron fence upon wooden posts is approved of and adopted. Such fences possess advantages over all others peculiarly their own. They can be erected on the shortest notice, are the cheapest of any other of equal service, are adapted to any climate, soil or situation, and subject to every conceivable modification as a plantation fence. So much for the primary advantages of wire fences, and now for their future and continuous maintenance. This no doubt depends greatly upon the kind and quality of the materials of which they are composed. Iron pillars and standards are considered the most durable framework for a fence, and next to iron mature Larch or old Scots Pine. I removed a fence last year composed partly of malleable iron and partly of Larch, and found many of the iron pillars $1\frac{1}{2}$ inch square quite eaten through with rust, not only at the surface of the ground, but at other parts. The iron pillars, standards, also of malleable iron, $1\frac{1}{2}$ by 1 inch, were completely eaten through, and it was remarkable to

notice also how differently different pillars were affected by corrosion—some being comparatively little worn, while others were nearly extinct. The fence had stood over forty years, and was fully and freely exposed to the influences of the sea, from which it was distant from a half a mile to one mile. The Larch posts in the fence were of sound wood, evidently cut in the winter season, and erected with the bark on. They, too, like the iron pillars, differed greatly as to decay, nor were they invariably most decayed at the surface of the ground—some indeed were quite sound there, while the upper parts were completely rotten. The fence, as far as could be ascertained, never in any way received paint or other application for preserving it. To appearance the iron and wire had originally been painted, but the wood was neither charred, tarred, nor in any way treated for preservation, nor had the iron or wire, apparently been for at least 30 years.

A frequent enquiry is, What can be done to wooden posts in order to make them last longest? The answer I am prepared to give is, Do nothing to them at all, at least if the wood is well watered and hard grown. Crocoting wood, as in preparing railway sleepers, either by placing the posts in tanks or barrels, and allowing them three or four weeks to absorb the liquid, is unquestionably of great advantage to sappy, young timber. In the case of iron-wood, and when the opportunity is at command it should be adopted on the ground of economy; for young Scotch Fir posts, Spruce and Young Larch, &c., will endure at least three times longer by crocoting than otherwise. By placing the posts vertically in the liquid, it enters the vessels of the wood by absorption, while by hydraulic pressure it is forced into them as is done in preparing railway sleepers, pine wood, and large scantlings. Opinions are very conflicting regarding the effects of peeling or shaving off the bark of posts, and this is not to be wondered at, when so many and diverse influences are operating upon the wood. The question also of charring posts is one of no small importance, and ought to be settled for the guidance of those of limited experience, and small means and opportunities of arriving at a conclusion. To my mind it does no good, and therefore must do injury, for by the process a certain portion of woody tissue is lost without any equivalent advantage being gained. After a wire fence is erected, and the wood is dry, the whole fence should be gone over with a coating of tar, natural bark (except that of all protections against decay), should be dressed with Archangel tar in a hot state, unless in the heat of summer, when it is liquid enough without heating. It should be heated only, and not boiled, as in the latter state it encrusts too much, and falls off in scales. The wire, staples, and all iron-work should receive a coating of prepared coal-tar, which costs about 6d. per gallon. The latter operation should be frequently repeated, say every third or fourth year, according to distance from the sea, exposure, and quality of wire, &c. Though coal-tar is frequently applied to wood-work of various kinds (and I participate in its application), it does no good by way of preserving timber or wood of any kind. It darkens the wood and makes it all of one hue, but beyond this its good effects are imaginary.

In erecting wire fences some secure the posts by means of pitting them, and ramming the earth in with a beater; others dispense with the earth taken out, and secure them with stones instead, at least at the surface; others, again, neither use the natural earth taken out of the holes nor stones, but strong clay instead, which they never preserves the posts longest sound. Some, again, drive the posts with heavy mallets, first making holes with an iron piercer the exact shape of the foot of the post that fits it.

All these, and many more systems and practices of erecting wire fences are adopted, each possessing some modicum of advantage over others. But with these, as with most other things, certain effects are produced, and some only a very slight connection with the assigned cause, and it not infrequently happens that between certain effects and believed causes no connection whatever exists. This is very evident in regard to charring posts. As to the use of the iron-staple, but few take the pains of examining the charred broken post, and observing that it is not the charcoal that has decayed and given way, but the wood underneath the charred surface which the charring helps to drive away. Having, however, already exceeded my limited space, I must conclude for the present, and take up the subject again. C. Y. Michie, Cullen House, Cullen, Aberj. 23.

Florists' Flowers.

SENDING OUT DAHLIAS.—The first day of May is the traditional time for the dealers to send out Dahlias. It is a custom which has prevailed in the trade for years, and though under special circumstances the time for sending out new varieties may be hastened by a few days, yet the first day of May is the usual time for commencing. It requires up to that time to get the plants well hardened off and fit to travel, and nurserymen have cleared away by that time the heaviest pressure of their spring orders. After all, there remains but a little space of time in which to crowd many details—not much more than two months, and during that time the work of propagation is carried on at high-pressure. The roots are placed in the propagating-pits early in, and towards the middle of, February. Propagation commences according to the number required of any one variety, some being in greater demand than others. As a rule, cuttings taken through March make the best plants, as they are of the right age not to become stunted with long keeping—a danger which begets some, and they are in good time without forcing. The first cuttings are often too large and sappy, and are thrown aside, unless it happens to be some scarce variety, and then all that can be struck. The cuttings are first of all put into suitable-sized pots in which to strike, and planted in a brisk bottom heat, frequently in dung-heated pits. As soon as the cuttings strike root they are potted singly in thumb-pots, again placed in a bottom-heat to root thoroughly, and then in a frame with a somewhat cooler temperature. Finally, they are placed in cold frames on an ash bottom, kept close for a few days, and then allowed to have air till somewhat hardened off. Towards the end of April it is necessary to get the plants arranged in their sorts for sending out. Advantage is taken of a fine morning to get this done. The plants are taken from the frames, each variety is placed together, and when the process of sorting is complete they are returned to the frames according to the numbers they bear, for it is an invariable rule to keep the varieties under number, beginning with the lowest and going on to the highest. This greatly facilitates the execution of orders. As soon as the plants are arranged they are sprinkled overhead, the lights shut down close, and they soon recover from any flagging caused through exposure.

Mr. Keynes of Salisbury, Mr. Turner of Slough, and other large growers send out thousands of Dahlias during the first three weeks of May. The plants are in thumbs, or very small 6o pots, a stake being placed to each plant and securely tied. They are laid in layers in oblong hampers, and carefully packed with soft moss, and in this manner the plants may be sent to the northernmost parts of Ireland or Scotland without taking harm. As soon as the plants are received they are unpacked, sprinkled, kept close for two or three days to recover the effects of the journey, then repotted, and grown on as fast as possible.

A goodly number of plants is always left on hand after the May and June trade is over. They are generally taken from the small cut-out-pots, and then staked out-of-doors in some out-of-the-way place for the summer. In the autumn, when the foliage has quite died down, they are turned out of the pots, and are sold as pot-roots during the winter. Some varieties throw better blooms from pot-roots than from cuttings struck in spring, and this is one of those matters of observation that falls to the experience of Dahlia cultivators. Sometimes persons are found ridiculing the "jargon of florists," but it really represents a number of useful facts reduced to practice.

An old florist once found it necessary to caution purchasers of new Dahlias against being too covetous, and indicating the lesson he wished to convey from his experience. He states that on one occasion he cut off the tops of some plants as soon as they were received from the nursery. By this operation he certainly doubled the number of his plants, but at what a loss?—for he goes on to say he so weakened his plants in constitution that they became incapable of producing either early or perfect blooms. They had already been subjected to as great a strain in the way of increase as they could well bear. R. D.

—The award of a First-class Certificate to a GOLD-LEAF POLYANTHUS is an event so novel at South Kensington that it deserves more than a passing notice. It is not the fault of the Floral

Committee that many years have passed since any gold-leaf Polyanthus received such honour, as that body has proved itself cheerfully ready to recognise merit in that direction at the first time of asking. Theault has rather been found in the fact that some stocks of the gold-leaf Polyanthus had so far degenerated that flowers worthy of recognition as both new and meritorious were not to be had. Mr. Smith's worthy name Duke of Wellington is probably the beginning of a new break of a favourite but too long neglected old florist's flower; others will no doubt soon follow in its wake, and the comparative regeneration of the gold-leaf Polyanthus may thus become a pleasing reality.

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD WOODED PLANTS.—Oranges.—These plants will now be much better for being in a close warm temperature, something similar to that which Camellias like. Large plants that have stood in conservatories through the winter will be benefited if they can be transferred to a vinery now in active root, and well filled with soil. Such plants, which require more root-room should now have larger pots or tubs. With careful management Oranges may be kept in a healthy condition with simple greenhouse treatment, but when no heat is given them during the season of making their roots, they rarely make so many roots as when grown warmer; consequently should not have so much pot-room, and ought to be very carefully watered during the winter. Like all other large-leaved evergreen plants, they cannot bear to have their soil about the roots, or to be kept on the other hand, it never must receive so much water as to become sodden. When Oranges get into a bad condition through loss of root they very soon show it by the sickly condition of the leaves and their premature decay, together with the weak branches dying off. With plants that are in this state the best thing is, before growth commences, to turn them out of the pots, remove all soil that is at all sour or in an unhealthy condition, cutting all decayed roots back to the healthy portions, and planting them in new pots or tubs only large enough to admit the reduced ball and a couple of inches of new soil all round. Bottom-heat is absolutely necessary to restore these plants when in the condition above described, but to the best advantage, and to the greatest profit, neither would it be advisable to put them there as the temperature is usually too high for them even in a healthy state, and when out of condition, like all other plants, they cannot bear too much excitement; under any circumstances, however, the night is sufficient with a proportionate rise by day. If on the floor of a vinery at work, as already hinted, a body of fermenting material could be placed, and the pots or boxes plunged, it would be the most certain means of restoring them to health. As soon as they have had an accession through the spring and are now out of bloom, should be cut freely back before growth has commenced—the erect growing kinds especially, if not subjected to this treatment annually, soon get naked and unightly at the bottom. Successful flowered plants of Acacias and Gen's are should be similarly treated, and if all can have a place in a little closer atmosphere for a couple of months they will be much benefited. Habrotamnus elegans is a most striking plant, and one of the best of the single-stemmed stems from 4 to 6 feet high, according to the dimensions of the house it is to occupy. From its ability to make rapid growth it can be got up to a useful size in a very short time. If young healthy plants are selected, and single-stemmed stems kept trained to a stick until they have attained the required height, then stopped as necessary during the summer so as to induce the production of a sufficient number of shoots at the top to form a head, and all that break out below the head rubbed them plenty of pot-room, they will need nothing more.

Azaleas, though not generally so treated, very well bear cutting back. The natural habit of the plants is such that with a reasonable amount of foresight as to stopping and training in their younger stages, they will not often get naked or leggy at the bottom; but where they have been allowed to get into this condition, they will bear cutting in so far as a reduction to half their size. Further than this it would not be safe to go, for with these, as with most other plants, especially such as are of a hard woody nature, there is a considerable loss of root consequent upon heading back; but cutting-in must only be practised on plants that are in a healthy condition, with plenty of roots, as if deficient of these, and consequently in a weak state, heading back would be most likely entail their destruction. After being thus cut-in the plants, if possible, should be stood in a house or pit where the atmosphere can be kept a little close and somewhat moist.

SOFT-WOODED GREENHOUSE PLANTS.—Early-sown *Cinerarias* intended to come into flower by the close of the year will be ready for pricking off later than usual. This is not to be allowed; the seedlings to stand crowded together in the seed-pot, for if ever these plants become drawn no after-treatment can give them the stout, sturdy appearance, with large heavy leaves at the bottom, which is the mark of all management. A little more seed should now be sown to furnish plants to succeed the earliest. A sowing of *Primulas* ought to be made, and the double varieties should be increased from cuttings, though all the plants be necessarily small. The plants with the whites alone are of much worth for cutting, as the black-tinted and different shades of red have a dingy appearance in bouquets or vases. Cuttings strike freely in an ordinary warm temperature, and to be successful in the cultivation of these plants, so as to get them to a considerable size and increase fast, they should be treated to an intermediate temperature and plenty of light. Where subject to a cool, damp atmosphere through the winter they make little progress. Put them well up to the leaves, leaving no bare stem, by which means they are much less liable to rot off at the collar. *Solanums* should at once be planted out; cuttings and seedlings after previously being sufficiently hardened, and other plants which are kept close in large pots, and most of the soil shook from the roots; they ought to have a situation fully exposed to the sun, receive water at the roots when the weather is dry, and occasionally a syringing overhead, which goes through the summer. A lifted and potted in the autumn, are very much superior in their foliage to those that are grown in pots altogether, but it is necessary to plant them out early, or the berries do not acquire their good colour and firmness of nature. They will stand a good many degrees of frost. *T. Loines.*

FRUIT.—The majority of the plants in the different divisions will now be showing signs of growth and activity; in some cases, however, the latter advances will chiefly be devoted to the formation and maturing of the flower-spikes and the blooms, for which that flower is the period of greatest activity, it is well ascertained that the treatment given should in some degree at least, and that so far as it can be managed in a mixed collection, be in accordance with the varying stages of growth in which the individual plants may at any given time be found. In the case of the annuals of water at the roots, as well also as the atmospheric moisture that is required to perfect the blooms of the greater part of the *Dendrobiums*, is a much less quantity than the same plants require when growing in a house, and is particularly so, and not only do these suggestions apply to this, but also to many other genera. Yet, though it may seem that such a course is the most reasonable, there are a few that, as it were, demand individual treatment to their benefit, up to the blooming and early fruiting condition. *C. Cambridgeana* may be cited as one of these. For after the growth is formed and the flowers have appeared, the newly made bulb commences to rot, and for the next three months at least it will be necessary to give the plants a plentiful supply of water; the newly forming roots may thoroughly plump up the new growth, for the strength and vigour of the bulb made this season will in this case, more than in many of the others, indicate pretty certainly the size and healthiness of the one we may look for the following season. The chaste and lovely *D. Devoniana* will now require careful treatment, for it is very apt to start into growth before the flower buds are formed along the bulbs, in which case the young breakings, as it were, of the part of the plant called the flowering bulb, and as a consequence the number of flowers is perceptibly lessened, for, instead of flowering freely a good part of the length of the bulb, the blooms are only developed at very irregular intervals. To counter this it is best at present to withhold water, to be subjected to much heat, for if it is kept just quietly moving, and but a small quantity of water given, the flowers come in much more freely and last much longer in freshness and beauty than if they were to be in a hot and then stood or hung in a cool house. Strong bulbs of this will sometimes bring four, five, and even six flowers at a single joint, in which case it is one that is justly admired, and deserving the high commendation that are given to what is highly to be considered the usual tints of this species. *D. Bensoni*, *litiflorum*, *crystallinum*, &c., on blocks or in baskets, will also be showing flower. These may now be dipped in water a few degrees warmer than the present state of the air, but do not be misled by the practice of keeping them at present continually wet, but see that the previous dipping has well drained away or the young breaks damp off. This remark applies to *D. Bensoni* more particularly, for when this is not in active growth the water required is of the smallest

quantity. The collection as a whole must now have greater attention in the matter of water. The quantity must be increased at the roots, the atmosphere at the same time, by damping the floors, walls, and syringing between the pots, &c., must also be considerably moistened. See, however, that once a day the houses are permitted to get moderately dry, that the superfluous damp may be got rid of. This could be accomplished by the admission of fresh air, which now may be given at every favourable opportunity, using chiefly the bottom ventilators. Should the soil, however, be very hot and clear, a little top-dressing may be given. Be careful to lay down the blinds at such times, that nothing may be caught by the fierce rays of the sun. *W. Swan, Fallowfield.*

FRUIT HOUSES.

PINES.—After a prolonged continuance of murky and sunless weather such as we have experienced this season, there will be a tenderness in the foliage of plants which are subjected to high degrees of temperature, which will render it liable to injury from powerful sunshine; watchfulness will therefore be necessary whenever it is likely to be potent, the ventilators at the top of the house should be slightly raised, and the blinds drawn down, so that the condensed moisture betimes, and the materials if required for shading purposes be ready at hand. Amongst the many contrivances in this way, none in our estimation meets the case with so little trouble and expense as a mixture of no. 11 kail with some slacked lime to give it consistency; this should be applied on the outer surface of the glass with a brush when it is dry, and for a considerable time it will serve to accomplish the object desired, without the necessity of any light from the plants. Shading Pine plants, excepting those without pots, is still a questionable matter with many; we, however, practise it annually in the case of houses with large squares of glass which contain plants in near proximity to the sturdy growing section of plants, such as *Queens*, *Smooth Cayennes*, &c., not more than 3 feet from the glass when they are fruiting, and slightly less when in course of preparation for fruit. The ordinary means of shading from the top of the pots the erect-growers require proportionately more, which is usually supplied by giving these sorts the back or middle place, as the state of the structure may require. Let the ordinary means of shading be used, and the materials be judiciously performed; keep the temperatures well up, as before indicated; and let the maximum point be the rule, with the aid of solar influences. *G. T. Miller, Wyeombe Abbey.*

VINES.—Examine the inside borders in early houses where the Grapes are taking their last swelling, and, if necessary, give sufficient water to keep the soil in a healthy growing state until after the fruit is cut. The soil, however, should be kept in the dry range, a little fresh matting to keep the moisture in the borders. Keep up a constant circulation of warm air, but avoid draughts. Allow the temperature to rise 85° with sun-heat, gradually reduce it in the afternoon, and in the evening to 70°; if the temperature in the house range low at night. Watch for red-spider, and sponge with clean or weak tobacco-water if sulphur is objected to, as White Frontinam and some other delicate kinds are sometimes injured by its use on the pipes. If the outside mulching has become cold a portion of the heaviest may be removed, leaving sufficient to protect the surface-roots from injury and to prevent the borders from becoming dry. The usual attention to stopping, tying, and removal of surplus canes, and the fruit successions should not be neglected for a single day, as every branch which is not wanted increases the strain on the Vines, and rots those intended to ripen. *Muscats*, in many sorts, will now require a high range of temperature, and should be kept at 70° by night, with a little air. Go over the bunches with a camel-hair pencil when the sun is shining, and keep the points turned up to the light. Take advantage of every ray of sunshine in the day, with fire-heat, and close about 3 P.M., according to the state of the weather, with plenty of moisture, when the fire-heat may be shut off until the house falls to within 5° of the night temperature, and the sun not exceed 60°. Examine inside borders, and water freely with tepid liquid manure; if well-drained they cannot receive too much when the Vines are in active growth. Newly planted Vines should be kept close and moist until they have taken a good range of soil, after which they may be encouraged to make short-jointed wood by judicious ventilation and full exposure to light. *W. Coleman, Eastnor Castle.*

CUCUMBERS.—The past mild winter having been unusually favourable to the continuous growth of Cucumbers, old plants which have been in bearing since November will now begin to present an untidy appearance, and if they have been having a good chance are that they will not be free from red-spider.

Where this is the case, and the house is divided into compartments, this section should be cleared of its occupants, all secure and fastenings removed, the glass, woodwork, and walls thoroughly cleaned, and new hills may be formed for the reception of vigorous young plants, which will come into bearing in a very short time after this date, and give less trouble with moisture than the old plants. Let the hills for summer work be placed as far as may be convenient from the pipes which supply top-heat. Use loam somewhat heavier than that recommended for winter, and secure bottom-heat, and manure removing materials in preference to that which is given off by hot-water. If old plants may be retained, crop lightly, give more water at the roots—tepid liquid manure answers best, top-dress with good loam, and syringe with tepid water, and keep wood and fastenings material should be of the lightest texture, and I look upon this as being more necessary to the protection of fruit than foliage. Plants in pits and frames will now be coming into bearing; dress over as often as the state of the weather permits, and keep wood and fastenings tight and clear of the glass. Use glasses for keeping the fruit clean and straight. Ventilate freely early in the day, and close about 3 P.M. with plenty of moisture. If after renovation of the linings steam is likely to be troublesome, it should be left on at night. *W. Coleman, Eastnor Castle.*

KITCHEN GARDEN.

The ground hitherto occupied by the various waterings and Broccoli will now be ready for turning up in preparation for future crops, and on such plots as require deep digging, the soil should be turned to the bottom of the trench and a dressing of lime spread over them to hasten decay and check the increase of slugs; if manure is required it should be spread over the surface and forked in after the trenching is finished. Plots which were reserved for winter crops, and in this, and in that case the old stems should be wheeled to the rubbish yard, the manure required be spread over the surface and deeply forked in with long-tined three-pronged spades; and previous to getting in fresh crops, the surface should be well stirred, and the whole surface thus disturbed, will be of great advantage, especially after such a mild winter.

Considerable attention will be required in keeping up successional sowings of the various sorts of Peas for salads, and before recommended, the various sorts of summer Lettuces, both *Cos* and *Cabbage* varieties, may with great advantage be sown in drills and thinned out to the requisite distances, and if this is done at short intervals, and the plants are not over-tempting; at the same time where a large supply is required it is scarcely possible to avoid transplanting, in the case of the *Cos* varieties, as ground becomes vacant, these however will require more copious supplies of water, and have little to do with the ground the next ten days it will be safe to get in the main crops of *Scarlet Runners* and *Dwarf French Beans*; deeply trenched and highly manured ground will realize an abundant and succulent produce. The *Scarlet Runners* may be sown in rows, or what is better, single rows with spaces between sufficient to occupy five or six rows of *Walthein Cauliflower* or *Dean's Snowball Cauliflower*, both of which would leave the ground vacant about the same time as the *Runners*, and the shade afforded by the tall Beans would be of great advantage to the well-toing of the *Cauliflowers*. The principal sowing of *Red Beet* should now be got in once; in a light and deeply trenched soil, well manured the previous year, and the plants well watered, and the straight and uniform root is a great desideratum, if it is necessary to manure the ground for the crop, it should be done late in autumn or early in winter, and no opportunity omitted to knock it out, so as to get the soil to be in the best state for the sowing, for if the manure is turned on in lamps the roots will surely send out forks in search of it, and as these are liable to be broken off when preparing for cooking, the Beet when placed on the table will have little to show for it, a great portion of its colour. Successional sowings of *Pearl and Windsor Beans* must be kept up, and as the present sowings of *Peas* will be coming to maturity during the hottest parts of the year, the present and all succeeding sowings should have little extra attention by way of keeping the roots cool; an excellent way is to take out a trench and fill it with good manure on which to sow the seed, but if this cannot be done recourse must be had to a thick covering of manure on each side of the rows and the plants, but the best of all is to get the sowings of *Celery* will now be ready for pricking out; see that the plants are properly supplied with water and shaded for a few days, as the great object is to avoid checking a free growth. All the sorts of Broccoli which have been sown in the winter months have especial attention, and it is probable that the spaces intended for them are yet occupied, the plants should be at once pricked out to a sheltered border and shaded. *Turnsole Sprouts* will also come under the same rule, but the best crop of these should be permanently planted out in rich soil as soon as the plants are large enough. *John Cox, Kellinf.*

THE
Gardeners' Chronicle.

SATURDAY, APRIL 28, 1877.

APPOINTMENTS FOR THE ENGLING WEEK.

		[Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.]
WEDNESDAY, May 9		[Scientific Committee, at 1 P.M.]
		Opening of Messrs. G. Jackson & Sons' Horticultural Exhibition at Regents' Park.
THURSDAY, May 10		Sale of Orchids, at Stevens' Rooms
		Linnæan Society: Meeting, at 8 P.M.
FRIDAY, May 11		Sale of Orchids, at Stevens' Rooms.
		[Sale of Scientific Instruments at Stevens' Rooms.]

AN example has been set at the rising city of PETERBOROUGH, in the arrangements for a PUBLIC PARK, that may be advantageously imitated by many other towns. In some instances we fear this example comes too late, but there are as yet many towns with an increasing population that have open plots of lands within easy distance, which have not been cut up into irregular patchwork by little independent land-jobbers and speculative builders. It is these towns, which have escaped this petty building mania that has too often resulted in making suburbs hideous, that we would invite to consider what has been done at Peterborough. With a view to convey to our readers the importance of this question, we have given a reduced illustration on p. 533. This plan of the park and land towards and around it, which is systematically laid out for building upon, almost speaks for itself. But there are a few details which are full of interest.

Peterborough has sprung into a town of importance simply because it is the junction of four leading railway systems, viz., the Great Northern, the Great Eastern, the London and North-Western, and the Midland. Stamford ought to have been in this enviable position, but through the prejudice and nearsightedness of some landowners the Great Northern Railway was prevented from running parallel with the great north turnpike road. Stamford, therefore, has stood still while Peterborough has increased greatly in manufacturing and commercial importance, upon which naturally follows a greatly increased and increasing population. The Great Northern Railway Company's repairing works are a mile or so north of the town, where a suburban village, which oddly enough has been named "New England," has been built; while Messrs. BARFORD & PERKIN'S works for steam-ploughs, steel mills, water-ballast rollers, and other machinery and implements, have greatly increased of late years, and added to the business and prosperity of the town. We mention these points because the projectors of the admirable arrangements which we have illustrated have reserved plots for other factories; and negotiations, which have been so far successful, are going on with a view to establish branches of factories which are now flourishing at Nottingham, Derby, and other midland towns. It is thus shown, we may add, that a rare combination of refined taste and business foresight has guided the few enterprising promoters of this land project, who in less than two years have transformed a farm and a few straggling plots of land into one of the best laid out suburban estates that we know of in connection with any town.

The estate altogether consists of about 146 acres. The land was mainly bought of the Ecclesiastical Commissioners, who, we are informed, have acted very meritoriously in disposing of land at fair prices when it was represented to them that to do so would promote the prosperity of the city. This estate may be described as in the form of a Jew's-harp, and, as will be seen, it has something of the form of that instrument—the two roads which form the handle of the figure running con-

veniently down to the centre of the town, that is, to the top of The Causeway, as the wide street in the centre of the city is termed.

The details of the transformation of this estate are something marvellous, considering that it was originally a speculation by four men of business, and that they have taken less than two years, as we have intimated, to carry them out. The outlines would of course be the first object with men who set themselves to work so systematically. There are two miles of main road on the two sides and around the head of the estate. This road is uniformly 50 feet wide, and it is planted on both sides with Plane, Lime, and other trees, 23 feet apart. The proprietors have had one sale—the darker shaded plots of our illustration being the result—a part of the conditions of that sale being, the vendors hold themselves responsible for 5 miles of drainage under the roads and other places, and for 10 miles of fencing in front of and between the plots. There are 500 plots laid out, of various sizes to suit the taste and means of purchasers. Conditions are at the same time very properly laid down for purchasers to abide by. In some instances, when the plots are short and suitable for small houses, the gardens in front are to be 12 feet in depth. This arrangement, with the 50 feet roadway, will give an open space of nearly 21 yards between the fronts of these houses. At other parts a frontage of 30 feet must be left, and at other places there must be a reserve of 50 feet, so that there will be front gardens varying from 12 feet to 50 feet for planting with shrubs and making into flower beds, while the width between the lines of houses will range from upwards of 20 yards to nearly 35 yards. These conditions refer to the roads of the narrower part of the estate near the town. The restrictions in regard to the style and value of the houses in the semicircle at the head of the estate, and beside the roads looking over the park, are more in harmony with the large grounds which are set out in the plans.

The park, as will be observed, is in the form of a horse-shoe, and conveniently situated in the centre of the estate. It is 22 acres in extent, and the way in which it has been laid out is most convenient and tasteful. It is divided into four quarters by promenades, which run at right angles from a raised mound in the centre. The raised mound is about 8 feet high and 150 feet in diameter. A pagoda will be placed in the centre for shelter at all times, and for the use of a band on gala days; this is approached by four sets of stone steps. The promenades are 25 feet wide, and ornamental trees are planted on each side. The fringe of the park is formed of raised beds and serpentine walks, the background of the beds being planted with choice shrubs and permanent flowering plants, while nooks and fringes are left for Pelargoniums and other summer bedding-plants. The north-east and south-east quarters are left in turf for such games as football, bowls, and cricket matches. The north-west quarter is reserved for ornamentation by choice shrubs and plants, while the south-west quarter is being supplied with a small lake and a sunken pool and fountain, bordered with rock-beds, for the growth of aquatic and other suitable plants. Any one who has seen the Lower Grounds at Aston, near Birmingham, may anticipate what a charming spot is here designed by the proprietors.

This park, however, has been formally offered to the Corporation of the City, and as the terms are very easy, and certainly easier now than they will be again, the authorities, we should think, will not let the opportunity slip out of their hands. One part of the terms is singularly fortunate. A few years ago the widow of a successful tradesman of the city made a present of 4 acres

of valuable land to the Corporation on condition that it should be preserved as a recreation ground in memory of her husband. This recreation ground (A) has, however, never been properly appreciated: the Corporation have not ornamented it in any way, and it is left as a bit of rough pasture for boys and girls to romp on as the fit takes them. The proprietors of the estate, however, have offered to make an exchange of a part of their park for these 4 acres of recreation ground. As this enclosure is nearer the city, and, therefore, more valuable for a factory or other business premises, they have offered 3 acres of the park in its present state for 1 acre of the recreation ground. This will cover 12 acres of the park, and, therefore, leave only 10 acres to be purchased with money by the Corporation. Fortunately the benevolent lady who presented the recreation ground is still living, and has kindly consented to the exchange being made, expressing her pleasure at the same time that her gift is likely to aid in leading to something more worthy of the town. On these grounds we hope, with Mrs. STANLEY—the name of the lady referred to—that the Corporation will meet the liberal offer made by the present proprietors of the park, and secure for ever an open space that will be a worthy imitation of the noblest acts of our own time, and a perpetual example for posterity to emulate.

We may add that in the absence of Government exercising any paternal control over the arrangement of building lands adjacent to rising towns, men of business there, either as enterprising private men or in their corporate capacity, may advantageously pay a visit to Peterborough, and see for themselves how great and good a work may be done, both for the present generation and for posterity, by a few neighbours taking a matter of this kind in hand and setting to work with energy, judgment, and good fellowship. The proprietary, we are informed, has recently been converted into a company of six shareholders. Another sale of plots has, we believe, taken place this week, but we have not heard the result. We are informed, however, that the original shares would readily sell at a premium of from 25 to 30 per cent. While, too, the main chance has always been well looked after in this enterprise—as it always should be if men would have the power of doing good—the moral interest of the people has not been overlooked, for sites have been set apart for churches, schools, clubs, and other modern institutions; indeed, nothing of importance appears to have been overlooked. This is why we say this estate is worth visiting, and the action of its proprietors worth imitating.

—THE AMSTERDAM BOTANIC GARDEN is by no means worthy of so large and wealthy a city, and forms an unpleasant contrast with the neighbouring zoological garden. The outdoor department is specially meagre, partly, indeed, from want of space. The most remarkable tree in it is a *Toxodum distichum*, with the habit of an English Oak rather than of a Conifer. Its clean unbranched bole can barely be spanned by two men with outstretched arms, and the whole aspect is so different from ordinary specimens of this species that it is at first difficult to persuade one's-self of its identity, particularly when devoid of leaves. A shrub marked *Ribes grossularioides*, neither leaves nor flowers of which were expanded at the time of our visit, is also remarkable for its habit, the upper branches spreading horizontally or slightly bending downwards at the tips, forming a flat-topped shrub of peculiar appearance. The glass-houses are numerous, mostly lofty, narrow and ill-suited for plant growing. Most of them, moreover, are double-glazed, and, in some cases, the outer covering is removed during the summer months. Fine specimen Palms, Pandanus, Cycads, and Tree Ferns, constitute the chief features of the collection, but some of them are suffering from the restricted space in which they are placed. We may briefly enumerate

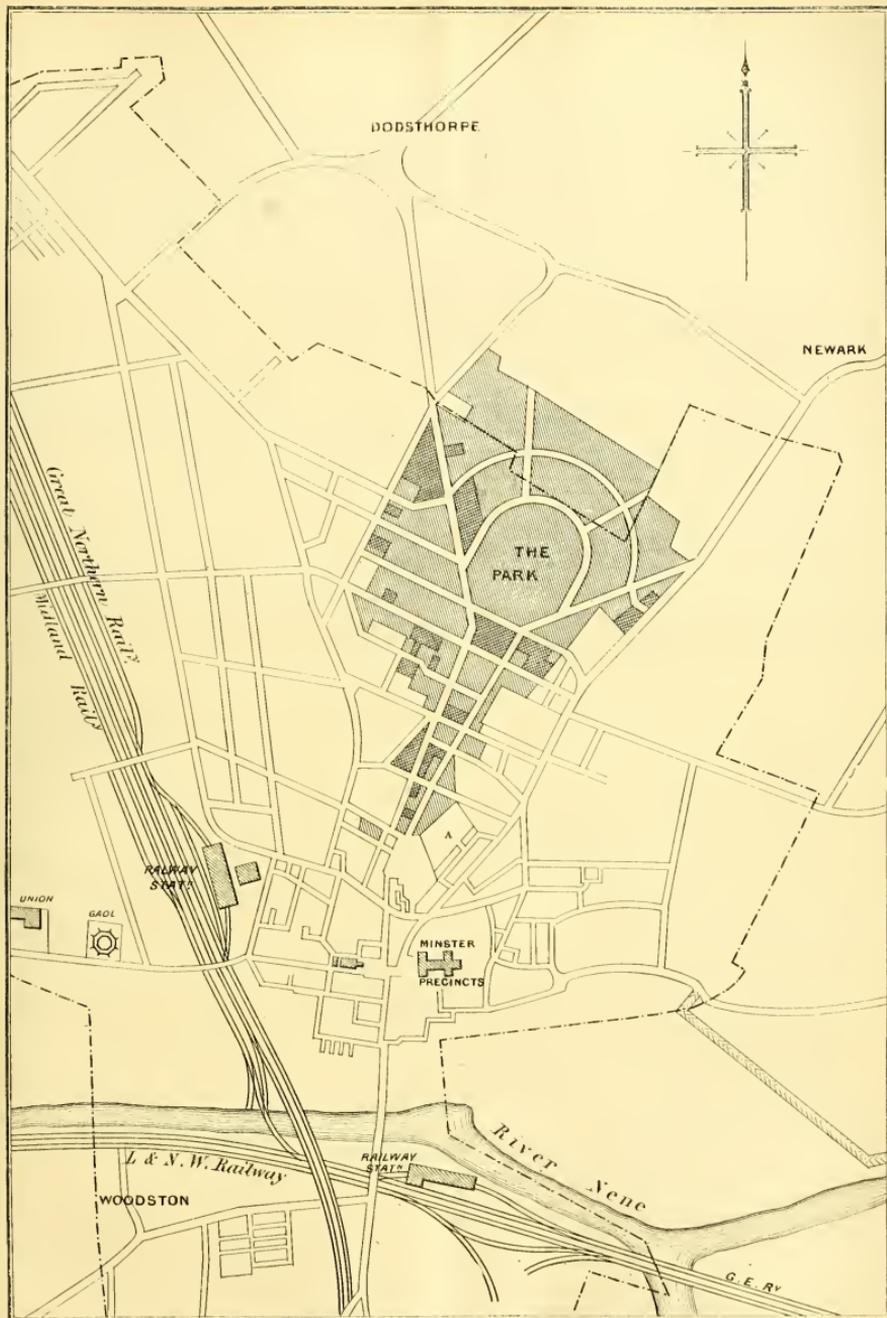


FIG. 84.—PLAN OF THE LAND COMPANY'S ESTATE, PETERBOROUGH.

the following species as being well represented:—Palms.—*Phoenix spinosa*, *Calamus gracillimus*, *Sabal umbraculifera*, very fine; *Asrocaryum Ayriei*? *Caryota Cumingii*, *Arecia rubra*, &c. Cycads.—*Ceratopteris mexicana*, female plant, in fruit; *Cephalotaxis Altsteinii*, *E. Lehmanni*, *E. longifolius*, a noble specimen with a trunk 16–17 feet high, and as thick as one's body; *Cycas circinalis*, dividing at the summit into three branches; *C. Rumboldii*, of which the top has been cut off, but from which new offshoots are in the course of formation; and a very handsome specimen of *Cycas glauca*, and *Zamia Mitquiana*. Among Ferns we may cite *Alsophila australis*, *Angiopteris Willinkii*, and various species of *Cibotium* and *Cyathea*. A lofty specimen of *Strelitzia augusta* also deserves notice, as well as a bush of *Cestrum aurantiacum* loaded with white pyriform berries. In one of the greenhouses are fine specimens of *Protea cynaroides*, *Banksia serrata*, *Knightsia excelsa*, and other Proteads, now rarely seen in this country. The Victoria-house serves in winter-time as a store-house for Heaths and other plants which are turned out in summer. The collections as a whole make one think that the Amsterdam folk by no means appreciate the richness of their possessions, or understand the requirements of students.

—The decoration of wild banks, wilderness walks, and the like, if judiciously done, is one of the most satisfactory of garden procedures. We have in view just now a stretch of undercliff covered in places by a thicket of common wild CLEMATIS. Why not introduce here and there among it plants of *Clematis Jackmanni*, or other of the gorgeous varieties of this genus? In the undercliff at Folkestone, as also in the Isle of Wight by Ventnor, and many similar localities, there would, with a little care at first, be ample means of establishing these plants in quantities sufficient to provide for a large amount of deperdition by small boys, and yet leave a large surplus for those whose stiffened limbs would only permit them to admire at a little distance. At Folkestone just now plantations of black Austrian Pine are being made along the slopes of the sandstone cliff, and temporarily fenced off, so that it would be easy to introduce the *Clematis* likewise.

—The next meeting of the INSTITUTION OF SURVEYORS will be held on Monday evening, April 30, when the adjourned discussion on the paper read by Mr. J. SHAW at the last meeting, on "The Rivers Pollution Prevention Act, 1876," will be resumed. The chair to be taken at 8 o'clock.

—*TILLANDSIA USNEOIDES*, a wonderfully curious form of Bromeliaceae, is flowering in the stove at Kew. It is a rootless epiphyte, forming a tangled mass of wavy, slender stems and narrow leaves, all over silvery, with minute scales, bearing tiny green flowers of delicate perfume. It is a native of the West Indies, Central America, and the South United States, growing in great profusion on the Cycas trees on the Mississippi, and basking in large leaf-like masses it gives the trees a strange, gaunt appearance. In Jamaica it is known as "Old Man's Beard," and is called also American Moss. It is used in America in the preparation of an ointment for hæmorrhage; the stems are used for stuffing purposes, after removal of the outer parenchyma, by steeping in water. In this condition it is known as vegetable hair, and is said to have been imported to this country. The stems are remarkable from being without spiral vessels. The leaves are so brittle as to be scarcely distinguishable from the stems at a short distance, and are curious from nearly all being terete for a space near the middle, while either channelled or flat above and below that portion. The flowers are produced about two together at the ends of the branches, the petals are narrow, bright green, and translucent, spreading above the tips of the sepals. It has been said that *Tillandsias* have no roots, but this, though true of the present and perhaps some other species, is not true of all, as an inspection of the plant in the house will testify. The cultivation of the *Clematis* is not difficult, provided a healthy growth to commence with. It is nearly always received dead, or nearly so, often from being packed in large damp masses. For cultivation it should be laid thinly on suspended pieces of Tree Fern stems, with the temperature and moisture of a stove. It will live a long time without water, but is easily weakened by struggling to grow

in a dry atmosphere. The stems on which it is placed should be treated with water as if to grow an Orchid. Seeds of this plant, gathered from the same importation, have germinated.

—There is just now in bloom at Mr. KINGSTON'S nursery at Richmond some fine GLOXINIAS, both named varieties and seedlings, and among them is a pure white erect-flowering variety with blossoms of a snowy whiteness and of the finest form. It is named *Comtesse de Naidailac*. Lord Derby, with the lobes shaded maroon, and a pure pale cream-colored throat; and *Duchess of Teck*, crimson, with a shaded lilac margin, are also very fine. Among the seedlings raised by Mr. KINGSTON there are some delicately reticulated flowers that have much novelty of character.

—One of the finest Palms shown at the recent Amsterdam Exhibition was a young plant of *PLECTOCOMIA ELONGATA*, the stem and under-surface of the leaves of which are covered with white meal, the stem, moreover, bearing regular spiral coils of formidable spines. The large pinnate leaves ran out at the points into a long lash-like tendril, beset with hooked prickles.

—We learn that M. PLANCHON is to edit the *Flore des Serres* of VAN HOUTTE, an announcement which will be received with satisfaction by all those who are interested in the correct determination and nomenclature of the plants they cultivate, while the subscribers in general will be glad to receive something more than mere repetitions of the plates of the *Botanical Magazine*.

—We have received from Mr. JOHN GRAY a fine bloom of *SOLANDEA GRANDIFLORA*, cut from a specimen flowering at Lord BROWNSLOW'S, Ashridge Park. The bloom, which is of an orange-yellow colour, and much resembling a *Brugmansia* in form, measured nearly a foot in length. The foliage is very handsome, and we agree with Mr. GRAY that such a beautiful subject should be more often seen in collections.

—Mr. J. MAFERSON, late foreman at Hatfield under Mr. BENNETT and Mr. THOMSON, has been appointed to succeed Mr. W. GARDNER in the management of St. G. R. PHILLIPS' garden at Weston House, Shipton-on-Stour. Mr. GARDNER has been at Weston House forty-four years.

—The last number of REEGL'S *Gartenflora* contains some particulars of the CLIMATE of different parts of RUSSIA and its effects on vegetation. The writer also gives some statistics of the quantity of fuel consumed in the botanic gardens of St. Petersburg during the first half of last December. While we were busily engaged keeping the water out, our friends in St. Petersburg were combating the fierce cold. From December 1 to 15 the temperature for a part of the time there was from 63° to 75° of frost, and during the remainder of the period from 40° to 63° of frost. The average quantity of fuel used daily in the botanic gardens was 150 centners of coke and 13 cords (7 feet square by 2½) loads of solid Birch wood, and 2 cords (7 feet every way) of Pine wood! We do not know the extent of the glass in the Petersburg garden, but the expense of preserving the collections through the winter must be enormous!

—We learn from the *Wiener Gartenfreund* that a movement is being made in Austria to obtain an Act for the PROTECTION OF BIRDS, for which committees are forming in all parts of the empire.

—For the next two or three weeks the FRUIT ORCHARDS will be decked in all their beauty, and persons in search of joys yet untasted may well give the country a few visits whilst the trees are robed in their floral coverings. If the keen cold east winds of last week present the total of weather severity to be experienced in the east, and a continuation of such a critical period of Blackthorn winter we may look upon the abundant Plum blossom as safe to produce a good crop. Last year, although an immense bloom was seen, no fruit followed, and, although the deficiency was generally attributed to the severe frosts and ungenial weather that prevailed during the blooming period, there can be little doubt that the heavy crops

of the preceding year affected the fertility of the blossom. The Pear trees are remarkably full of bloom, many being literally masses of white, and if only a tith should set, there will be an abundant crop. The Apple trees also are full of promise. Some will be a perfect gale of flower; the *Max* *Collins* especially will soon be singularly beautiful. The ripe fruit of the *Apple Blossom* renders the most ornamental of all hardy fruits, and, therefore, the first week in May will find the orchard districts peculiarly attractive. Cherries, as with other standard fruits, are full of all the promise that masses of flower blossoms can give. Gooseberries constitute one of the most valuable of bush fruits, and present appearances indicate a very plentiful crop. With nearly all our hardy fruits it is entirely a question of weather, and remembering the comparative rest enjoyed by the trees last year, there is good reason to hope for an abundant crop of all kinds.

—A 'cute American suggests, as an efficacious mode to discover the DIFFERENCE BETWEEN A MUSHROOM AND A TOADSTOOL, "to eat it." If you live in a Mushroom, if you die it's a toadstool. This method may possess the merit of originality, but it will not bear the test of experience, inasmuch as if it is a Mushroom you are no wiser in future difficulties, and if it is a toadstool the tragic result renders the knowledge gained of no further use to the experimenter, and certainly the game is scarcely worth the candle. Probably it is wisest in all cases of doubt to give yourself the benefit of the doubt, and abstain from partaking of the tempting fungus.

—A plant rarely seen now, but which is worthy of being more frequently grown, is *COSMOTHES DEVOSIANA*, a Genetard with small, opposite, ovate, somewhat fleshy leaves, and irregularly funnel-shaped white flowers. The plant is a trailer, sending out adventitious roots, and is well adapted for hanging baskets for conservatories. We saw it lately so employed in the Botanic Garden at Brussels, and were struck with its effectiveness for the purpose mentioned.

FERTILISATION OF PLANTS.*

I PURPOSE devoting this and the remaining contributions to self-fertilisation. Before, however, making out my case, I would wish to guard against being misunderstood; for my criticisms have, I fear, led readers to imagine I would undervalue Mr. Darwin's laborious investigations and their important results. This would be far from my intention. The chief of these results may be briefly summed up thus:—1. Crossing with a distinct stock usually gives enormous advantages, which are continued into subsequent, often many generations. Every element of vigour and prosperity is enhanced. This is clearly established. 2. That more moderate advantages accrue from an intercross with another plant of the same stock, and that the relative advantages of such, over self-fertilisation, gradually disappear in successive generations. 3. The crossing of different flowers on the same plant generally does little or no good, such benefit being mostly (?) in the case of self-sterile plants. 4. Self-fertilisation. This last, Mr. Darwin says, is "injurious," and produces "evil results." Now, it is here where I am compelled to differ from his conclusions, and my previous criticisms to be made a matter of dispute at this point. Allowing for individual exceptions, I maintain that, as a broad general principle, self-fertilisation in the vegetable kingdom is not "injurious" in any ordinary sense of the term. I may be wrong, but that is my conviction, and the present communication will supply my reasons for so thinking.

On p. 26, while recommending his readers to study certain cases in particular, in which "the crossed plants are superior to the self-fertilised in a marked degree," Mr. Darwin adds:—"As instances of self-fertilised plants being equal or superior to the crossed, the experiments on *Bartonia*, *Canna*, and the common Pea ought to be read; but in the last case, and probably in that of *Canna* [and he might have added *Bartonia*, for the plants were unhealthy], the want of superiority in the crossed plants can be explained;" the explanation being, that as *Canna* and the Pea have been long cultivated by self-fertilisation, intercrossing did little or no good. But there are other

* *Cross and Self-Fertilisation of Plants*. By C. Darwin. Murray.

instances, such as the case of "Hera," *Mimulus*, *Reseda*, *Echscholzia*, &c., to which this case does not apply, and which were much superior to their interested rivals.

I will now quote three passages of importance. "We should always keep in mind the obvious fact, that the production of seed is the chief end of the act of fertilisation; and that this end can be gained by hermaphrodite plants with incomparably greater certainty by self-fertilisation than by the union of sexual elements belonging to two distinct flowers or plants" (p. 3). In speaking of the superiority of self-fertilised seedlings of *Ipomoea* to those raised from flowers fertilised by pollen taken from other flowers on the same plant, he says:—"This is a remarkable fact, which seems to indicate that self-fertilisation is in some measure more advantageous than crossing, unless the cross brings in, as is generally the case, some decided and preponderant advantage" (p. 61).

Lastly, Mr. Darwin observes:—"The most important conclusion to which I have arrived, is that the mere act of crossing by itself does no good. The good depends on the individuals which are crossed differing slightly in constitution" (p. 27).

Considering them in detail, I shall endeavour to show how self-fertilised plants can and do fulfil the conditions here spoken of by Mr. Darwin.

The following are some of the chief facts connected with the self-fertilisation of plants:—

1. The majority of flowering plants are self-fertile, and very few are known to be physiologically self-sterile.

2. Many are morphologically, but not physiologically self-sterile.

3. Both physiologically and morphologically self-sterile plants become self-fertile under changed conditions.

4. Flowers may become self-fertilising (1) by the withering of the corolla; (2) perhaps by its excision; (3) by closing; (4) by remaining closed, never having opened; (5) in the absence of insects; (6) by transportation to a different climate; (7) by reduction of temperature.

5. Highly self-fertile varieties may appear under cultivation.

6. Self-fertilisation may be secured by special constructive adaptations.

7. Inconspicuous and cleistogamous flowers are habitually and highly self-fertile.

8. Self-fertility does not decrease, but may increase in successive generations.

9. Though plants may acquire increased constitutional vigour by crossing, self-fertile plants may gain the same by transportation to other climates.

10. Of plants requiring insect agency and self-fertilised, the latter are best fitted to survive under migration.

11. When free from competition, self-fertile plants are equal and often superior to the intercrossed.

12. There is no waste of energy with self-fertilised plants, as occurs in the production of a profusion of pollen by intercrossing and anemophilous plants.

13. Highly self-fertile and long cultivated self-fertilised forms derive little or no benefit from an intercross, and may derive none when a cross with a new stock. All self-fertile plants are in every way as healthy as the normally intercrossed plants.

1 to 4. Plants may be physiologically or else morphologically self-sterile, or both combined; but under certain circumstances many, and probably all such plants acquire or regain the power of self-fertilisation. Mr. Darwin records several cases, as, for example, the Brazilian *Echscholzia*, of which he says, "their self-sterility had evidently increased greatly by being reared for two generations in England." It was similar with Abbot's Darwinia. Some plants of *Reseda odorata*, as already stated, are self-fertile, while other plants are self-sterile. *Verbascum phoeniceum* fluctuates in the same way; and while *V. Thapsus* is self-fertile, *V. nigrum* is self-sterile. *Lobelia fulgens* was self-sterile in Germany, but Mr. Darwin found it self-fertile. This, like the Brazilian *Echscholzia*, appeared to become self-fertile in consequence of the lower temperature of England; for the latter became again self-sterile in Germany. Orchids may be both morphologically and physiologically self-sterile, while even in some cases the pollen acts as a poison on the stigma of the same flower.

Mr. Darwin regards such self-sterility merely as an "incident," and not due to natural selection to prevent self-fertilisation.

Plants adapted for insect agency may be, and generally are, however, self-fertile. This occurs with many Leguminosae; *Pisum sativum* is habitually self-fertilised, so is *Phaseolus vulgaris*, but *P. multiflorus* has not yet retained the power, and is still flowered, such as pale varieties of *Pedicularis*, *Primula* and *Dianthus*, may gradually become self-fertilising by maturing their stamens and pistil together.

In speaking of the "immediate cause" of self-sterility Mr. Darwin attributes it to the enviring "conditions." These, I think, should be called the "proximate" causes, the immediate or ultimate cause being, as I conceive, the preponderating influence of the corolla and nectariferous whorls, which thus by undue growth destroy the equilibrium between the essential organs. Whatever, therefore, may be the cause at work which checks the growth, or develops the energy, in whatever way shown by the corolla, glands, and nectaries, and perhaps in part the stamens, that same energy is now diverted into the pistil, which thus matures simultaneously with the stamens, and, therefore, earlier than it would otherwise have done. What led me to draw this conclusion was an examination of the order of "emergence," as well as the subsequent growth of the floral organs of a large number of plants; such order being frequently as follows with flowers having conditions, that is, sepals, stamens (if in two rows), that opposite the petals, and lastly the corolla. The latter grows subsequently very rapidly, and then, of course, exceeds the other parts very greatly. On the other hand, with inconspicuous self-fertilising flowers, the pistil often emerges simultaneously with or before the stamens. The former condition I take to be the immediate cause of protandry, and the latter that of self-sterility; or if the pistil becomes too much stimulated the equilibrium is again destroyed, and protogyny is the result. But if energy be diverted from the corolla, as seen in the pale *Pedicularis*, then it passes into the next whorl which appears in the order of succession, *i.e.*, the pistil; this latter now retaining its power of growth arrives at maturity simultaneously with the stamens, and self-fertilisation is the result.

Under heading No. 4 I have given six causes, and possibly there may be others which may thus bring about self-fertilisation.

Mr. Darwin alludes to withering of corollas of *Viola tricolor*, and I can corroborate this, for I have noted that of *Tradescantia virginica* in September last when the corollas shrivelled and matted round the ovary, thus keeping the style bent down upon it and the stigma in contact with the anthers; a number of capsules ripened, and the seeds contained perfectly formed embryos. Mr. Darwin alludes to *Buttercup* fertilising themselves by closing at night, and perhaps we may generalise upon that; at all events it is suggestive that flowers which close in diffused sunlight (as *Anagallis arvensis*, *Mesembryanthemum*, *Daisies*, &c.), in the evening, or at night, may do so for this very purpose.

The above observation led me to deduce the expectation that if the corolla were cut out, the protandry of one or otherwise sterile flowers might become self-fertilising; and I was most agreeably surprised to find cases recorded by Mr. Darwin which exactly fulfilled my prediction, though the operation was performed for a different purpose. "Karr," writes Mr. Darwin, "removed the whole corolla from a considerable number of flowers, and these yielded seeds. Flowers which are self-fertile would naturally produce seeds under these circumstances, but I was greatly surprised that *Delphinium Consolida*, as well as another species of *Delphinium* and *Viola tricolor*, should have produced a fair supply of seeds when thus treated" (note, p. 420). Now, such a result exactly corroborates or proves my deduction, but I hope to test it fully this year, and would be extremely glad if any one would assist me in doing so by thus removing the corollas together with some of the stamens, as well as alone, especially before development, and carefully protecting those flowers thus mutilated from the approach of insects; for of course it need only be done in the case of protandrous flowers.

Another cause of self-fertilisation is the lowering of the temperature. Allusion has already been made to this in the case of the Brazilian *Echscholzia*, which, though self-sterile in South America, became self-

fertile in England. Mr. A. Bennet also called attention to the fact that some of our wild flowers, when they blossom in winter, do not open their buds, and are self-fertilising in consequence, and I can corroborate his observations by many other instances. The *notations* being, as I believe, that the reduction of temperature checks the growth of the corolla and the secretion of the glands.

Again, certain white and pale coloured varieties are great seeders; and this, again, I suspect, is another cause of the same kind, for whiteness represents loss of vigour. Mr. B. T. Lowce informs me that he found the garden Balsam became white if the soil was deprived of ammonia, but if it be artificially supplied the colour returned—an important fact, to which I would call the attention of horticulturists. If such be the true explanation of protandry and self-fertilisation, the question is resolved into one of degrees of compensation, and, so far at least, has nothing to do with "injuriousness" whatever. In fact, it is an absolute loss (and therefore an "injury") to a plant to be self-sterile, for its facility of propagating is therefore largely, if not entirely, checked.

Though I agree with Mr. Darwin that "the inefficiency of a plant's own pollen [physiological] is in most cases an incidental result [of differentiation], and has not been specially acquired for the purpose of preventing self-fertilisation," I cannot agree with him as drawn to a different conclusion for morphologically self-sterile plants, for he adds:—"On the other hand, there can hardly be a doubt that dichogamy . . . that the hetero-stylid condition of certain plants, and that many mechanical structures, have all been acquired so as to check self-fertilisation and to favour cross-fertilisation;" and yet he shows that when plants lose their dichogamy they regain great self-fertilising powers, which he then considers to be an advantage to the plant. Elsewhere, too, Mr. Darwin says "it is difficult to avoid the suspicion that self-fertilisation is in some respects advantageous."

My explanation is that it is simply an unavoidable result of the loss of equilibrium between the pistil and corolline and nectariferous whorls. As long as insects visit a flower they are continually keeping up a sort of irritation at that region; the whole weight of the insect is often thrown upon the corolla. If it be a terminal flower, the insect alights on any petal or petal, and nothing induces the power to become irregular, but if the power be solitary, or slight, on the anterior side and so (I assume) thetically, until it can be demonstrated or disproved) causes the corolla to be bilateral, by determining a flow of nutriment to that part; though what innate forces may regulate the special peculiarities of structure in different flowers is at present quite incomprehensible.

This constant irritation and the continual drain upon the secretive organs must stimulate them to develop more and more, just as a man's arm increases by work, or the mamme may be made to secrete for prolonged periods; so that, in my view, it is not that insects have gone to the flowers because they were first conspicuous, but have actually themselves determined their conspicuousness. The process may have been a slow one, only affected in many generations; the result has been that nourishment has been delayed from the pistil, and the flowers have become in the majority of instances dichogamous. On the other hand, in the absence of insects, there is no such increase of energy in the outer whorls at the expense of the gynoecium, so that the balance is restored and self-fertilisation resumed. *George Henslow.*

(To be continued.)

Home Correspondence.

The Cucumber Disease and "Salus."—Will Mr. Worthington Smith kindly come to my aid in fighting the Cucumber Disease? Starting in an entirely fresh house, everything went merrily as marriage bells until the first Cucumbers were cut, and then the old enemy appeared on the under and True, though seeds, and in fact, plants, to make doubly sure, were had from a fresh place. The plants were instantly pulled up and burned. The disease has, however, got hold of other varieties, and we are now cutting a few, but a speck of sal, mixed with Salus, which eats through the leaves, and utterly destroys them in a very short time. The *Salus* seems to penetrate through them, causes them to bleed a sort of exudation, and then they are gone, if it does not kill the spores it destroys the leaves and the plant. But will it destroy the spores or prevent them

pushed, are also far more lasting than those gathered at the natural season. No good fairies would think of fixing May or other flowers on to the dry gallery altar, and pulpit fronts or other boards, as Holly leaves are impalpable for lettering, which appears to be your correspondent's ideal of church decoration, otherwise the flowers could not fade in half an hour. By simply mounting flowers for lettering, as for bouquets or wreath-work, with a medium of damp material, the durability for lettering, which appears through the longest services—or days either for that matter, as your correspondent will find after a fair trial. *D. T. Fish.*

Running to Waste.—The missing link in our life is being cherished up. The working man now able he will to save something, and there is a safe place where he may put it, in the Post Office Savings Bank. It is not enough to open certain doors, write up certain inscriptions, and trust to a general diffusion of the land; it is necessary that the man coming into contact with the man, and giving him at least equal opportunities for saving as for spending. It is true we are very slow in these matters, but experience has taught us that it is not enough to establish savings banks, and to let their magnetic influence to draw people to its doors. Happily the law has recognised this fact, and has provided collectors in many districts in connection with the Post Office Savings Banks, and the results to be seen in the streets. The good savings banks agencies as these do a vast deal towards encouraging habits of prudence and thrift among the working classes. Among a large portion of those who earn wages the possibility of saving seems hardly to have entered their thoughts. The working man has his various tradesmen that he has dealings with, and why not have his banker also? Let him have such a friend, and the publican and the pawnbroker perhaps may feel the change for the worse; but the butcher, the farmer, and the working man will be so much the better. Taken in the aggregate, the earnings of the working classes at the present day are colossal, and it is very grievous to see in many cases how this magnificent revenue is misapplied and wasted. The more frequent the money pours in, the more recklessly it is very often flung away. It is in vain to hope that the working classes will be raised to their true dignity while this process goes on. No rate of wages will effect a substantial improvement unless it depends chiefly on two words—industry and frugality—and that, is waste neither time nor money, but make the best use of both. Without industry and frugality nothing will do, and without them no other Diligence will do good, and no good will be done. It often seems as if the mass of working men were unconscious of the value of money. Let the man who spends his wages as fast as he gets them look at the gin palace. He there sees what his money can do in the way of its waste. He would rather be a beggar dwelling, if he would only learn to put his money in the right place. Let him be told that the State has taken some care of him, and has provided a bank where all he can save will be absolutely safe. Let him be told that his friends in the State would be glad to invite him to hand over his money, and will show him exactly what he is to do. It is not the interest of employers, and certainly it is not the interest of society at large, that the enormous collective wages of the working classes should run to waste. A saving man is a safe man, and one who by bestirring himself in youth generally secures both leisure and ease in old age. We admit that habits of saving are not unknown to those classes, but that which has been said in this paper is only a matter of fact, and on the rich harvest that remains to be reaped, and every endeavour should be made to help the working man to save. He can generally be trusted to earn and get good wages, but what to do with his money when he has it is the question on which the State should break down, and where he most needs the grasp of a part and friendly hand. The folly of many one in this is that he is always looking for something to turn up. By too much waiting things often turn down. The law of life is as inexorable as the law of the tides. There are certain styles of behaviour which lead to honour, usefulness, and success. I should like to fire the ambition of young people especially to be industrious, and to exercise foresight and economy. A gloomy aspect should never be put on their expectations. There is little hope of a young man if he begins life cowed down. One smile of encouragement is often of more value to him than gold. I would say to you, Young man, do not fret or complain; go to work as hard as you can, and stick to your work, and be careful of your hard-earned earnings. It is a welcome document that tells of providence among their working classes. No doubt there are instances of improvidence, but they can be amended, and this paper, if its character is to be kept before the public eye with wearisome persistency. With some doubtless it is often a true though a sad sketch, but it is a relief to turn from those to a higher grade of the community—higher, because they see

their opportunities more profitably. There are thousands who earn good wages, and who, if they used means aright, might gather a little store against old age, or the probable contingency of ill-health. There is room too for a lettering party to lay by, as there are abundant facilities for the humblest equally with the richest in the savings bank. Still there are fewer persons using this provident organisation than there might be, far fewer than the happiness of the poor would seem to be entitled to. It is something, however, to know that if we are not as exemplary in this respect as we might be as a nation, still we are tending towards improvement. Glasgow, for instance, has nearly three millions of money in the collection of its savings bank, and has nearly a hundred thousand depositors, mostly working men. Providence is a virtue in itself, and that it is also a benefit to the community in a variety of ways the use of those banks by class for class when they were despised, the above statement sufficiently demonstrates. It is quite evident that when once a person opens an account he is reluctant to withdraw his money, and takes it out in the smallest possible dribbles that his expenditures will allow. Thus the savings banks have to do with the bank organisation more extensively. The more we take this counsel the better for ourselves and for the community. *John Downie, West Coates, Edinburgh.*

The Gold Medal given by the City of Hamburg to Messrs. Elvort Brothers (see p. 505).—This beautiful gold medal was not sent by the City of Hamburg, but by the Gartenbau-Verein für Hamburg, Altona and Umeyged. H. G. Ribb. f.

Local Museums.—While fully endorsing your remarks on this subject (p. 471), I should like to offer a word of advice to those who may propose to start one of the kind. I had the pleasure of examining a monoyllable, initiated with the third letter of the alphabet—of local museums, is the omission to empower the curator to refuse to exhibit objects which are unsuitable. I know the difficulties which surround this question. Mr. Alderman Somersley sends a head of a South African antelope, or something else which has as little to do with the objects for which the museum was created as a Queen Anne's sherry penny or an American Indian's tomahawk, and yet must be placed in the collection, because the worthy alderman presented it! Then, again, empty shelves and cases look so ugly; and it is so nice to see the room filled, no matter how. Much of this is due to the originators, and they would only determine beforehand the objects to be shown; the particular museum shall illustrate, and authorise the "return with thanks" of all objects which do not conduce to this end. *An Old Curator.*

American Blight on the Auricula.—Not having seen the Auriculas that were alleged to be infected with the American blight, I know nothing about them practically, but the mention of the matter in the papers has suggested to me that a random shot by one whose eyes are shut might, by a fluke, hit the mark. I once had a dry border covered with *Lysimachia Nummularis*, the common Moneywort, and this was attacked by a *Phylloxera* to such an extent that the roots were literally embedded in the white flocculent matter peculiar to the insect. My random shot is in that direction; and I suggest that, if the *Lysimachia* is not allowed, so as to give the Auriculae the *Shilley Hibberd, Stoke Newington.*

The Proposed "Journal of Forestry."—I observe at p. 469 a paragraph in reference to the proposed *Journal of Forestry*, in which, while welcoming the announcement of the new venture, you express the hope that the proceedings of the meeting of that useful body, the Scottish Arboricultural Society. As chairman of the meeting of those gentlemen who resolved upon supporting the efforts to start such a journal, and as one of the Vice-presidents of the Scottish Society, and of this journal will be also a valuable aid to the Society in recruiting its ranks by disseminating and making known to a wider area than its own immediate membership its usefulness and worth. *Robt. Hutchison, Carlisle.* [We are glad to learn that the relations

between the proposed new journal and the Society are such as our correspondent states, and heartily wish it success. E.D.s.]

Hurricane at Inverary Castle.—During the raging of the storm on the 16th inst., several large Silver Fir, Beech, and Spruce trees of the old Castle of Lehanon, were blown down, but the chief injury caused by the last wind was where the old Beeches were forked in their branches, owing to the wet penetrating quite down through the trunks and the branches were rent asunder, and when the whirlwind got in amongst the branches, they were twisted out and tossed about in all directions. Outwardly those old Beeches look fair and healthy, but within they are full of rotteness and decay. *John Cain, Inverary Gardens.*

Extraordinary Set of Peaches.—"Vitis" in this week's issue is unfortunate in citing Mr. Miller's practice against the irrigating theory of setting Peaches. Has not Mr. Miller, according to his own statements in the *Gardener's Chronicle* about two years ago, been a "setter with the syringe of twenty year standing?"—and does not his present success show that he is quite right? We cannot suppose that Mr. Miller has at this date given up a practice that he had demonstrated by nearly a quarter of a century's experience to be the best. Our early Peaches this winter set every flower. They were thinned twice before stoning and once afterwards, and "Vitis" or any one else, is welcome to come and see what sort of a crop is on the trees now in blossom. I have not a word to say, I may state that I have never advocated "camel's-hair pencils," "bunches of feathers," or other "artificial fertilisation" practices of that kind. "Vitis" should keep himself read in the *Gardener's Chronicle*. *F. Simpson, Wootley.*

The Weather in North Notts.—The unprecedented rainfall of 22.03 inches has been registered here in six months, namely:—1876—October, 2.91 in.; November, 3.59 in.; December, 6.05 in.; 1877—January, 4.29 in.; February, 2.55 in.; March, 2.64 in.; total, 22.03 in. The rainfall in April is likewise much above the average, for up to this date (23) 2.65 inches have fallen. From the continued soddened state of the soil vegetation is very backward in this district, but there is now a good opening, and should the weather the wind has shifted out of the cold north-easterly currents into the south, and the temperature has risen considerably in the last few days. Gooseberries and Currants are in full flower at present, and should the frost now be over, there should be a very early abundance of blossoms. Of late years the crops of these fruits have been injured by spring frosts two years out of three here. Pears, Plums, and Cherries are likewise showing abundance of blossom-buds, which are now about opening, and should the weather now keep favourable, heavy crops may be expected, to make up for the losses last year. The Apples, being later in flowering, stand a little better chance of setting their fruit this year, and they likewise promise well as regards fall crops. The Apricots, Peaches, and Nectarines have set plenty of fruit here, but the trees, being protected on the walls with glass coverings, they are independent of the weather. *William Tilley, April 23.*

A Floriferous Tulip.—The following remarks may probably interest several of your readers. Having in my garden a Tulip which appears to be a permanent variety, having for the last three seasons produced two flowers on one stalk, and this year I was greatly surprised on looking at it to find from four lower stalks, each with one flower on one stem, another, two on another, and one on the fourth, a much weaker stalk. I never remember seeing such (except in the *Talpa persica*) till I first saw this three years ago with two flowers on one stem. It is growing in the border under the house, which has not been disturbed for years. Perhaps some of the readers of the *Gardener's Chronicle* may have noticed a similar case. *F. S. C.*

Ivy on Damp Walls, &c.—While highly appreciating the beauty and usefulness of the many varieties of Ivy for covering unsightly buildings, forming picturesque and quaint objects, and other decorative purposes, yet there are many unwelcome and serious objections to its use in covering costly buildings and good workmanship, for, let the building be brick, stone, or wood, it will soon spoil and decay if it be covered with Ivy. The practice of planting Ivy on houses for the purpose of keeping them dry is a great mistake. The notion that Ivy will keep a house dry is deeply erroneous, and the more I have been thoroughly convinced of the reverse being the case. I may instance a coach-house covered with Ivy, in which the damp was spoiling the carriage; if the Ivy was destroyed, and the place soon became quite

dry again. One of the lodges to this place was stripped of its coat of Ivy by a severe gale; it remained only a few days, and the lodge-keeper begged us to destroy it, as the place had not been free from dampness for many years. I might give many other illustrations in proof of my statement. I saw a piece of Ivy growing through a wall 14 feet thick, the size of one's wrist, and had the appearance of a tree, and as it increased in size. The parish church steeple here, which is 100 feet high, was once covered to the top with Ivy; it is now cleared off, and shows the destructive nature of its old green coat. Foresters generally have a dislike to Ivy growing on trees, and its spoils, and even kills them if grown on plaster-covered walls it soon causes the plaster to decay. Ivy will not adhere to perfectly dry walls or dead trees without some kind of fastening. The Irish Ivy is the best for covering, but the rapeseed and the best growers. *H. Gooding, Ebbw Vale.* [On buildings should be kept closely cut in. Eds.]

Clianthus puniceus.—At Woodstock Park may be seen a very fine specimen of *Clianthus puniceus*, or Glory Pea of New Zealand. At this time of year the plant is in full bloom, and the colour of its gorgeous racemes of coral-like blossoms. The plant here is planted out in the conservatory and trained up the rafters and spondrils of the house; it also covers part of the trellis of the back wall. The plant in question is very hardy, and has been allowed to ramble and blend its shoots with those of *Wistaria chinensis*, which is planted at the other end of the same house, and, as if by common consent, the two plants are always in bloom at the same time, when the effect is very beautiful. I would strongly advise those who may have to cover large pillars, &c., in lofty conservatories to try those two plants trained up and through each other, and allow the Glory Pea to make plenty of young wood, and they cannot fail to have pillars or arches of great beauty and elegance. *G. Dodd, Woodstock Park.*

Primulas: their Culture and Treatment.—These are the most useful greenhouse plants we have, and yet many fail to grow them to perfection. I generally sow the seeds on March 1 in pans filled with fine sand, and a shallow wooden frame. The soil in the pans is pressed down and covered with silver-sand, and then sprinkled over with water, and allowed to stand a few minutes before the seeds are sown. The seed-pans are placed in the Cucumbers and shaded with a cold frame, and the surface over when dry, and when they come into rough leaf I move them into an intermediate house for a few days, then put into 48-sized pots. The compost I use is made up of two parts loam, one of sand, and one of rotten manure mixed with a little cocoa-nut fibre, a few bones and oyster-shells broken fine and mixed all together; they are then put back into the intermediate house till the next move into 30-sized pots, and then I put them into a cold frame till the final move into 18 size, which are the pots I use for flowering. I generally grow about seven dozen, and flower one-half from September till March, while from the other half I take off the flower-spikes until the beginning of March; these are now in full bloom. As regards watering, I may say I never give water overhead, and during the winter months I never let them get too wet or too dry; if Primulas ever get thoroughly dry they seldom recover from it. I had a very fine specimen of *Primula* of blooms of my own growing which are 2 inches in diameter; this strain of seed, which I have grown for the last fifteen years, was obtained from the firm of Dickson, Brown & Tail, Manchester. *S. Brooks, Morfield, Ebbw Vale.* [A very good sample indeed. Eds.]

Reports of Societies.

The National Aricula Society's Show at the Crystal Palace. *April 24.*—The first Southern show of the National Aricula Society has come to an end, leaving behind it only pleasant memories. It was truly a grand show as to quality, and in the matter of extent was considered on all sides to have been the largest ever seen. It was a great day for the Artists, of whom there was a strong gathering, and many were the hearty greetings between the redoubtable growers of North and South, old friends in print and by correspondence, though strangers in the flesh. Owing to the backwardness of the season, the Northern florists generally were better time, so that but few could compete with their Southern rivals. Those, however, who did come up to town—i.e., the Rev. F. D. Horner, Mr. Ben Simonite, and Mr. S. Cooper, of Timperley, were in the best form, and all well liked the board of the most valuable prizes. The Rev. F. D. Horner was especially impressive, and showed in fine form; and Mr. Ben Simonite, the worthy Sheffielder, contributed some magnificent blooms—if he does live in the most smoke-begrimed

spot in the busy Northern town. Mr. James Douglas and Mr. Turner well represented their Southern friends, though they were not so successful in the prize lists; but with the enthusiastic florist a defeat to-day means a determined struggle for victory on the morrow, and our Northern friends must look well to their plants for next year, or their Southern friends will have to say as they did at a show in the South next spring was a settled thing, which at present it is not, but the expression of a hope that the National Society would make a Southern show an annual fixture in its programme, was so unanimous that we have no reason to doubt, but the little doubt of its being the correct thing to do, or that it will be done. The success of the show on this occasion was too decided to allow of its being dropped; and judging by the great amount of interest in the show, by the general approval of the Crystal Palace, and the admirable arrangements made by the Company's officials, Mr. G. Thomson and Mr. F. W. Wilson, we can only hope that the Crystal Palace may again be the trying place. In the afternoon the judges, exhibitors, and friends of the movement lunched together, Mr. Charles Turner, in the absence of the President, F. Whitburn, Esq., taking the chair. The toast of the day was "Success to Floriculture, especially desiring continuance and prosperity to the National Aricula Society," proposed by Mr. Turner, and replied to in most suitable terms by the Rev. F. D. Horner. "The Judges" was replied to by the Rev. F. Tymons, Cloghran, Drumcondra, Ireland; and "The Exhibitors," proposed by Mr. Llewellyn, was acknowledged by Mr. Ben Simonite and Mr. James Douglas. "The Horticultural Press" was proposed by the Rev. F. Tymons, and responded to by Mr. Shidey Hibberd and Mr. Thomas Moore. The Escovee of the Southern Show was proposed by the Rev. F. D. Horner, and replied to by Mr. E. S. Dodwell, who bore testimony to the valuable assistance which had been received from Mr. Thomson and Mr. Wilson. The judges were the Rev. F. Tymons, Mr. Thomas Moore, Mr. F. Douglas, Colonel Napier, and Mr. Charles Turner, and all awards were received with great satisfaction.

In the class for twelve dissimilar varieties there were five competitors, and the Rev. F. D. Horner, Kirky Malzeard, Ripon, came in 1st, with John Simonite, Clontarf, Dublin, in 2nd, Duke of Devonshire, Smiling Beauty (Heap), Fizaro (Campbell), Champion (Fage), Ann Smith (Smith), Freedom (Booth), George Lightbody (Heady), Anna (Trail), Prince of Greens (Trail), Charles J. Perry (Turner), and Lancaster (Lancaster), Topsy (Kay), Admiral Napier (Campbell), Charles J. Perry, Robert Trail (Lightbody), Eliza (Sims), Smiling Beauty and Lancashire Hero (Lancashire); and Mr. Turner, Slough, 4th, with Mrs. Sturrock (Martin), Crucifix (Clegg), General Nell (Trail), Robert Trail (Lightbody), J. Waterston, Charles J. Perry, Colonel Champey, Pandora (Turner), Squire Chilman (Wilmer), Lord Elgin (Finlayson), Peacemaker (Turner), and a seedling. The other competitor, Mr. H. Jones, Arrow Hill, Clontarf, Dublin, took 5th, Duke of Devonshire, Wellington (Dickson), Formosa (Smith), Miss Willoughby (Hutton), Charles J. Perry, Squire Smith (Chapman), General Bolivar (Smith), Counts of Wilm (Cheetham), Duke of Cambridge (Dickson), and Ironclad (Folger), taking two seeds.

For six dissimilar varieties, the Rev. F. D. Horner was also 1st, with Lancashire Hero, Prince of Greens, Smiling Beauty, Fizaro, George Lightbody, and Trail's Anna; 2d, Mr. James Douglas, with Beauty of the North (Lloyd), Charles J. Perry, Admiral Napier, Colonel Champey, and Lancashire Hero; 3d, Mr. Ben Simonite, with Lord Palmerston (Campbell), Sims' Eliza, Fanny Crossland, Lancashire Hero, Beauty, and Lovely Ann (Oliver); 4th, Mr. Turner, with George Lightbody, and Queen (Horsefield), Charles J. Perry, Mrs. Sturrock, Admiral Napier, and Colonel Champey; 5th, Mr. H. Jones, with General Nell, Countess of Dunmore (Lightbody), Eliza, Miss Willoughby, Formosa, and Countess of Wilton.

Again, in the class for four dissimilar varieties, was the Rev. F. D. Horner 1st, with Smiling Beauty, George Lightbody, Prince of Greens, and Fizaro; Mr. Turner coming in 2d here with Charles J. Perry, Colonel Champey, Alderman Vardy, and Mrs. Sturrock; Mr. Douglas 3d, with Smiling Beauty, Eliza, Colonel Champey, and a green-eyed seedling; and Mr. H. Jones, with General Nell, Heald (Wilson), Mrs. Smith (Smith), and Miss Willoughby.

In the class for pairs the Rev. F. D. Horner also held his own, coming in 1st with George Lightbody

and Charles E. Brown; Mr. James Douglas 2d, with Lady Lancaster (Gairns), and Charles J. Perry; Mr. Ben Simonite 3d, with Charles E. Brown and S. Cooper; and Mrs. Budge 4th, with Charles E. Brown, the Rev. B. H. Margetts, Lyddington, Uppingham, 4th, with Napoleon (Trail) and Beauty; and Mr. Turner 5th, with Charles J. Perry and Colonel Champey; Mr. H. Jones showing General Nell and Formosa.

In the four classes for single specimens the Rev. F. D. Horner was well-nigh invincible, taking by far the largest share of the awards. For a single green-eyed variety he was 1st with Duke of Devonshire, Prince of Greens, 3d with Colonel Taylor, 4th with Lancashire Hero, and 6th with Rev. George Jeans (Trail); Mr. Douglas being 5th with Lord Palmerston, 7th with Lovely Ann, and 8th with a seedling—a promising flower, with a deep violet purple body colour. Amongst other varieties shown we noticed Countess of Dunmore, from Mr. S. Cooper, The Hollies, Timperley; George Lightbody, Anna, Imperator, and Apollo (Beeton), from the Rev. F. D. Horner; Highland Boy (Bollock), from Mr. Douglas; Lady A. Wilbraham (Oliver), and Sir John Moore (Lightbody), from Mr. Turner.

In the grey-eyed class seven out of the eight prizes offered went to the Rev. F. D. Horner, viz., the 1st, with George Lightbody, 2d with Duke of Devonshire, E. Brown; 4th, with Alma (Lightbody); 5th, 6th, and 7th, with Lancashire Hero; and 8th with Alexander Meiklejohn (Kay). The 2d prize went to Mr. Douglas, who had Robert Trail; Mr. Douglas also had the 3d prize with George Champey, George Lightbody, and John Waterston, and Mr. Turner examples of his Colonel Champey and Fletcher's Mary Ann.

With white-eyed varieties the Rev. F. D. Horner took the 1st prize with Duke of Devonshire, 2d, with Smiling Beauty; 2d, with Catharina (Surremances); and 4th, with Taylor's Glory; Mr. Douglas came in 3d, with Catharina, and 5th, with Ann Smith; and Mr. Turner 6th, with Heady's Arabella.

The next class, which was single self, was better contested, and five out of the eight prizes fell to the Rev. F. D. Horner. These were, the 1st with Fizaro, 3d with Duke of Argyll (Campbell), 4th with Blue Bell, 5th with Metropolitan, and 6th with Duke of Devonshire. Mr. Douglas was 2d with the new Ellen Lancaster (Folman), Mr. Ben Simonite with a rich rose crimson seedling, and Mr. Turner 7th with Pendelo (Turner). Ellen Lancaster also came from Mr. Horner, Metropolitan from Mr. Douglas, and Mrs. Smith, Master Hole (Turner), and Lord Lee from Mr. S. Cooper; and Formosa from Mr. Turner.

Three fine collections of fifty plants each were staged, and they made a fine display. The 1st prize went to Mr. Turner, with Mr. Douglas, and the 3d to Mr. S. Cooper. Space forbids our giving the names of more than a few shown in this class, and we have selected for mention only such varieties as were not exhibited in any of the previous classes. In Mr. Turner's collection these were, Duke of Devonshire, Clipper (Turner), Garnet (Turner), James Douglas (Turner), Sarah (Downing), Prometheus (Turner), Sir Robert Peel (Finlayson), Prince Alfred (Turner), Mireole (Turner), Eclipse (Martin), Superb (Heady), Calypso (Turner), Apollo (Hudson), Metropolitan (Parker), and the following apples, which have all been raised at Slough—Mrs. Llewellyn, Percival, Mrs. Thomson, Mrs. Carter, Sensation, Dolly Varden, Elsie, Edith, Topsy, and Livings; and in Mr. Douglas' collection these were, Duke of Devonshire, the other classes Lady Sophia Dumaresque, Miss Arkley (McDonald), True Briton (Hepworth), Unique (McLean), Perfection (Smith), Marie (Chapman), St. Augustine (Cunningham), and Alice (Simonite). Mr. Douglas had Lightbody; 3d, Prince, Brilliant, Miss Reid, Elcho, Edgar, and Mercury.

For a dozen dissimilar alpinas Mr. Turner was 1st, with Nat Norman, John Ball, Dolly Varden, Facets, Victoria, Queen Victoria, and Mrs. Cooper's Beauty; 2d, Queen Victoria, Mrs. Eleanor, and Veauvins; Mr. Douglas was 2d with Spangle, Beatrice, Sydney, Masterpiece, Elcho, Edgar, Bronze Queen, King of Crimsons, Mercury, Brilliant, and Miss Reid.

In the following class, which was for six alpinas, Mr. Turner was 1st, with Queen Victoria, Bronze Queen, Queen Victoria, Mrs. Llewellyn, Topsy, Dolly Varden, and John Ball; Mr. S. Cooper was 2d with Neatness, Ovid, Brilliant, Dazle, Beatrice, and Diadem; and Mr. Douglas 3d, with Bronze Dragon, Brilliant, Beatrice, and Dazle.

Mr. Douglas came 1st in the single specimen class with a remarkably large, almost black velvet self-seedling, subsequently named Silvia; Mr. Turner being 2d, King of the Belgians, 3d with Distinction, 4th with Miss Vasey, 5th with Nat Norman, and Mr. S. Cooper, 6th with Diadem.

The premier Aricula in the show was a beautiful plant, with a tuess of eight perfect pips, of George Lightbody, shown by the Rev. F. D. Horner. First-class Certificates were awarded by the Judges

to the Rev. F. D. Horner for the splendid white-edged Auricula, the *Simonne* (Walker), in which Mr. Horner considers an even better flower than Heaps' Smiling Beauty. To Mr. Ben Simonne for Auricula Frank Simonne, a splendid white-edged variety, with a rich violet body colour; Talsman, a green-edged flower of beautiful form, the black body colour being well defined; William Bradshaw, grey-edged, with rather narrow dark maroon ground, but fine paste, and good yellow eye; and Fanny Crossland, a striking flower belonging to the white-edged class; the body colour is violet, and the paste good, but the eye is not quite bright enough. To Mr. Turner, for Clipper, a fine dark self, and Peacemaker, a grey-edged variety; also to the same exhibitor for alpinas John Ball, a strikingly beautiful self, of a dark glossy black colour, and rich gold tints; Mrs. Thomson, also a beautiful self; and Distinction, which belongs to the same type. To Mr. R. Dean, for three novelties in alpine Auriculas, named Charming, Mrs. Cooper, and Captivation, all of which have well-defined lace edgings. Charming has a dark purple body, laced with pale lilac; Mrs. Cooper is larger than the last-named, of a deep maroon shade, laced with pale rose; and Captivation has a maroon ground with pale ochre facing. There are no doubt the forerunners of a beautiful race, which we hope Mr. Dean will do his best to increase.

The Polyanthuses shown were generally of so poor a quality that they need not specially be alluded to. We must, however, mention that Mr. Dean received Certificates for Polyanthus Avalanche and Purity, both very fine whites; and Mr. G. Smith for gold-laced Polyanthus Duke of Wellington. The general effect of the exhibition was considerably heightened by a fine group of forced Roses, *Auroras*, &c., contributed by Mr. Turner, and which were most effectively backed up by an excellent assortment of handsome foliage plants belonging to the Crystal Palace Company, whose garden superintendent, Mr. Thomson, also filled one of the long tables with an interesting assortment of succulent plants, admirably grouped in a geometrical pattern.



Natural History.

THE HAWFINCH.—At least one family of these birds have bred here during the last few years. Two years ago they made sad work with the Peas, and either two or three were caught in the net. Last summer I had the young ones in my hand, after they had flown from the nest, and I put one in a cage, in the hope that the old birds would feed it, as the bullfinch does. The cage was hung up on a tree, and left undisturbed, but at the end of the second day I found the bird dead. The old birds are very shy, and perhaps they had not fed it. The other members of the family I saw several times afterwards. Their nest was on a Scotch Fir in the pleasure-grounds, and about 40 feet from the ground. The birds have been seen here again this spring, about 100 yards from the same tree. About four years ago I found a fine adult specimen caught by the head in a wire netting near from the same place. It was nothing the worse for its mishap, and rewarded its deliverer by a peck on the hand with its powerful bill that turned the skin blue. I suppose the hawfinch has been found as far north as this before, but not often. I have lately topped the tree where the old nest is, but it does not appear to be tenanted as yet. It is a twiggy looking structure, but it is too high up to be examined, and is placed in an inaccessible part of the tree. *J. Simpson, Worsley Hill Gardens, Sheffield.*

A short account of this bird may be interesting to some of your readers. As a resident in Middlesex, I have had opportunities of observing the habits of this bird. It breeds here every year, and orchards seem to be the favourite nesting-place. I have known as many as three nests within a few yards of each other, and all built in Apple trees, which they seem to prefer to any other.

The nest is made of twigs and lichen, lined with fibrous roots, in which are deposited from four to six eggs, of a pale olive-green ground, streaked with grey and spotted with black. Sometimes the eggs are without any spots, but they are always streaked with grey. The young ones and parents continue in company long after they leave the nest. They are destructive birds in the garden, eating green Peas, Cherries, &c., and about the time the *Vew* berries are approaching maturity they may be seen in numbers, and the small branches they nip off with their powerful beak when searching for the berries completely strip the ground, making one think that squirrels had been at work. They are certainly very shy birds, and on the first approach of danger make for the highest trees in the neighbourhood. *W. E. T.*

HATCHING OF ROOKS.—I want to ascertain the earliest and latest periods at which rooks are hatched. Can your obliging correspondents help me? Gilbert White has but little to say of the natural history of the rook. *George H. Haydon, Bell'hem Hospital, S.E., April 21.*

Notices of Books.

L'Afrique Centrale; Etude sur les Produits Commercialisables. Par M. Bernardin. Avec une carte. Gand: C. Annot-Breacknach.

Professor Bernardin of Melle has just issued another of those little books, which, when brought together, useful records of the hints of economic plants. The present pamphlet does not, as hitherto, deal with any special class of plants or special products, but is an enumeration of the resources of Central Africa under the above title. The products of the three kingdoms of Nature are all enumerated, those of the vegetable kingdom being placed first, as they are by far the largest and most important; the arrangement of these is on a commercial system, that is, textile fibres are brought together, then oils and fats; dye-stuffs, spices and narcotics; drugs, food-grains and starches; caoutchoucs, wools, and flowers. Under the first heading, that of fibres, we find a notice of the Baobab (*Adansonia digitata*), and the application of its bark for paper-making. The Bamboo is next treated of, and its recent introduction for a similar purpose to the last, that of a paper material, is discussed. As an illustration of the careful collation of recent facts, M. Bernardin not only quotes from Mr. T. Rostklee's pamphlet on Bamboos contained in a paper material, but refers also to the writings of Stanley and Cameron; indeed, more than once through the forty-six pages of which the pamphlet is composed the author shows himself alive to modern facts and discoveries. The oil of *Trichilia emetica*, Vahl, a meliaceous plant, is used by the natives in the preparation of their food, and is described as being of excellent quality. M. Bernardin tells us that the seeds are imported to Rotterdam by the Commercial Society of Mozambique, and the oil is extracted in Cologne for the manufacture of soap. On the subject of Cola or Kola nuts we have nothing that is really new. *Cola acuminata* is of course credited, and rightly so, with furnishing one kind; but the bitter Kola is still referred to a species of *Garcinia*. With regard to caoutchouc, the author thinks that *Landolphia owariensis* and another species of *Landolphia*, together with a species of *Ficus*, furnish the bulk of African caoutchouc. Other plants, however, help to swell the African produce.

These notes will serve to show that the pamphlet is made up of interesting matter.

Obituary.

WE regret to record the death, on the 17th inst., at the age of 57 years, of Mr. DAVID WAUGH CUNNINGHAM, for many years gardener to Lord Eghly, Moor Park, Rickmansworth, by whom he was highly esteemed; and formerly gardener to the Bishop of London at Fulham.

We have also to record the death, on the 24th inst., at Hastings, in her sixtieth year, of Mrs. MARY ANN CUTBUSH, widow of Mr. WILLIAM CUTBUSH, late of the Barnet Nursery, Herts.

An intimation has also reached us of the death, on the 20th inst., at 18, Melville Terrace,

E. Linburgh, of Mr. JOHN GAVIN, who for upwards of forty-three years was head gardener to the Earl of Moray, at Donibristle, Fife-shire. Mr. Gavin was in the eighty-fifth year of his age.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON FOR THE WEEK ENDING WEDNESDAY, APRIL 25, 1877.

MONTH AND DAY.	BAROMETER.				TEMPERATURE OF THE AIR.				HYGROMETRIC DEGREE.				WIND.	THERMOMETER.
	Mean Reading.	Barometric Pressure from 1000 Feet to Top of Barometer.	Temperature from 1000 Feet to Top of Barometer.	Temperature from 1000 Feet to Top of Barometer.	Temperature from 1000 Feet to Top of Barometer.	Temperature from 1000 Feet to Top of Barometer.	Temperature from 1000 Feet to Top of Barometer.	Temperature from 1000 Feet to Top of Barometer.	Temperature from 1000 Feet to Top of Barometer.	Temperature from 1000 Feet to Top of Barometer.	Temperature from 1000 Feet to Top of Barometer.	Temperature from 1000 Feet to Top of Barometer.		
April 19	30.00	+0.95	1.37	34.1	42.7	-4.5	33.5	71	W	SW	0.00	1.00	0.00	0.00
20	30.00	+0.87	0.72	37.5	42.2	-4.7	38.0	68	W	SW	0.03	0.03	0.03	
21	29.71	-0.65	0.41	4.4	44.1	-3.8	40.5	71	W	SW	0.03	0.03	0.03	
22	29.45	-0.30	0.65	17.1	42.7	-3.1	39.6	75	W	SW	0.05	0.05	0.05	
23	29.31	-0.36	0.36	20.0	40.5	-2.9	34.1	66	W	SW	0.04	0.04	0.04	
24	29.35	-0.29	0.73	34.4	44.7	-2.5	36.7	71	W	SW	0.03	0.03	0.03	
25	29.72	-0.64	0.35	18.8	43.2	-5.1	36.6	78	W	SW	0.03	0.03	0.03	
Mean	29.65	-0.40	0.58	37.97	41.9	-4.0	39.79	71	variable	variable	0.03	0.03	0.03	

- April 19.—A fine bright day, partially cloudy. Windy Cloudless at night. Cool.
- 20.—A fine bright day; generally cloudy. Cool.
- 21.—Overcast, dull, and wet till 6 P.M. Fine after.
- 22.—A cloudy, but bright day, with occasional rain. Disturbance heard about 6 P.M.
- 23.—Fine, generally cloudy. Thunder and lightning at 4 P.M., accompanied with rain.
- 24.—A fine bright day. Heavy clouds, distant thunder and rain till half 7 P.M. Cloudless at night.
- 25.—A fine day, but generally cloudy. Cool.

LONDON: Barometer.—During the week ending Saturday, April 21, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.18 inches at the beginning of the week to 29.67 inches by the afternoon of the 16th, increased to 29.66 inches by the night of the same day, decreased to 29.58 inches by the night of the 17th, increased to 30.25 inches by the morning of the 20th, and decreased to 29.75 inches by the end of the week. The mean reading for the week at sea level was 29.86 inches, being 0.05 inch higher than that of the preceding week, and 0.09 inch below the average.

Temperatures.—The highest temperatures of the air varied from 58° on the 20th to 43° on the 18th; the mean value for the week was 49½°. The lowest temperatures of the air ranged from 32½° on the 20th to 40° on the 15th; the general mean for the week was 37°. The mean daily range of temperature in the week was 12½°, the greatest range in the day being 25½° on the 20th, and the least 8½° on the 21st.

The mean daily temperatures of the air for the week are as follows:—15th, 45½; 16th, 43½; 17th, 38½; 18th, 37½; 19th, 42½; 20th, 43½; 21st, 44½; and the mean reading for the week at sea level averages were 1°, 5°, 3°, 6°, 8°, 0°, 2°, 5°, 4°, 7°, and 3°. The mean temperature of the air for the week was 42°, being 5° below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 117° on the 19th, and 116° on the 20th; on the 21st the reading did not rise above 53°. The lowest readings of thermometer on grass, with its bulb exposed to the sky, were 29° on the 20th and 31° on the 18th; on the 15th the lowest reading was 37°.

Wind.—The direction of the wind was E.N.E. and E., and its strength brisk. The weather during the week was dull, cool, and the sky generally cloudy. Gales prevailed on the 16th and 17th.

ENGLAND: Temperature.—The highest temperature of the air observed by day were 62½ at Cambridge, and 61° at Leicester; at Wolverhampton 52½ was the highest temperature; the average value from all stations was 56½°. The lowest temperatures of the air observed by day were 28½ at Bristol, and 29° at Cambridge and Eccles; at Sunderland the lowest temperature; the mean value from all stations was 33½°. The range of temperature in the week was the greatest at Cambridge, 33½°, and the least at Brighton, Lewisham, and London, all 19°; the mean range of temperature from all stations was 15½°. The mean of the seven high day temperatures was

the highest at Truro and Cambridge, both 53°, and the lowest at Wolverhampton, 49°. The general mean from all stations was 49°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 35°, and the highest at Truro, 42°; the mean from all stations was 38°. The mean daily range of temperature was the greatest at Cambridge, 46°, and the least at Hull, 8°. The mean daily range from all stations was 14°.

The mean temperature of the air for the week from all stations was 42½°, being 1½° lower than the value for the corresponding week in 1876. The highest was 46°, at Truro, and the lowest 39½°, at Wolverhampton.

Rain was measured at Plymouth to the amount of 2½ inches nearly, and at Truro 1½ inch fell, but at Norwich and Stratford one-hundredth of an inch only was half an inch. The weather during the week was generally dull and stormy, and the sky cloudy. Gales occurred generally over the country on the 16th and 17th. Solar hail was seen at Bristol on the 20th inst.

SCOTLAND: *Temperatures*.—The highest temperatures of the air ranged from 49° at Edinburgh to 54° at Aberdeen; the mean from all stations was 51°. The lowest temperatures of the air varied from 28° at Perth and Dundee to 34° at Greenock; the mean from all stations was 30°. The range of temperature in the week was the greatest at Edinburgh, 28½°, and the lowest at Aberdeen, 21°; the mean range from all stations was 26°.

The mean temperature of the air for the week from all stations was 42½°, being 1½° lower than the value for the corresponding week in 1876. The highest was 43°, at Greenock, and the lowest 41°, at Perth.

Rain.—The fall of rain varied from 1½ inch at Greenock, to one-tenth of an inch at Aberdeen and Leith; the average fall was half an inch.

DUBLIN.—The highest temperature of the air was 59½°, the lowest 32½°, the range 27°, the mean 45½, and the fall of rain 1.69 inch.

JAMES GLAISHER.

Variorum.

MEADOW FLOWERS, fair and sweet,
Can ye feel the summer?
Can ye hear her dainty feet
Coming softly, light and fleet—
Will ye not outrun her?

Spring up, white Anemone,
Graceful as court lady;
King, ye Harebells, merrily,
Hyacinths, stand ye by;
She will greet you, ye may be.

Blushing red, Rose Campion fair,
Like a rustic beauty,
Hides behind the Maidenhair,
White Veronica, like a nun;
Open blue eyes from duty.

She is coming, is our queen,
Softest breeze shall waltz her;
Palmly bows of freshest green
Wave where'er her robe is seen,
Little brooks bring laughter.

Every joyous scent and sound
Rises swift to greet her;
Even the loud incense organ
Shares the fragrance of the ground:
Let us go and meet her.

S. Williams, in "Good Things."

FARMING IN THE CASE OF GOWRIE.—This had always been considered purely cow-growing land. The produce some 20 or 25 years ago would hardly be credited—50 or 60 bushels per Scotch acre, or 60 or 70 imperial—but then it was comparatively a virgin soil, being an alluvial deposit; and no land can stand successive grain cropping unless manured. On the continent of America, and in certain parts of the crops have been taken, the land is allowed to run to waste, and fresh land taken into cultivation. As I have said, rents rose considerably during the war; they were paid in money, with a proportion of Barley, which was nearest the market, and in this the Tay. When I succeeded at the end of 1826 prices of grain had fallen considerably, and I found a large amount of arrears due. In 1828 I had the estate valued, the consequence being a reduction of rents to the present extent of 40 per cent. At the same time being aided by the advice of a very able land steward, I came to the conclusion that bare fallow, though advisable for cleaning foul land, would not restore its fertility, and that pure straw was applied to the land, trodden down in open courts by Highland cattle taken in for a few shillings a head. In 1833 I was fortunate enough to procure a first-rate tenant well versed in green crop cultivation, and he was the first man in this district who tied up cattle to feed. The land was

drained (so shallow) by a wedge-shaped piece of clay being taken out and inverted—gorge or branches being sometimes inserted in these drains, cut at the bottom of high ridges. This was followed by stone, wood, and concrete drains, afterwards horse-shoe tiles, made by hand, were used, then pipe-drain-iron was introduced by Lord Tweeddale, made by a machine on the principle of a Neapolitan macaroni machine. I erected tile-works, and the tenants were supplied at cost price, cutting the drains themselves, but still too shallow—feet instead of 4 feet, and not acknowledged as the proper depth. The prices of grain continued to vary considerably, I resolved to adopt a plan tried by a friend of mine, Lord Wolloughby d'Eresby, of grain rents for the clay lands, and half grain and money for the blue lands. Facilities were given for adopting this plan, on account of the prices of grain being struck annually, calling "Fairs' prices," for the purpose of fixing the stipends of ministers. The average number of bushels corn was considered as 12 bushels of Wheat, 18 of Barley, 18 of Oats—and a third was calculated as a fair rent; two-thirds being counted for expenses and farm profits. Of course I rested with the tenant to add to the profit by the improvement of the land. On lands of superior quality an addition of 1 or 2 bushels was considered a fair rent. That the grain rent was fairly calculated appeared on going over the books of the tenant referred to for the last thirteen years of his nineteen years' lease, when it was found that there was only a difference of £30 during that time from his original money rent. His books also showed that notwithstanding a large outlay the first six years the tenant had lived comfortably with his family, and at the end had more than doubled his capital. Farming even then paid well, we had not then to contend with unpropitious seasons, and expense of working the farm. Horses costing now about £90 could then be purchased for £30 to £35. Farm servants' wages were £9 to £10 a year, with cottage, meal and milk, fuel and garden; now single men's wages, with lodgings as before, are £30 or £35. With great advance in saddlers' and blacksmiths' bills, I believe this increased expenditure is only to be met by improved manure and steam cultivation. *Lord Kinnaird, in a Letter to Mr. Falconer King.*



Law Notes.

ACTION BY A GARDENER FOR ILLEGAL DISTRESS.—At the Marylebone County Court, on the 12th inst., the case of *Isford v. Jones* was heard before Mr. Sergeant Wheeler and a jury, in which the plaintiff, described as a master gardener, carrying on his business at Victoria Road, Kilburn, sued the defendant, a former landlady of the plaintiff, to recover the sum of £50 as damages in consequence of injuries he had received in course of his business through illegal distress made upon him by the defendant under the following circumstances.

The plaintiff, being called, stated that he formerly occupied Chapel Cottage, Kilburn, of which the defendant was the landlady, and upon which property he had erected extensive greenhouses; but finding more eligible premises he gave defendant notice to quit, but before that three months' notice had expired the defendant had followed him to his present address, and put a broker into possession, who, after remaining in possession three days, and taking an inventory, was paid the sum of £10 and left, and the present action was brought to recover the sum now sued for, an excessive and illegal distress. The plaintiff put into Court a mass of documentary evidence in support of his claim, and stated that he had since that time commenced the defendant had paid £13 into Court, and had brought a counter action for £30 for dilapidations.

At this stage of the case the learned Judge said that it was purely a question of amount, inasmuch as the defendant by paying £3 into Court had acknowledged the plaintiff's right, but the question as to it was clear from the documentary evidence before the Court that the defendant had no right to levy a distress until a quarter's rent was due, which in this instance was not the case; then again, as the counter-claim could not legally be maintained, he should present the plaintiff's claim to the jury, and strike out the counter claim. His Honour, after addressing the jury on the whole facts of the case, they, without retiring from the box, returned a verdict in favour of the plaintiff for £15 *os. 6d.*, with costs.

Enquiries.

He that questioneth much shall learn much.—BACON.

183. HARDINESS OF *ARACARIA EXCELSA*.—I have a fine *Aracaria excelsa*, too large for my conservatory, which I am thinking of planting out-of-doors next month in a spot as sheltered as I can find. Can any of your readers inform me if they know of any planted out-of-doors, and if it will be likely to live? Of course I should mat it up in a severe winter. If I remember right a few weeks ago it was stated in your paper or the *Field*, that it was sufficiently hardy to live. *R. Thornton, High Cross, Framfield, Sussex, April 2.*

184. *TRICHOFLIX SUAVIS*.—Can any of your correspondents be good enough to use the *Trichoflix suavis* to which you have flowers on a spike, as I have a plant now with two flowers of four each? *T. C. H. (We think not. EDS.)*

185. THE DADLY LONGLEGS.—I shall be greatly obliged if you or any of your correspondents can inform me of a method of destroying, without injury to vegetation, the larvae of the Tipula olereacea, or Daddy Long-legs, which is so destructive to the grass in the vicinity of London. I have tried several remedies, but none answer the purpose, but we believe the most effective and safest plan is to frequently roll the grass with heavy rollers. *EDS.*

186. CHARRED BONES.—Will you kindly inform me if you have any experience in the use of charred bones instead of charcoal for potting purposes? I have a supply of such bones, and think it is possible they might be of service instead of the charcoal. *M. H. (We have no experience. Will some of our readers kindly answer this question? EDS.)*

Answers to Correspondents.

ECCLESIASTICAL NURSERYMEN: *P. G. S.* If the Hon. and Rev. gentleman chooses to turn nurseryman there is nothing to prevent him from doing so, but he should not, however, be allowed at any time to compete at a flower show in other than nurserymen's classes.

GARDENERS' TESTIMONY.—The expiration of seven years' lease, unless he is a nurseryman, or the lease contains a stipulation to the contrary, cannot legally cut down such trees as Gooseberries and Currants, &c., unless they have been purchased and planted then during his tenure. We cannot say where you can purchase the small book, relating to garden law, which was published some years ago.

GRAMMATOPHYLLUM: *Duffier*. These plants require to be potted in well-drained peat, and to receive the gentlest treatment, and to be kept in a greenhouse, to be grown in a moist stove, in company with such subjects as Indian Orchids.

INSECTS: *J. P. S.* *Pulvinaria vitis*. *A. M. S. Thallitis*. *Chrysomelidæ*.

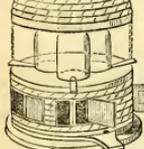
LATHYRUS: *J. T. R.* Both the species may generally be met with in botanic gardens, but neither the seeds of the one nor the tubers of the other are cultivated for food, so far as we know.

MELON: *A. H. H.* We should think not, but have never tried it. The variety in question would no doubt grow in the open air, but then the fruit would be worthless we should think.

NAMES OF PLANTS: *G. R.* The flower faded before we could identify it, but it may be *Narcissus Ponicus* var. *angustifolius*, which we cultivated in 1876, or the variety *ortus*, which follows very close upon it.—*J. Maund* is right in supposing his seedlings to be common Spruce.—*R. C. Appleton*. The *Cattleya* is a variety of *C. Mossii*. The *pseudobulb* are, we believe, those of the Dove-drover, *Peristeria alata*.—*J. Hillman*. 1, *Begonia argyrostigma*; 2, *Hibbertia divaricata*; 3, *Phlox*; 4, *Phlox*; 5, *Phlox*; 6, *Phlox*; 7, *Phlox*; 8, *Phlox*; 9, *Phlox*; 10, *Phlox*; 11, *Phlox*; 12, *Phlox*; 13, *Phlox*; 14, *Phlox*; 15, *Phlox*; 16, *Phlox*; 17, *Phlox*; 18, *Phlox*; 19, *Phlox*; 20, *Phlox*; 21, *Phlox*; 22, *Phlox*; 23, *Phlox*; 24, *Phlox*; 25, *Phlox*; 26, *Phlox*; 27, *Phlox*; 28, *Phlox*; 29, *Phlox*; 30, *Phlox*; 31, *Phlox*; 32, *Phlox*; 33, *Phlox*; 34, *Phlox*; 35, *Phlox*; 36, *Phlox*; 37, *Phlox*; 38, *Phlox*; 39, *Phlox*; 40, *Phlox*; 41, *Phlox*; 42, *Phlox*; 43, *Phlox*; 44, *Phlox*; 45, *Phlox*; 46, *Phlox*; 47, *Phlox*; 48, *Phlox*; 49, *Phlox*; 50, *Phlox*; 51, *Phlox*; 52, *Phlox*; 53, *Phlox*; 54, *Phlox*; 55, *Phlox*; 56, *Phlox*; 57, *Phlox*; 58, *Phlox*; 59, *Phlox*; 60, *Phlox*; 61, *Phlox*; 62, *Phlox*; 63, *Phlox*; 64, *Phlox*; 65, *Phlox*; 66, *Phlox*; 67, *Phlox*; 68, *Phlox*; 69, *Phlox*; 70, *Phlox*; 71, *Phlox*; 72, *Phlox*; 73, *Phlox*; 74, *Phlox*; 75, *Phlox*; 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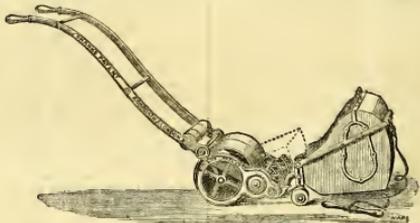


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 54-inch Machine 34 0 0
 56-inch Machine 36 0 0
 58-inch Machine 38 0 0
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 72-inch Machine 52 0 0
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 76-inch Machine 56 0 0
 78-inch Machine 58 0 0
 80-inch Machine 60 0 0
 82-inch Machine 62 0 0
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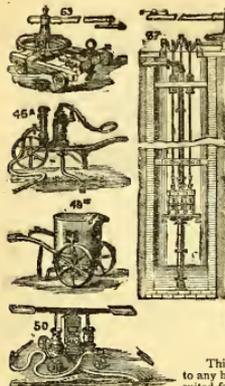
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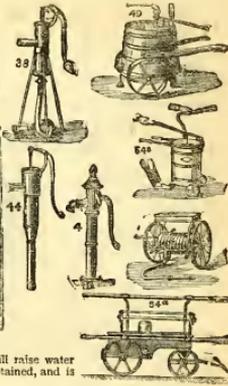
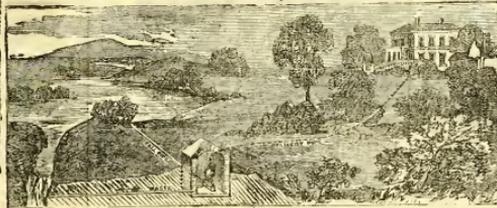
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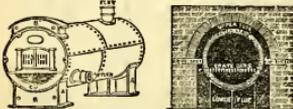
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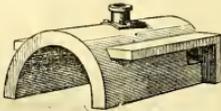
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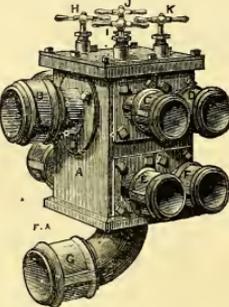
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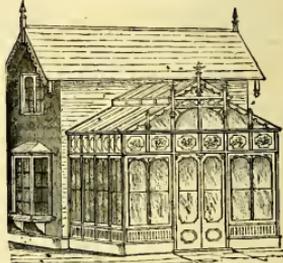
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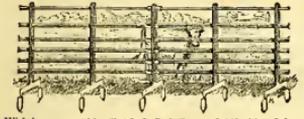
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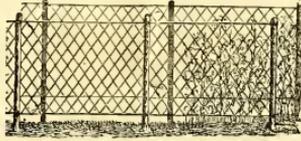
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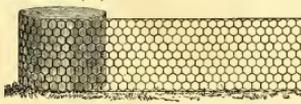
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FOREMAN N.—Age 24, respectable.—**P. HILLIPS** AND CO., Torbay Nursery, Torquay, Devon.

FOREMAN, where Fruit and Plants are well grown, and things carried on with spirit.—Age 23. Bothy preferred.—Address, stating wages, &c., to R. M., 1, Uington Gardens, Stamford, Lincolnshire.

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FOREMAN, in a good Establishment.—Age 23; well up in all branches of the profession. Two years' experience in the Forcing of Vines, Cucumbers, &c. Address, stating wages, to **GEORGE LADY**, Lady Rodge Hall, Duckworth Lane, Bedford, Yorkshire.

FOREMAN, in the Houses.—Age 23; nine years' experience. Good testimonials as to abilities from present and previous employers.—State particulars to H. H., Post-office, Crayford, Kent.

To Nurserymen.
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PROPAGATOR (HARD AND SOFT WOOD).—Ten years' excellent character from last situation (Lacombe, Fines & Co.).—**S. POPE**, 1, Fines's Cottages, Broom's Barn, Kent.

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TO SEEDSMEN.—Wanted, by a respectable Youth, aged 24, a situation in a Seedsmen's Shop; having had some experience at Gardening.—Apply, stating his terms, **UNDINE**, Post-office, St. Salvage.

BAILIFF (WORKING), or BAILIFF or GARDENER.—Married, no encumbrance; large experience in Stock. Will do good Dairy and Poultry-work. Leaving through death of late employer. Unexceptional references.—**L. V.**, Mr. Baxenden, Nuseryman, Guildford.

E P P S ' S C O C O A.—A GENUINELY COMFORTING.

By the operation of its natural laws which govern the organs of digestion and nutrition, and by careful application of the most improved and approved process, Mr. Kippes beverage which may save us many heavy doctor's bills. It is by the judicious use of this beverage, that a weak constitution is gradually built up. Hundreds of strong enough to resist every temptation to disease, and who, wherever there is a weak point, may escape many a fatal shaft by keeping themselves well fortified with pure blood and vigour. It is the only beverage which is sold in this country, and is sold in every part of the world. **JAMES EPPS AND CO., HOLBORN-ENTRY CHEMISTS, 41, THE MARK LANE, LONDON, E.C. 4.**

KINAHAN'S LL WHISKY.—Universally recommended by the Medical Profession. It is pure old spirit, mild, mellow, delicious, and most wholesome. **Dr. Hissall says**, "I have samples were safe and agreeable to the taste, aromatic and ethereal to the smell. The Whisky must be pure, and of fine quality, well watered, and of very excellent quality."—Wholesale and Retail, **Great Tintinn, London, W.**

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DINNFORDE & CO., 172, New Bond Street, London, and all Chemists.

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THE WINNERS OF EVERY PRIZE IN ALL CASES OF COMPETITION.

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SINGLE AND DOUBLE HANDED "SILENS MESSOR" LAWN MOWER.

	£	s.	d.
To cut 6 inches	1	15	0
Can be worked by a Lady.			
To cut 8 inches	2	10	0
Ditto.			
To cut 10 inches	3	10	0
Ditto.			
To cut 12 inches	4	15	0
Can be worked by one Person.			
To cut 14 inches	5	15	0
Ditto.			
To cut 16 inches	6	15	0
Can be worked by one Person on an even Lawn.			



	£	s.	d.
To cut 18 inches	8	0	0
Can be worked by a Man and Boy.			
To cut 20 inches	8	10	0
Ditto.			
" 22 " Ditto.	9	0	0
" 24 " Ditto.	9	10	0

* If made stronger, suitable for Donkey, 30s. extra.

Prices of Horse, Pony, and Donkey Machines, including Patent Self or Slide Delivery Box; Cross-stay complete; suitable for attaching to Ordinary Chaise Traces or Gig Harness:—

DONKEY and PONY MACHINES.

To cut 26 inches	£15 0 0	Leather Boots for Donkey	.. £1 0 0	To cut 30 inches	£22 0 0	To cut 42 inches	£30 0 0
" 28 "	17 0 0	" " Pony	.. 1 4 0	" 36 "	26 0 0	" 48 "	34 0 0
" 30 "	18 10 0					Leather Boots for Horse	.. £1 9 0

The 26 and 28 inches can easily be worked by a Donkey, the 30 inches by a Pony, and the larger sizes by a Horse; and as the Machines make little noise in working, the most spirited animal can be employed without fear of its running away, or in any way damaging the Machines.

Carriage paid to all the principal Railway Stations and Shipping Ports in England, Ireland, and Scotland.

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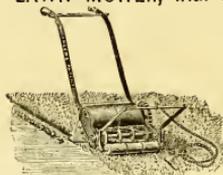
This Mower is well adapted for cutting long, coarse, rough, and wet Grass. It is strongly made, and does its work admirably. It will cut nearer to an object than any other Lawn Mower extant.

The sizes and prices of the "Monarch" Mower are in every respect the same as for the "Silens Messor," with Grass Box, &c., complete.

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No Lawn Mower Manufacturer keeps so large a stock of Mowers as is to be found at our London Establishment, 54 and 55, Blackfriars Road, where purchasers can select from upwards of 500 Machines of Hand, Pony, and Horse Power, and have their Orders executed the same day they are received.

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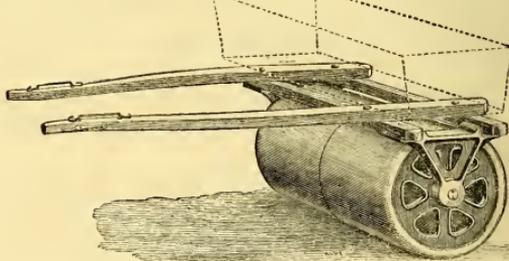
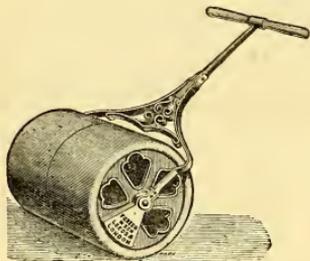


Green's Lawn Mowers are the only Machines in constant use at the Royal Horticultural Society's Gardens, South Kensington, London.

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Delivered, Carriage Free, at all the principal Railway Stations and Shipping Ports in England, Ireland, and Scotland.

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PRICES OF HAND ROLLERS.

In One Piece.			In Two Pieces.		
Diam.	Length.	£ s. d.	Diam.	Length.	£ s. d.
16 inches	by 17 inches	.. 3 0 0	16 inches	by 17 inches	.. 3 5 0
20 "	22 "	.. 3 17 6	20 "	22 "	.. 4 7 6
24 "	26 "	.. 5 0 0	24 "	26 "	.. 5 12 0
			30 "	32 "	.. 0 10 0

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Diam.	Length.	£ s. d.	Diam.	Length.	£ s. d.
30 inches	by 30 inches	.. 13 10 0	30 inches	by 48 inches	.. 17 0 0
30 "	36 "	.. 14 0 0	30 "	60 "	.. 16 10 0
30 "	42 "	.. 15 10 0	30 "	72 "	.. 22 0 0

Special quotations made for Rollers 3 feet and 4 feet diameter, fitted with Shafts for One or Two Horses.

THEY CAN BE HAD FROM ALL RESPECTABLE IRONMONGERS AND SEEDSMEN IN THE UNITED KINGDOM; OR FROM
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 ILLUSTRATED PRICE LIST FREE ON APPLICATION.

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NEW REGAL PELARGONIUMS

(Two of the Gems of the Season) "PRINCE OF WALES" and "PRINCESS OF WALES." WILLIAM BULL, F.L.S., Establishment for New and Rare Plants, King's Road, Chelsea, London, S.W.

Geranium, "Wonderful." WILLIAM CLIBRAN and SON can now supply plants of this fine double sport of Vesuvius, at 6s. and 9s. per dozen, free for Cash with order.

Special Offer.—150,000 Vesuvius. WILLIAM BADMAN offers strong autumn-struck VESUVIUS from single pots, 2s. per 100; or from store-pots, 8s. per 100, 7s. per 1000, package included.

Pelargoniums. CHARLES TURNER can supply strong healthy plants of all the classes; they will have a good head of bloom this season.

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Verbena, Verbena, Verbena. WILLIAM BADMAN offers VERBE KING, White, Scarlet, Crimson, and Rose PINKERAS, in single pots, 12s. per 100; or turned out of pots, 10s. per 100.

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FIFTY THOUSAND BEDDING PLANTS in variety for Sale, at Wholesale and Retail prices; all grown in separate pots, and in excellent condition.

PYRUS MAULEI is now being sent out, in strong plants, in full bud, at 10s. 6d. each, at once showing its distinct character and high claim to the attention of Hardy Fruit Growers.

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WOOD and INGRAM offer fine plants of the above, or roughly established in single pots, at 10s. per 100, or 50s. per 1000.

HARRISON'S NEW MUSK.—For full description and particulars, see p. 65 of Gardeners' Chronicle, or apply to HARRISON and SONS, Leicester.

Gentlemen's Gardeners, Amateurs, and Others.—GARDEN POTS of best quality, are requested to send their orders to J. MATTHEWS, Royal Pottery, Weston-super-Mare.

WANTED, choice CUT FLOWERS for the Trade. FLOWERS, Mr. Gilbey, Fostwick, Stoke Newington, N.

MRS. FOLLOCK, or OTHER TRICOLOR GERANIUMS.—Parties, having such to dispose of, will oblige by communicating, State quantity, size, and price, to J. AND F. ALLUM, Nurseries, Tamworth.

WANTED, a quantity of good strong Plants, State lowest price to H. AND F. SHARPE, Seed Growing Establishment, Wisbech.

For Description of COLOURED PLATE,

issued with this day's Gardeners' Chronicle, ROSE QUEEN of HEDDERS (Noëke), see advt. p. 575.

JERUSALEM ARTICHOKE.—A quantity of the above, offered, price 4s. per bushel. STUART and MEIN, Seedsmen, Kelso.

Clematis Roots for Grafting, 30s. per 1000. CLEMATIS.—Finest named kinds, spring and autumn flowering, any number at very reduced prices.

English Sharpe's Runner Beans. H. AND F. SHARPE have a few Bushels of the above more than they require, and offer them to the Trade at a very reasonable price.

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Lobelia, Emperor William. H. B. MAY offers strong autumn-struck plants (warranted the true variety), 6s. per 100, 50s. per 1000, package free.

Lobelia, "Ebor." F. AND A. SMITH offer the above, in strong plants, at 3s. per dozen.

MANDEVILLA SVAUEOLENS.—Strong and thoroughly healthy plants, 8s. per dozen, or 80s. per 1000.

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Vines, Vines, Vines.—The Planting Season. THE COWAN PATENTS' COMPANY, The Vineyard, Garston, near Liverpool, can supply excellent Planting Stocks.

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NEW 1877 ROSES.—Our Plants are now fine and strong. Early orders are respectfully solicited.

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SEED POTATOS.—A few tons of Early Rose, at 6s. 10s. per ton. Sample pack, 10s. 1b. for 1s. D. BRINKWORTH and SON, Potato Growers, Berkhamstead, Bucks.

ASPARAGUS, Giant, 3-yr. and 4-yr., fine, all at low prices. L. BATH, Crayford, Kent.

The "Gardeners' Chronicle" in America.

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GARDENERS' CHRONICLE, to the GARDENERS' CHRONICLE, Including postage to the United States, is \$6.30 gold, to which add premium on gold for U.S. currency at the time, and 2 cents change per dollar on the rate of exchange.

ROYAL BOTANIC SOCIETY, N. Gardens, Regent's Park, N.W. FIRST SUMMER EXHIBITION OF PLANTS and FLOWERS, WEDNESDAY, May 16. Tickets to be obtained at the Gardens, only by vouchers from Fellows of the Society.

CRYSTAL PALACE.—GREAT FLOWER SHOW of the Season, SATURDAY, May 12. Dramatic Performance, "Oceana," by Ticket purchased before Friday, May 11, 5s.; 6d. by Ticket taken after that date.

MANCHESTER ROYAL BOTANICAL and HORTICULTURAL SOCIETY. THE GRAND NATIONAL HORTICULTURAL EXHIBITION of 1877 will open on the 18th inst. Special Notice to Exhibitors.—ENTRANCE CLOSE on the 1st inst.

LEADS HORTICULTURAL SOCIETY: NOTICE.—In addition to the liberal Schedule of Prizes, the ROYAL HORTICULTURAL SOCIETY'S SILVER BANKIAN MEDAL will be given to the Best-grown Plant in the Exhibition, and the ROYAL HORTICULTURAL SOCIETY'S SILVER KNIGHTIAN MEDAL will be given to the most worthy specimen of French-grown Plant.

ROYAL HORTICULTURAL GARDENS, S.W. NOW ON EXHIBITION the largest Collection of DAFFODILS ever staged, viz., 120 varieties, the property of BARK and SUGDEN, 12, King Street, Covent Garden, London.

GIANT ASPARAGUS PLANTS, the best and most productive, at certain prices, at 6d. per doz. This delicious vegetable does not require half the expense usually incurred in planting it. See RICHARD SMITH'S SEED LISTS for 1877.

PROTHEROE and MORRIS, HORTICULTURAL AND GENERAL ESTABLISHMENT, 5, Abchurch Lane, London, E.C. and 4, Leighton-stone, E. Monthly Horticultural Register had on application.

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H CANNELLI begs to inform the Public generally that he has purchased part of the Raiser's stock for the distribution in England, and will send nice rooted plants, at each of the following prices...

Immediate Effect, &c.—Plant Now.

JAMES DICKSON and SONS beg to draw attention to their very extensive and superior brassy yellow double white translated EVERGETT'S...

FIFTY THOUSAND MAGNIFICENT DWARF ROSES, in POTS. ROSES for BEDDING, at 12s. to 18s. per dozen, 1000, per 1000...

LET'S FAVOURITE.—The handsomest and best Potato ever offered. Indispensable for exhibition. This variety will be the greatest Prize Winner of the season...

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New Bedding Tropaeolum, "Hunteri" DOWNING and LAIRD have much pleasure in offering for Spring delivery the above, an excellent Bedding Tropaeolum, surpassing its parent Cooperi, being of a dwarf habit...

CHARLES TURNER can now supply strong Plants of all the classes, also the following New Varieties:—The first time in this country, Burgundy, Black Knight, Canary, Chris Ridley, Drake, Lewis, Eels, Figo, Mrs. Urquhart, The Rover and Vivian Grey.

THE TRADE FUCHSIAS, CHRYSANTHEMUMS, COLEUS, HELIOTROPES, SALVIA, HELIANTHEMUMS, in all the best sorts, 12s. per 100. PINKS, PENSTEMONS, PHLOXES, PANSIES, 10s. per 100. FERNS, ANEMONES, PEONIES, CARNATIONS, PICO-TEES, 3s. per 100. IRESINE, ACERATUMS, LOBELIAS (from cuttings), 1s. per 100. GERANIUMS, Zonal and Nonesay, in great variety, 15s. to 20s. per 100. Bicolors, 20s. per 100. WILLIAM CLIBRAN and SON, The Oldfield Nurseries, Altrincham.

CHARLES NOBLE, Bagshot, offers the following:—RHODODENDRONS, Hybrid named, 60s. with buds, for forcing or growing, 1 1/2 to 2 feet, 25s. per dozen, 100s. per 100. " " " for immediate effect, 2 1/2 to 4 feet, and same 100s. 42s. per dozen, 100s. per 100. " " " Seeding, 1 1/2 to 3 1/2 feet, 24s. per dozen, 200s. per 100. " " " FORTICUM, 1 1/2 to 2 feet, bushy, 6s. per dozen, 35s. per 100. KALMIA LATIFOLIA, 1 to 1 1/2 foot, buds, for potting, 75s. and 100s. per 100. ANDROMEDA FLORIBUNDA, buds, for potting, 75s. and 100s. per 100. ERICA CARNEA, very fine, 21s. per 100.

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Sutton's Improved Miniature Aster. A profuse flowering variety, of dwarf compact habit, remaining in bloom for a considerable period, hence it is invaluable for growing in pots for conservatory or drawing-room decoration. We have this season succeeded in saving six distinct colours, which greatly increases the value of this beautiful Aster for bedding purposes. Price per Packet, mixed, 2s. 6d. Six varieties, separate, 5s.

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Which forms a close velvety turf in a very short time. For making New Lawns or Croquet Grounds 3 bushels, or 60 lb., is required per acre, or 1 gallon to every six rods (or perches) of ground. For improving those already in turf, 20 lb. should be sown per acre. March, April, and May are the best months for sowing.

Price, 1s. 3d. per lb., 22s. 6d. per bushel, carriage free.

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds Gratis and post-free.

Sutton's THE QUEEN'S SEEDSMEN, READING, BERKS.

Cheap Plants—Special Offer. WILLIAM B. ADMAN offers, at under, all highly strong stuff—VERENAS, Purple, White, Scarlet, Rose, Crimson, from single pots, 12s. per 100; well-rooted cuttings, 2s. per 100, 20s. per 1000; 12 choice named sorts, 8s. per 100. CALCIFLORARIA, Golden Gem, 2s. per 100, 40s. per 1000. LOBELIA, speciosa (truss), 2s. per 100, 20s. per 1000; Blue-stone and pumila grandiflora, all from cuttings, 5s. per 100. PELARGONIUMS, Venusium, from stores, 8s. per 100, 75s. per 1000; Jean Sisley, 20s. per 100; Madame Vaucher, 20s. per 100; Master Christine, 12s. per 100; all from single pots. Tricolor, Mrs. Pollock, 20s. per 100; Crystal Gem, 12s. per 100; Flower of Spring, 2s. per 100. HELIOTROPE, finest dark, good bushy plants, 12s. per 100; named cuttings, 2s. per 100. AGERATUM, Imperial Dwarf, blue, fine bedding plant, 2s. per 100; 40s. per 1000. IRISINE, LINDEN and COLEUS VERSCHAFFELTI, crimson leaf, 6s. per 100; 60s. per 1000. CANTHARIA CAENDIVIA, rose silver leaf, 3s. per dozen; 20s. per 100. Packing included. Terms, cash. Cemetery Nursery, Greatwood, S.E.

To Parties Purchasing New Houses. H. W. WALTON begs to intimate to the above that he has for sale an unrivalled collection of FLOWERING and FOLIAGE PLANTS of extra size suitable for immediate effect, which must be cleared out to make room. Also an immense stock of STOVE and GREENHOUSE PLANTS of all the newest and most approved varieties. H. W.'s CATALOGUE is now ready, and will be forwarded post-free on application to H. WALTON, Edge End Nurseries, Enderfield, near Burnley, Lancashire. Edge End is distant from Burnley, 3 miles; Accrington, 5 miles; Stalton, 14 miles; Bradford, 30 miles; Manchester, 20 miles; Huddersfield, 20 miles; Leeds, 33 miles; Wakefield, 40 miles.

Presented (by post) on application, NEW CATALOGUE, for 1877. MESSRS. H. B. AND SON'S DESCRIPTIVE LIST for this Spring, free by post on application. Their stock of Florist and Bedding and Stove Plants generally, are surpassed by few, if any, either in extent or quality, all the newest and best varieties being constantly added to the variety classes, and every pains taken to keep the varieties true to name. Another great advantage to purchasers is that none of the plants offered are taken directly from a warm propagating house and sent off, but are all carefully hardened and most of them potted off singly, and are thereby fitted to travel either by rail or post without the slightest injury. A great proportion are autumn-struck plants, and many of the undermentioned can be sent by post—Abutilum, in variety, 3s. 6d.; Aesculus, 20s. per 100. Achmees, in variety, 3s. 6d.; Ageratum, in variety, 8s. 9d.; Begonias, tuberosa, 6s. and 9s. per dozen. Calceolarias, Golden Gem, 8s. 9d. per dozen. Camellias, 30s. and 42s. per dozen. Carnations and Picotees, 12 plants, 6s.; 25 pairs, 20s. 6d. Carnations, true, in variety, 20s. per dozen. Centaureas rugulosa, 3s. per dozen. Chrysanthemums, near 10,000 now ready, 20s. per 100, 6s. per dozen. Clematis, in variety, 60s. per 100, 9s. per dozen. Coleus, in variety, 40s. per 100, 3s. per dozen. Cyclamen, in variety, 6s. and 9s. per dozen. Dactylis elegantissima, 5s. per 100, 12s. per dozen. Dahlia, 2s. per 100, 4s. per dozen. Delphinium, splendid sorts, 9s. to 12s. per dozen. Euphyllium, 9s. to 12s. per dozen. Ferns, store and greenhouse, 9s. to 12s. per dozen. Fuchsia, 30s. per 100, 3s. per dozen. Gardenia florida, 6s. to 12s. per dozen. Greenhouse Plants, 9s. to 12s. per dozen. Geranium, Tricolor, 3s. 6d. per dozen. " " " Ricolor, 20s. per 100, 3s. per dozen. " " " Silver-edged, 3s. 6d. per dozen. " " " Double, 20s. per 100, 3s. per dozen. " " " Zonals, for bedding, 15s. per 100, 3s. per dozen. " " " Zonals, for pot culture, 3s. to 6s. per dozen. Gladioli, to name, 6s. to 9s. per dozen. " " " splendid seedlings, 40s. per 100, 3s. per dozen. " " " Brechtleyensis, 20s. per 100, 3s. per dozen. Helianthemum, 2s. 6d. per dozen. Herbaceous Plants, 40s. per 100, 3s. per dozen. Arches, Pinks, and Flumms, and Heliotropes, in variety, 2s. 6d. per dozen. " " " Hesperis, 4s. per dozen. The Oldfield Nurseries, Altrincham.



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Offer the following in Seed, of quality the best that can be had, at per packet:—

- CALCEOLARIA**—the variety of colours, size, and shape of the flowers is the result of many years' continual improvement; 2s. 6d. and 5s.
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- LOBELIA**, Brilliant Improved, White Brilliant, Mazarine Gem, speciosa—from pot plants, panicle grandiflora, Lustre Improved, Denance—the best red, Bluestone, and Magnifica, 1s. each.
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On May 1, with the New Dahlias,

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will be prepared to offer one of the finest ZONAL GERANIUMS ever yet before the Public.

J. K. trusts his long experience and care will be sufficient guarantee for the quality and character of this splendid variety. It was raised by Mr. Wm. Dodds. A great trust of flower, splendid bedder, lively majenta colour, quite a new shade from any other. Has been the admiration of all in the beds at Salisbury.

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Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

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It is free flowering, very dwarf habit, and we can with perfect confidence recommend it.

PRICE PER DOZEN, 9s. USUAL DISCOUNT TO THE TRADE.

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HOLLIES—HOLLIES—HOLLIES.

THIS BEING UNDOUBTEDLY THE BEST SEASON OF THE YEAR FOR

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We would call the attention of the Public to our Collection of the same.

We possess over 6000 Plants of the COMMON GREEN HOLLY,
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Also a very large and choice selection of GREEN and VARIEGATED VARIETIES.

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Plants in pots of the above, ready early in June, 7s. 6d. each, 14s. the two varieties; Blooming Plants, in 24-pots, 10s. 6d. each, 20s. the two varieties.

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GERANIUMS, Crystal Palace Gem, good plants, established in single pots, 15s. per 100. Cash with order to S. BIDE, Alma Nursery, Farnham, Surrey.

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Strong Plants now ready, 2s. each, 18s. per doz.

The Trade supplied on the usual terms.

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Mildew or Red Spider are effectually prevented or destroyed by merely painting the hot pipes with the composition mixed with white-wash. No direct application to the foliage is then necessary.

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"Lewenshof Garden, Cape Town, November 28, 1876.

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"Believe me to be, dear Sir, yours truly,

"P. J. KOTZE."

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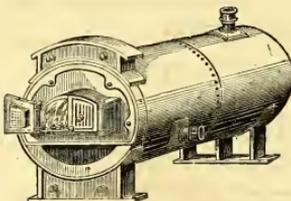
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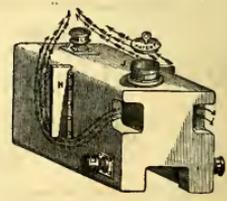
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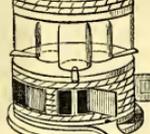
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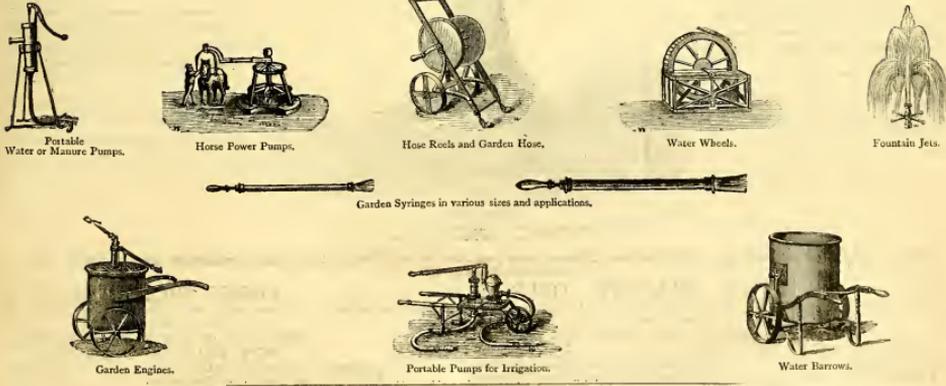
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HAVING OFFERED THROUGH THE ROYAL HORTICULTURAL SOCIETY

ONE THOUSAND POUNDS FOR NEW PLANTS

Of his own introduction, begs to announce that Twelve Silver Cups and Money Prizes as follows (the Fifth Annual Series) will be awarded at the Royal Horticultural Society's Great Summer Show, to be held at Kensington, on Tuesday, June 19, 1877. Particulars of these Prizes are given at pages 167 to 171 of Mr. William Bull's Catalogue of New Plants for 1877. The Prizes to be awarded on Tuesday, June 19, will be as follows:—

FOR PRIVATE GROWERS.

1st Prize, a Silver Cup, value ..	15 Guineas
2d Prize, a Silver Cup, value ..	10 Guineas
3d Prize, a Silver Cup, value ..	6 Guineas

FOR NURSERYMEN.

1st Prize, a Silver Cup, value ..	15 Guineas
2d Prize, a Silver Cup, value ..	10 Guineas
3d Prize, a Silver Cup, value ..	6 Guineas

In each and all cases the above Prizes are offered for Twelve New Plants of Mr. W. Bull's introduction, and sent out since the commencement of 1874. The Plants available for these Prizes to comprise only those announced in Mr. W. Bull's Catalogues, as sent out by him for the first time. The Catalogues can be easily referred to, or a List of the Plants had on application.

In each and every entry the names of the Twelve Plants to be exhibited must be sent with the entry. Exhibitors can only compete for one Prize at a time in each class.

The Twelve Plants must be twelve distinct species or varieties, but each may be composed of one or more individual plants, if grouped in one pot, pan, or vase.

Any Exhibitor winning either of these Prizes, and having previously won two of Mr. William Bull's Silver Cups, can have Money instead of the Cup, if preferred.



PRIZE CUP.

Specially Designed by Messrs. Elkington & Co. to be awarded for Mr. William Bull's New Introductions.

Mr. William Bull will also give the following PRIZES this year, for 12 NEW PLANTS of his introduction, sent out since the commencement of 1874:—

FOUR SILVER CUPS,

As follows, will be given at the Grand Summer Exhibition of the Glasgow and West of Scotland Horticultural Society to be held in the Crystal Palace Conservatory, Royal Botanic Gardens,

GLASGOW, on May 23, 1877:—

FOR PRIVATE GROWERS.

1st Prize, a Silver Cup, value ..	10 Guineas
2d Prize, a Silver Cup, value ..	6 Guineas

FOR NURSERYMEN.

1st Prize, a Silver Cup, value ..	10 Guineas
2d Prize, a Silver Cup, value ..	6 Guineas

The above Prizes are confined to Growers in Scotland.

In each and all cases the above Prizes to be offered for Twelve New Plants of Mr. W. Bull's introduction, and sent out since the commencement of 1874. The Catalogues can easily be referred to, or a List of the Plants had on application. In each and every entry the names of the Twelve Plants to be exhibited must be sent with the entry. Exhibitors can only compete for one Prize at a time. The Twelve Plants must be twelve distinct species or varieties, but each may be composed of one or more individual plants, if grouped in one pot, pan, or vase.

A SERIES OF SILVER CUPS, and MONEY PRIZES,

as follows, will be given to those not having previously won any of

MR. WM. BULL'S SILVER CUPS:

FOR PRIVATE GROWERS.

1st Prize, a Silver Cup, value 15 Gs. and £10
2d Prize, a Silver Cup, value 10 Gs. and £7
3d Prize, a Silver Cup, value 6 Gs. and £5

FOR NURSERYMEN.

1st Prize, a Silver Cup, value 15 Gs. and £10
2d Prize, a Silver Cup, value 10 Gs. and £7
3d Prize, a Silver Cup, value 6 Gs. and £5

In each and all cases the above Prizes are offered for Twelve New Plants of Mr. W. Bull's introduction, and sent out since the commencement of 1874. The Plants available for these Prizes to comprise only those announced in Mr. W. Bull's Catalogues, as sent out by him for the first time. The Catalogues can be easily referred to, or a List of the Plants had on application.

In each and every entry the names of the Twelve Plants to be exhibited must be sent with the entry. Exhibitors can only compete for one Prize at a time in each class.

The Twelve Plants must be twelve distinct species or varieties, but each may be composed of one or more individual plants, if grouped in one pot, pan, or vase.

THREE SILVER CUPS,

As follows, will be given at the Great International Horticultural Exhibition, to be held at

CARLISLE, on Sept. 6, 7, and 8, 1877:—

FOR PRIVATE GROWERS.

1st Prize, a Silver Cup, value ..	15 Guineas
2d Prize, a Silver Cup, value ..	10 Guineas
3d Prize, a Silver Cup, value ..	6 Guineas

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By Her Majesty's  Letters Patent

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- 3.—No breakage from vibration caused by heavy winds or passing trains.
- 4.—Squares of glass can be instantly replaced.
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NEW PLANTS FOR 1877.


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Is now ready, and can be had on application, price 1s.

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- CYRIPEDIUM DRURYI,
- DIFFENBACHIA CHELSONI,
- „ VELUTINA,
- DIFLADENIA ORNATA,
- „ REGINA,
- DIFLAZIUM ARNOTTHI,
- DRACENA AMPLIATA,
- „ CRUENTA,
- „ MINIATA,
- „ MIRABILIS,
- „ NIVALIS,
- „ ROBINSONIANA,
- „ ROSEO-PERFECTA,
- „ RUBESCENS,
- „ TRIUMPHANS,
- „ VESTALIS,
- „ VIVICANS,
- DRACONTIUM ALBOSTIPES,
- „ ANNULATUM,
- „ CARDERI,
- ENCEPHALARTOS HILDEBRANDII,
- EUCALYPTUS CITRIODORA,
- GYNOMORPHA MERTENSII DOBROY-DENSIS,
- HIBISCUS (ROSA-SINENSIS) COLLERII,
- IRIS ROBINSONIANA,
- LOMARIA DALGAINRSLE,
- MACROZAMIA MACKENZII,
- NEPHRODIUM TRUNCATUM,
- PANAX LACINIATUM,
- PHEXIN RUPICOLA,
- PLECTRANTHUS FETIDUS,
- SADLERIA CYATHEOIDES,
- SMILAX SHUTTLEWORTHII,
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NEW REGAL PELARGONIUM
 "PRINCE OF WALES."

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

One Guinea.

MR. WILLIAM BULL'S

ILLUSTRATED CATALOGUE FOR 1877
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SATURDAY, MAY 5, 1877.

MAY DAY.

MAY-DAY as a popular festival appears to have fallen out of fashion; like all else dependent upon the capricious tastes of humanity, May-day revels have had their rise and fall, their seasons of greatness and neglect, being doubtless at the height of their popularity during the reign of Elizabeth—those piping times of peace, when—

Every man eat and safety,
 Under his own Vine, what he planted;
 And sang the merry songs of peace to
 To all his neighbours.

May games were at this period held in every village which boasted a convenient green whereon to erect the May-pole—this latter being the gift of the lord of the manor, who never regarded such festivities with churlishness, but would bestow the tallest and straightest tree from his plantations for the occasion, and gave countenance to the proceedings, not only by his own presence, but by that of his family also.

The rustic rose betimes in every hamlet to fetch home green boughs from the woods with which to decorate the fronts of their cottages, and to intertwine with flowers to form garlands; the village maidens also were stirring at dawn, for the dew which sparkled on the grass on the first morn of May was supposed to have potent charms, and she who bathed her face with its cool crystal drops would become as fair as a Lily and red as a Rose; this pretty conceit indeed abides in the North to the present time, and many a Scotch lassie would not miss the beautifying spell, though it cost her a night's repose. For some time before the fatal morn of joyous May" what hopes and fears must have agitated the breast of every village maiden who had the slightest claim, either by reason of her beauty or amiability, to be made the queen of a day!

The custom of choosing a May-queen, the gathering of garlands and the dancing on the green, have all become things of the past, but the memory of them lives in undying verse. Tennyson has immortalised the flower-crowned queen of past times, and the "Queen of the May" has become as familiar in our mouths as household words.

When the May-pole was erected and the garlands were hung, when her majesty was chosen and attended to her flower-decked chair of state, when her subjects had paid their allegiance, then the sports and games began. Foremost among these was dancing, which was led by the sovereign of the mimic court, as it was in her palace at Richmond by Elizabeth, whose "ordinary exercise was six or seven galliards in a morning, besides music and singing." At the same time as the courtiers danced their "grave measures and corantes" in stately halls and hospitable manor-houses, the peasant youths and maidens tripped the comely country round, and the recreations which became the courtly gentleman to adopt were no less becoming in the squire, the yeoman, ploughman, the trader, the artisan, and the apprentice; the accomplishments enumerated by Roger Ascham as worthy of attainment being "to ride comely, to run fair at the tilt or ring, to play at all weapons, to shoot fair in bow or surely in gun, to vault lustily, to run, to leap, to wrestle, to

swim, to dance comely, to sing and play of instruments cunningly, to hawk, to hunt, to play at tennis, and all pastimes generally which be joined with labour, used in open place and in the daylight, containing either some fit exercise for war or some pleasant pastime for peace."

All alike joined in these diversions and met on common ground to display their strength and skill: he was best man who could hold his own against all comers. The frequent and neighbourly commingling of all degrees of people used the bonds of kindness between all classes to be closer knit, and judging from the chroniclers of the time there was much less jealousy between rich and poor than at the present day—every one knew his station, and felt a just and worthy pride in fulfilling its duties.

As the reformed religion spread and Protestants became more puritanical in their ideas, the most passionate invectives were hurled from the pulpit against May-day games and similar seasons of merry-making, which were not few and far between during the supremacy of the Catholics. At first the Puritans directed their reprobations solely against such sports as were played on the Sabbath-day; so long as a popular festival fell on one of the six days devoted to labour the people were left to enjoy it, although bitter denunciations were levelled against the dancing schools (then greatly patronised), which were called academies for teaching "the noble science of heathen divinity," and the musicians, who were admonished thus—"Give over your occupations, you pipers, you fiddlers, you minstrels and you drummers, you tabretters and you fluters, and all other of that wicked brood." Sweet music, they held, "at first delighteth the ears, but afterwards corrupteth and depraveth the mind." Fortunately, such severe views were not held by the whole of the reformed clergy, who were willing to abolish whatever might be supposed to have had a papistical or idolatrous meaning in the procession, but who considered that it was unchristian, even on a Sunday, after evening service, "to shoot at the butts, to play football, or even to see an interlude;" thus, for many years, public opinion had been divided.

The celebration of May-day, with all its pastoral simplicity, never appears to have been revived with the spirit it was at one time kept. It became almost obsolete with the pranks of the "Lord of Misrule" and his noisy court of lusty mummings. Of all this bravery, but little beyond the tradition has descended to us. In remote districts "St. George and the Dragon" is sometimes played in the farmhouse kitchen, but it is but a sorry representation of the fun and frolic cherished as being common some two or three centuries ago; and even "Jack-in-the-Green," that once popular burlesque of May-day celebrations, is rapidly dying out. It is true that in certain villages there still exists a farcical semblance of distinguishing the May that the sorry exhibition is one to arouse pity rather than mirth. A few poor, wretchedly-clad girls, having made a collection of tawdry finery and dingy artificial flowers, deck themselves out, and carrying ill-made garlands with the same materials, pass from door to door begging remembrance for "St. George's May." The dolls given to them may represent the collections made for the poor at all ancient festivals, but the representatives of the queen do not carry with them even a shadow of the freshness and beauty which surrounded their predecessors; and which made them always welcome, doubtless, as a picturesque embodiment of the charms of the season.

Hawthorn buds may be gathered on the first of May—in exceptional seasons—but even calculating by the old style we should seldom find employment for many lads and lassies to pick a bunch in May, for the hedges would be sparsely clothed that depended on present outdoor vegetation for its floral beauty. T. S. J.

New Garden Plants.

STAPELLA GRANDIFLORA, Mass., VAR. LINEATA.

N. E. Br. (fig. 85).

Stems erect, branching at base, 6—12 inches high, 1—1½ inch thick, visibly pubescent, 4-angled, angles compressed but becoming thicker on the more rounded sides; to 4-toothed, teeth erect; flowers produced at the base of the young branches. Peduncle 3—5 lines long, very stout, generally 3-flowered (one central and one on each side), or rather with three buds, the two lateral ones being either dropping away, or by abortion 2- or 1-flowered, pubescent; pedicel stout, 1½ inch long, 2 lines thick, pubescent. Bud ovoid, apex obtuse, slightly depressed. Calyx lobes 5 lines long, lanceolate acute, pubescent. Corolla with 5 lines diameter, the back pale green, pubescent, the face everywhere transversely rugose, the disk dull purple-red covered with erect purple hairs (not matted together); the apical half to two-thirds of the lobes is glabrous; the margin distinctly ciliated with long hairs, the outer rows being white, the inner pale purple; from the base to half way towards the apex dull purple with numerous transverse pale yellow undulated lines: the apical half is filled up with dark purple-brown, which projects towards the base of the lobe in the form of a cone, giving the apex the appearance of being occupied by a large diamond-shaped blotch. Ligulae lanceolate acute, concave, spreading, recurved at the apex, dull reddish brown, paler at the apex. Rostra and pale yellow, shading with purple at the tip. Petals 5, the outer ones recurving, triquetrous, 5 lines long; also 3 lines long, adnate to the rostra for three-quarters of their length, broad, oblong apex rounded, entire or sub-entireolate. In fruit the peduncle and pedicel are 6—7 inches long, 1 inch thick at the base, tapering to the hooked apex, pubescent.

My identification of this plant as a variety of *S. grandiflora*, Mass., requires a little explanation, especially as no specimen of Masson's is preserved, and at least two other plants have already been identified with Masson's *S. grandiflora*—viz., that figured in the *Botanical Magazine*, t. 585, to which Hawthorn later on gave the name *S. speciosa*, and which differs widely from its more common form, the yellow and dark purple-brown inner corona, the yellow markings in the figure being intended for reflections. Secondly, that figured in Jacquin's *Staphelia*, t. 59, which appears to me to differ in the more compressed petals and the dark purple-brown inner corona.

Masson's figure, though characteristic, is a poor one, without dissections, and his description is still worse, yet the two following peculiarities appear 1st.—The petals of the inner corona are covered with five yellow lines radiating from the centre. The flower is figured as seen from the front, and the rostra, whatever outline they may present in profile, would appear as five radiating linear or subulate processes. The description says "peduncle sepe trifidus." These two characters, whilst absent from the *Bot. Mag.* and Jacquin's plants, are both present in the plant here described. The three-flowered peduncle is very peculiar, the short peduncle is branched like a trident or the Greek letter Ψ , but generally only the central flower develops—the two side ones, after growing to some size, becoming abortive, sometimes by the suppression of one or both of the lateral buds: the peduncle is one or two flowered; many of the genus are one-flowered; but in the present plant, as in the peduncle branches in an irregular manner or the pedicels are aggregated. In no other species that I am acquainted with does the peduncle branch in the peculiar manner of the present plant, which was fitted to the rostra "pediculus tri-lobatus."

For a long time I considered this as a new and distinct species, intending to publish it under the name of *S. flaviorostris*, but last October I received from Mr. Justus Cordery a flower exactly like that of my plant, but with the core of the rostra of a purple brown, the transverse yellow lines being absent: this nicely bridged over the difference in colour between this plant and Masson's, and after a long and careful consideration of the subject I can only come to the conclusion that Mr. Cordery's plant is *S. grandiflora*, Mass., and the one here described a variety of it, differing in nothing but the transverse yellow lines on the corolla lobes. For my knowledge of the plant I am indebted to Sir Henry Barkly, who sent me specimens and living plants to the Royal Gardens, Kew; from one of the latter my drawing was made. It appears to be a widely spread form in South Africa. Sir H. Barkly, in a note sent with his specimens, states that he has recently got it from the mountains of Colesberg, Griqualand West, and Victoria West. The woodcut represents its young stems, when fully developed they are 9—12 inches high, and the angles are thicker and more rounded; the pubescence is distinctly viscid to the touch, and the plant is very fertile. The following specimens of it are pre-

served in the New Herbarium—Sir H. Barkly t. 1 and 2 at his list of plants in 1874.

For the plant described by Jacquin (*Staphelia*, t. 59) as *S. grandiflora*, I propose the name *Staphelia obtusa*. A specimen of MacOwan's in the New Herbarium, bearing the same number (1197) as the one on the variety above, but sent some years later, agrees exactly with Jacquin's figure. N. E. Brown, Kew.

GREENHOUSE PLANTS.

THEIR CULTURE AND MANAGEMENT.

CROWEAS.—These belong to a limited family of plants, introduced from New South Wales, that are of comparatively small habit of growth, dense and bushy, producing their lively dark red star-shaped flowers, for two or three months in succession through the autumn, at a time when greenhouse-flowering subjects are few. Croweas have many things to recommend them to the general cultivator, not the least of which is their easy growth and adaptability for decorative purposes, especially for the conservatory, where by regulating the time that they commence growing a succession of the plants may be had so as to furnish some in flower from the commencement of August, to be succeeded by others that will keep in bloom till the close of the year. They will also bear, whilst in bloom, placing in a confined situation in conservatories or similar places much better than most hard-wooded subjects; they likewise have the property of flowering freely in a very small state. Plants the first year grown from the usual nursery sized stock will just bloom as plentifully in proportion to their size as when older. When they get large and are well managed, they are very useful for exhibition, if required for this purpose, the nature of the flowers being such that they will bear a deal of knocking about without being crushed or disfigured. They make moderately strong roots, that are not at all delicate or liable to injury from causes that would result in the death of more tender things; yet they do not form them in such large quantities as to need so much pot room as many plants. All the kinds will grow in loam, and in it, when of a good description, the colour of the flowers is often a little higher; but in peat they generally make quicker progress, and where the latter can be had of a fair character I should recommend it in preference to loam, using about one-sixth or seventh of clean sharp sand intermixed.

Although the Croweas do not require anything above a cool greenhouse temperature to grow them, they are amongst a certain number of plants that will bear and make much more progress by having their growing season lengthened through being started in a little warmth in the winter. Their time of flowering can also be regulated by this. Plants that are thus started into growth in slight heat in February will bloom early in August if required to be succeeded by others, the growth of which commenced with the advance of the season. Where there is means for submitting them to a temperature of 50° in the night, and 60° or 70° by day, they may be started about February. I should advise the young stock to be started at that time. Healthy plants in 6-inch pots, obtained any time through the autumn, will be suitable to commence with. In selecting these, choose such that have been properly attended to in stopping the shoots, so as to have enough branches to start with, for if they have not been kept cut back they will have assumed a too spare habit, and lack the first essentials to form close bushy specimens.

At the commencement of the year cut in the whole of the preceding summer's growth, leaving the shoots about 6 inches long from the point where they were shortened to the previous season; tie them out in a horizontal position, and about the time and in the temperature above advised place them where they will receive a fair amount of light, slightly damping them overhead with the syringe once a day; and here they soon commence growth, and be in a condition for potting. They will require a 2-inch shift, with a fair quantity of drainage, using the soil in a moderately lumpy state, and pressing it solid in the pot. Replace the plants in a similar temperature to that they have been in, and here they remain until the beginning of May, when there will be enough solar heat to keep them on growing without the assistance of fire; after this, they will do along with other ordinary hard-wooded stock, requiring

like treatment through the summer as to air, syringing overhead, and closing the house or pit they occupy with the sun upon it in the afternoon. They will not need any stopping of the shoots, except such as happen to grow considerably stronger than the rest. The reason that it is not advisable to stop these plants in the summer, as prescribed in the cultivation of most hard-wooded subjects, is that if pinched back nothing is gained, as it rarely has the effect of causing shoots to break

When their blooming is over, remove the plants to where they will receive ordinary greenhouse treatment as to temperature, air, and water, cutting them back as in the preceding season so as to reduce the shoots to 6 or 8 inches in length from the point they were shortened to the year before, and again starting them in a little heat as previously, or if a succession of bloom be required, a portion of the stock may be allowed to commence their growth later on in the greenhouse. This year they will bear a 3-inch

through the growing season. In this way Croweas may be kept for years in a thriving, healthy state.

The following varieties are all worth growing:—

C. saligna major: A large-flowered form of the Willow-leaved *C. saligna*, and much superior to the old variety.

C. s. latifolia: As its name implies, a broad-leaved kind, with large flowers of great substance.

C. s. elliptica: A free-growing variety, and equally free in flowering; has elliptic-shaped leaves.

C. s. stricta: An equally desirable sort, the habit of the plant more upright than the others.

Insects.—Croweas are not much subject to the attacks of insects; green-fly will sometimes affect them, but can be easily killed, the nature of the plants being such as to bear without injury a strong application of tobacco-smoke. The use of the syringe to promote growth during the early part of the season prevents their suffering through red-spider. Brown-scale is troublesome if it gets upon them, but can be destroyed by strong application of insecticide when the plants are at rest in the winter. Should white-scale get upon them there is not much chance of eradicating it thoroughly, as it requires a stronger dressing of insecticide than the leaves will bear. *T. Baines.*

HAARLEM AND ITS BULB GARDENS.

HAVING had the satisfaction of inspecting some of the Dutch bulb gardens, I purpose briefly to record a few facts and ideas resulting therefrom. As you very justly remark in your article on the same subject in the *Gardener's Chronicle* of Saturday last, the only way to answer the often-asked question, "Where do all the bulbs come from?" is to visit Haarlem when the Hyacinths and Tulips are in flower. The occasion of the International Exhibition in Amsterdam gave myself and others the opportunity of witnessing such a sight as every one should see at least once before he dies, for if there is such a place as a paradise of flowers, it must be in and around Haarlem. I naturally expected to see the Hyacinths in great quantities, but this, as well as the gorgeous splendour of the colours, far exceeded my expectations. The general tidiness of the bulb gardens, too, is a noticeable fact, to the credit of the proprietors.

It has been acknowledged over and over again that England is the best place to see Hyacinths in pots, and therefore it may be assumed that our cultivators know the requirements of the plant. It struck me, however, on looking at the soil in the Haarlem gardens that, as a rule, the soil used in England is much too retentive. Sand and water appear to predominate in the Hyacinth home. No doubt the sand is very much enriched by large applications of cow-manure, but I believe if a more sandy soil were used for pot-plants, and the necessary nourishment given in the shape of liquid manure prepared from cow-dung, an improvement would be seen in the ordinary displays of Hyacinths in pots. I cannot help thinking that much of the success seen in the bulb gardens is attributable to the dampness of the soil, for there is water everywhere in and around the different gardens or farms. It cannot be otherwise, but wet, and yet the bulbs are not in the water, the gardens being all above the water level, and, to make it doubly safe, the beds are all divided by sunken alleys to a depth extending below the bulb.

The question is often asked why we cannot grow Hyacinths year after year in this country in the same way as they do in Holland, and it requires but little consideration to arrive at a correct solution of the reason why. I believe it is well understood that nothing weakens plants so much as to ripen their seed, having then, as it were, performed their purpose—reproduction. This fact appears to be thoroughly understood by the Dutch cultivators, as they seldom allow the Hyacinth to expand all its flowers before they remove them. This being done, the whole of the energies of the plant are devoted to the storing up of nourishment to enable it to carry out Nature's purpose another time. That bulbs can be grown out-of-doors from year to year with tolerable success, and that they cannot be grown in pots the second year, proves the soundness of the Haarlem system. In an ordinary way the flowers in the borders do not last so long as those in pots, consequently the bulb is not so much exhausted in the border. The stormy weather experienced a few weeks ago unfortunately proved this matter more fully than

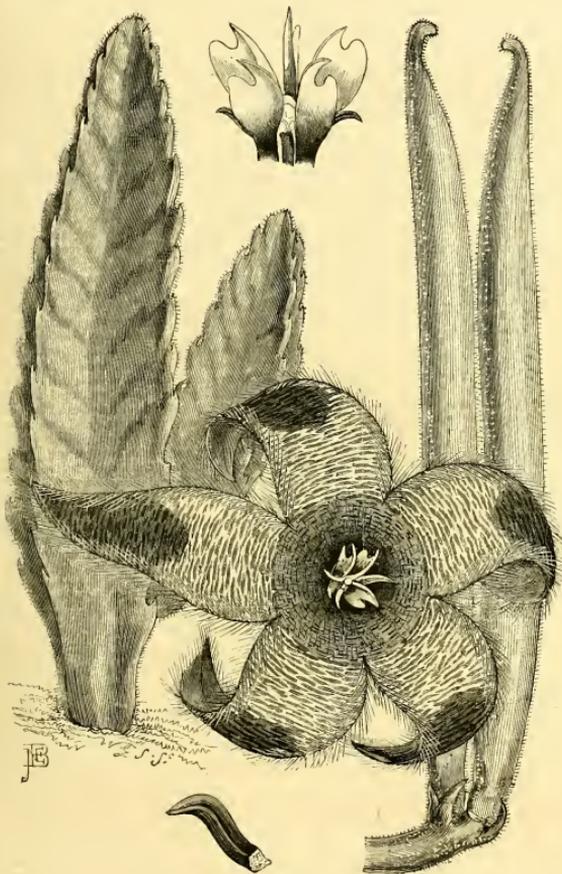


FIG. 85.—STAPHELIA GRANDIFLORA VAR. LINEATA.

out, several from each, as in the case of most things, but simply stops growth altogether for the season, and hastens their flowering. Where there is not the convenience of a house in which they can receive a little heat early, as above described, all the difference in their treatment required is to pot them later, about April, with the other hard-wooded greenhouse plants, and treat through the summer as before advised, but by the latter method they cannot be expected to make so much growth, nor flower so early. When they come into bloom they will make nice little plants for standing on front shelves, or in any prominent position.

shift, using the soil in a little more lumpy state, and keeping the strongest shoots well tied out, so as to clothe the base of the plants, treating them through the season as heretofore. The treatment required during subsequent years will be similar in every way, always cutting the shoots well back before growth begins, or a sufficiently dense, bushy condition will not be maintained. It is not necessary to increase the size of pot beyond 15 inches in diameter, as this will be big enough for full-sized specimens. After the plants have been in pots of this size for a year or two they should be regularly supplied with manure-water

pleasant, having broken off very many flowers that were just opening. Where this occurred the foliage has assumed a stiff, robust habit, while others, still retaining their flowers, have a lank, attenuated appearance.

To return to the Haslem bulk fields, we find that although the soil is naturally very sandy, it is made more so by constant dressings of the sand brought from the dunes or sand-hills, and this, with the heavy dressings of cow manure, enables the cultivator to grow the same crop on the same piece of ground every second year, yet it may be considered as a three years' rotation. When the ground is well manured Potatoes are planted, then Hyacinths after the Potatoes are taken up, and the next autumn Tulips take the Hyacinths' place, at least this is the system I understood one celebrated cultivator (Mr. F. Van Velsen, jun.) pursued, and his cult garden may be considered second to none, as all other flowers were to be seen anywhere. In many cases the robust character of the plants was very apparent. In this establishment was raised that splendid Hyacinth, the King of the Blues; it bears a splendid spike, and for late pot-work is invaluable. Mr. F. Van Velsen has a large stock of this fine variety, as well as of many others. Some of the more effective varieties seen were, of doubles, Eclipse, carmine, extra fine; Noble par Merite, blue, purple eye; Anna Maria, blue, pink eye and Madame de Sael, pale rose. Amongst single varieties the most conspicuous—Amy, bright red, fine for massing; Masterpiece, very fine rose; Robert Steiger, Von Schiller, Vuurbaak, bright red, very effective; General Havelock, a fine black; King of the Blues, before mentioned; Mimosa, fine large dark variety; Regulus; William the First; Bird of Paradise, a very fine yellow; Grande Vedette; La Grandesse, a very fine white; La Vestale, Mammoth, Thaba, Thémistocles, Charles Dickens, Havelock, and Tolens. My visit was rather early, so that the Tulips in perfection, still enough was seen to give an idea of the magnificence of the whole; the Duc Van Tholl varieties were very charming, and Canary Bird, single yellow, is very fine and highly recommended; the varieties of Claremore, rose striped and gold, are very good; Proserpine and Van der Neer should be in every collection. *George Thompson, Crystal Palace.*

FERTILISATION OF PLANTS.*

(Continued from p. 535.)

5. ALTHOUGH in many cases it would appear that intercrossed plants are absolutely more fertile than the self-fertilised, yet Mr. Darwin raised during his experiments some highly self-fertile varieties, which "yielded more seed and produced off-pring growing taller than their self-fertilised parents, or than the intercrossed plants of the corresponding generation." Such were "Hero" and the white variety of Mimulus, and a pale variety of Dianthus, while equal-styled Primulas proved more fertile than ordinary plants of the same species legitimately fertilised by pollen from a distinct individual. The ratio of the intercrossed opponent to "Hero" was only 100:106, but in the eighth generation two other "Heroes" appeared, whose ratios were as 100:111 and 100:150. Their off-pring, however, were not preserved.

6. Mutual adjustments of the essential organs, as well as special constructions, are often to be met with, in thus secure self-fertilisation. Mr. Meehan thus describes *Melampyrum americanum*: "The curved apex of the pistil is clasped by the stamens and held in contact with the pollen, just as in a cleistogamous Violet." The same occurs with small-flowered Epilobiums, while the styles of *Malva rotundifolia* curl backwards, as H. Müller has described, and it is the same in other small-flowered species, in order to intertwine amongst the anthers. In *Salvia clandestina* the elongated stigma curls back in a similar manner, and between the anthers, which burst, and the stigmas, as in other species, but sideways, facing the stigma. The position of the filaments in a position arching over the pistil is very common, as in small-flowered Ranunculi, Potentilla, &c. Such positions appear to be often the normal ones while in the bud, and have thus been retained after the flower has expanded. In flowers with a large number of stamens, Buttercups, &c., the outer stamens burst first, but if the pistil be not crossed, then the inner which develop later, perform the function.

* Cross and Self-Fertilisation of Plants. By C. Darwin. Murray.

7. Inconspicuous flowers are very numerous, and, as H. Müller observes, "must be self-fertilising, or they would become extinct;" and it is observable that they form the majority of our weeds, are excessively vigorous and amongst the commonest of plants. The origin appears to be by degradation from conspicuous conditions, as many of them have irregular flowers, such as *Fumaria officinalis* and small-flowered Clovers, which could only have arisen originally by insect agency. I do not agree, therefore, with Prof. Dyer, who regards cleistogamous flowers as "probably survivals of the original type" (*Nature*, Feb. 15, p. 331), for in all cases I consider them as degraded forms of their more conspicuous congeners, but reverting to self-fertilisation. I cannot, therefore, accept Mr. Darwin's conclusion that some plants "have actually had their flowers purposely rendered inconspicuous;" I take it to be simply and purely a result consequent on the absence of insects.

9. With regard to the facts of intercrossing and of self-fertilisation we must be careful not to confound the means with the end. Crossing does *per se* no good unless it bring new constitutional elements. This Mr. Darwin clearly proves. But I do not think he seems to see that self-fertilisation is not injurious except in the sense that a plant cannot introduce into itself the same vigour as when selected plants are introduced into other countries, then they may become excessively vigorous, as the British weeds have done in New Zealand.

And it is a significant fact that while, with scarcely an exception, such plants are self-fertilising weeds, their conspicuous allies are wanting. Thus *Malva rotundifolia* has established itself in New Zealand, Society Islands, Sandwich Islands, Abyssinia and Japan, but *M. sylvestris* and moschata are conspicuous by their absence, excepting the former, which is in Japan, proving that there is no *a priori* reason why it should not have done elsewhere. *Euphorbia Peplus* and *heliocarpa* are present in New Zealand, both of which Mr. Bennett showed were self-fertilising, but no other species is known. *Rosa ruginosa* is the most conspicuous flower, but oddly enough this is the only British Rose which has established itself in America.* Once more, five of the small flowered species of British *Stellaria* are scattered about the world, one of which, the highly self-fertile *S. media* or *Chickweed*, is found in New Zealand, Tahiti, the Sandwich Islands, American Islands, Small Islands, South Africa, South America, South Australia, Tropical Asia, Hong-kong, Japan, Madeira; but the larger flowered proterandrous *H. holostachya* conspicuous by its total absence from any of these far-distant localities. The inference would appear to be that the necessary insects required to cross conspicuous proterandrous species not being there, such plants have died out, if formerly introduced; and the self-fertilising weeds have thus proved themselves "the best fitted to survive in the struggle for life," in accordance with Mr. Darwin's remark on a 407. "If any entomophilous species ceased to be visited by insects it would probably perish, unless it were rendered anemophilous," or self-fertilising.

The next four headings (10 to 13) refer to the relative vigour displayed by self-fertilised plants, and as each has been already alluded to in previous papers little need be now added; I would, however, allude to the case of *Lobelia fulgens*. Of this plant three pots containing twelve self-fertilised individuals beat their intercrossed opponents in the mean ratio of 116:100, which in three pots all the intercrossed beat their opponents in the ratio of 100:73;—the mean ratio for intercrossed compared with the self-fertilised being as 100:91, that is, very nearly equality. Now this case, together with that of *Hero* and the white *Mimulus*, would seem to show that when a large number of plants are cultivated or grown for many years, self-fertilised plants may arise quite equal, or even superior to the intercrossed; and as many of Mr. Darwin's experiments were made on single or very few generations, and with even less than the plants above, it seems very considerably the relative value of such cases.

14. There is a section in chapter viii., p. 303, headed, "On the Transmission of the Good Effects from a Cross, and of the Evil Effects from Self-fertilisation." The test was in the heights of the plants raised by the intercrossing both the previously intercrossed and also self-fertilised plants. Of the fifty-four species cultivated Mr. Darwin selects three

only: the first, *Nemophila*, which unduly favoured self-fertilisation, must be struck out, as Mr. Darwin says of it, "This experiment was quite worthless." The second is *Viola tricolor*: the previous generation gave the ratio of the heights of the intercrossed to the self-fertilised as 100:42, but of the descendants from both derived by crossing and producing "an abundance of very fine capsules," it was as 100:82. That is to say, the self-fertilised had improved by the cross, but that the intercrossed had inherited its advantage. The third and last example given is *Lathyrus odoratus*. The first two generations gave the usual ratios as 100:80 and 100:88 respectively, and the ratio of the heights of their off-pring (now derived in both cases from an intercross) as 100:90. Hence, the same remark applies to this as to *Viola*. Mr. Darwin adds:—"These two lots of seeds were likewise tried by being sown under several unfavourable conditions in poor exhausted soil, and the plants whose grandparents and great-grandparents had been crossed showed in an unmistakable manner [my italics] their superior constitutional vigour." Turning back to page 159, it appears that some seeds were sown in the same pot with a *Broomrape*, others in poor soil in a shady place in the shrubbery. The ratio of the heights of the first lot was 100:88, of the others 100:98—that is, practically the same; for Mr. Darwin elsewhere considers 96 to 100 as equivalent to 100. I do not see, therefore, that the results quite justify the above description. The points which are clearly proved are, first, that constitutional superiority gained by intercrossing is transmitted to the off-pring; and, secondly, that nothing here tends to prove the descendants of the self-fertilised to be worse than their progenitors. Indeed, when we read that Mr. Knight's varieties of Peas, originating from a cross, were subsequently propagated in an abundance as a marketable product for sixty years, and that they were afterwards self-fertilised, we see what is meant by "the evil effects;" we may rather ask, was not the "cross" somewhat beholden to the power of self-fertilisation to be able to be kept up so long? Then the question suggests itself, Was the dying out of these varieties or of Mr. Laxton's due to degeneracy, or mainly to fresh varieties competing with them in the market and superseding them?

If we regard the undoubted benefits derived by crossing as a positive good, then it would seem fairer to say that self-fertilisation gives purely negative results.

If two people marry who are consumptive, we might in justice speak of the evil effects or injuriousness of the union, as revealed in their consumptive children. But of the great number of habitually self-fertilising plants, which by their vigour and abundance get called troublesome weeds, as *Senecio vulgaris*, *Cardamine hirsuta*, and *Stellaria media*, &c., nothing can possibly be said which justifies those terms. Hence the heading above quoted should have been "On the Transmission of the Good Effects from a Cross" alone, or with the addition, "and of the correlative negative results of self-fertilisation."

The general inference appears to be this, that self-fertilisation is *per se* not injurious in the ordinary sense of the term, as implying, for example, weakness of constitution, but only in that a plant cannot introduce by that agency fresh constitutional elements; such being the case, the average vigour of such plants remains stationary. If, however, it can acquire such, in nature by migration to a different locality, artificially made soil, then the self-fertilised may completely outstrip the intercrossed and beat them in every way. The sole, but doubtless a great, advantage of crossing, lies in such being an important means of introducing fresh constitutional peculiarities. On p. 438 Mr. Darwin observes, "That certain plants, for instance *Viola tricolor*, *Digitalis purpurea*, *Sarothamnus scoparius*, *Cyclamen persicum*, &c., which have been naturally cross-fertilised for many or all previous generations, should suffer to an extreme degree from a single act of self-fertilisation is a most surprising fact." The inference, however, I would draw is, that these plants probably represent a condition approximating absolute self-sterility, and one generation is not enough for them to recover their full self-fertility; absolute self-sterility having been reached by some species, the number of which "is not at present large" (p. 341). Hence I would group both kinds under the one common cause of sexual differentiation, due to insect agency. *Viola* seems to show—if I may express it metaphorically—that Nature found

* From a list of British plants in New Zealand, by Kirk, in *Transactions of New Zealand Institute*, 1868, vol. 1, p. 157.

she had gone a little too far, and ran the risk of having no offspring at all, and so adopted cleistogamous flowers as well.

This leads me to contest another of Mr. Darwin's

under *Domestication*, vol. ii., p. 149, he gives, what seems to me, the correct explanation, that "the sexual elements of the same flower have become differentiated in relation to each other, almost like

When we consider what the plants are which are thus absolutely or more or less self-sterile, we find them scattered about and in no way of—in other respects—low type, as correlation would, *a priori*, lead us to expect; e.g., *Eschscholzia*, *Corydalis*, *Reseda*, *Lobelia*, *Verhascum*, *Passiflora* and *Orchids*, as *Oncidium*, &c. Now these have either allied species partially or quite self-fertile, or may often become so on changed conditions, that instead of their sexes being not sufficiently, I should prefer Mr. Darwin's former explanation that they were too highly differentiated, and that when they become self-fertile, as *Eschscholzia* in England, it is a recovery of, or reversion to, self-fertilisation. Such is my impression: readers can now form their own conclusions as to which they may think is the more probable. *George Henslow*.

A NEW VARIETY OF COTTON.

M. DELCHEVALERIE, the Inspector of Agriculture of Cairo, laid before the recent Congress of Amsterdam some specimens of a new Cotton plant found growing in Egypt. In a field of Cotton, among which were found some *Bahmich* (*Hibiscus esculentus*), a certain Cheik-el-Celed of the environs of Chib-el-Kom, in Lower Egypt, noticed some specimens of fastigate Cotton plants, quite different to the others, and similar in habit to the *Bahmich*, or *Bamia* plant. The stems are about 8–10 feet high, straight, and with relatively few branches, and those ascending not spreading as in ordinary Cotton plants. Hence the planters of that region did not hesitate to call them "Kot-Bahmich." They collected the seeds carefully, in order to plant them separately. The following year they obtained nearly half a *faddan* (about half an acre) of them, of which the seeds were collected in the same way, and Egypt this year already possesses important plantations of this new variety of Cotton. The first samples which arrived in the market of Alexandria were distributed among several merchants, who sent them to Liverpool, where they were classed above "fair Cotton," and neatly fetched the price of "good fair."

M. Delchevalerie, in a note addressed to the Congress, suggested the idea that this Cotton is a hybrid production between *Hibiscus esculentus* and the Egyptian Cotton itself, and he proposes this summer to make some experiments at Cairo, in order to ascertain if this be so. If this hybridisation has really taken place between the *Hibiscus* (*Abelmoschus*) *esculentus* and the Cotton, the fact will be of great importance from a scientific point of view, for it may give rise to other experiments in artificial fertilisation between other genera of the same family. Similar facts are not unprecedented in the records of horticulture. However this may be, the new Cotton plant is taller than the ordinary Cotton. It is erect, and scarcely branched, with the exception of two or three small branches at the base, which allow of the plants being planted closer. It has not the shrubby form of the ordinary Cotton plant, which has numerous branches, themselves branched and producing here and there at the joints a capsule of cotton on a long peduncle, as seen at fig. 87. On the contrary, in the new Cotton plant, the principal branch is straight and not branched: see fig. 86. The capsules grow on the principal stem in clusters in the axils of the leaves, and are likewise borne on long axillary stalks. The roots are more tap-shaped than those of the ordinary Cotton, whose root fibres moreover spread more horizontally (fig. 88). And what is more important is, that the new variety produces much more Cotton. The cultivators of this new Cotton plant have assured M. Delchevalerie that they have obtained fifteen quintals of it per *faddan*, in the rich soil of the Delta, while the ordinary Cotton does not produce half that quantity. M. Delchevalerie informs us that he has instituted a series of experiments at Cairo on the cultivation of this new Cotton plant, and he has kindly promised to let us know in due season the results of his researches concerning this important question.

We have already alluded to this Cotton, specimens of which may be seen in the Kew museum, though by no means equal to those exhibited at Amsterdam. Young plants are also growing at Kew and with Col. Trevor Clarke.



FIG. 87.—NEW ORLEANS COTTON.

FIG. 88.—ROOT OF ORDINARY COTTON PLANT.

FIG. 86.—DIAGRAM SHOWING THE HABIT OF THE BAHMICH COTTON.

conclusions. On p. 455, in the passage beginning "It is an extraordinary fact" [to end of paragraph], he regards the more or less self-sterility of many species as due "to the sexual elements not having become sufficiently differentiated;" but in *Animals and Plants*

those of two distinct species," and he further adds, in direct opposition to his present work:—"We may conclude that it has been naturally acquired for the sake of effectually preventing self-fertilisation." This he now rejects (see p. 345).

Foreign Correspondence.

ABIES MENZIESII.—In the number of the *Illustration Horticole* for December, 1876, I alluded to a variety of *Abies Menziesii* which I had admired the preceding autumn in Professor Ch. Sargent's garden at Brookline, near Boston. I named this plant *Abies Menziesii* var. *Parryana*, in honour of Dr. C. C. Parry, who brought the seeds of it from the mountains of Colorado.

On January 13 of this year this beautiful tree was mentioned for the first time in the *Gardeners' Chronicle* (p. 48), when speaking of the young cuttings brought by Mr. A. Waterer from Mr. Sargent's garden.

Some weeks after, on February 17, M. Origies, of Zurich, wrote in the same journal (p. 214), saying that *Abies Menziesii* of Colorado was the same as the *A. commutata* of Professor Parlatore (or A. Engelmanni, Parry), the seeds of which were collected in 1874, in Colorado, by M. Roelz. M. Origies adds that those nurserymen who received these seeds from him will be glad to learn that their young plants are the same as those which adorn Professor Sargent's garden at Boston. It is impossible for me to place confidence in M. Origies' assertion concerning a plant which he has never seen, and consequently cannot verify. Since the publication of M. Origies' note, I have satisfied myself that the tree in Mr. Sargent's garden is really a form of *A. Menziesii*. After my visit to Boston, Dr. Engelmann, of St. Louis (Missouri), saw the specimens to which I refer, and after a critical examination confirmed my opinion. A year ago Dr. Parry himself, seeing again the plant of which he had brought home the seeds, was of a similar opinion; and one must not think that he judged this from a single specimen, but from a collection of several hundreds, taken under the utmost variety of conditions. The fine specimen with decided blue tint may be considered as the extreme form of the deviations from the type, to which others gradually revert.

Even in its youngest state, *A. Menziesii* may be distinguished from *A. Engelmanni* with the greatest ease. The young plants of *A. Menziesii* are characterised by a thick grey bark, and strong broad leaves, with sharp points that a spring of this tree cannot be pressed between the hands without sharp pain being felt. This character may not be recognised by the reflexed tips of the scales of the buds.

In *A. Engelmanni* the bark is very thin, scaly, and of a light brownish-red or greyish-purple colour. The appearance of the tree when young is almost identical with that of *A. nigra*, with which, at first sight, it might easily be confounded. The leaves are much more slender than those of *A. Menziesii*. They are 6 to 9 lines in length, and scarcely 1 line in breadth; they terminate in a short but not very sharp point, and a branch may be taken in the hand without any pain being inflicted. By this simple test Dr. Parry, who is more acquainted with these trees in Colorado than any other botanist, was able to distinguish between the two, even with his eyes shut.

On seeing the two species side by side, it is seen that *Abies Engelmanni* begins to grow in spring, a full month before *A. Menziesii*. The reason of this is, that plants growing wild at a great height or in northern countries, on being transplanted to a warmer climate begin to open their buds at the approach of the first spring-like day. This is fatal to them, for the late frosts invariably destroy their young shoots. In this manner *Abies pichta* (A. Sibirica) bears perfectly well the severe winters of North Russia and the British States, where the spring is late but continuous, but in France and England only forms miserable shoots which are cut off every year by the spring frosts. Under this category comes, unfortunately, *Abies Engelmanni*, for in America it is developed before any other species of Conifer, and the culture of it cannot be recommended anywhere but in the North of Europe. Thus it thrives perfectly at St. Petersburg, where fine specimens may already be seen. It is not so with *A. Menziesii*, and its divers varieties, which have nothing to fear from the climate of Central Europe. In the case of *A. M. Parryana* (which may also be called *A. M. coloradensis*, if it is wished to characterise this variety according to its geographical habitat), its hardiness is certain; and the altitude at which it grows is a sure guarantee, and I have no hesitation in saying that when the gardens of Europe possess it (which will not take place just yet, as Mr.

Waterer's young plants have not yet left his nursery), it will be universally acknowledged to be the most beautiful of all the species of *Abies*. I will conclude by adding that the greater part of the above information was obtained from Professor Sargent himself. *Ed. Andrié, 67, Rue Blanche, Paris.*



Natural History.

HATCHING OF ROOKS (see p. 539).—It may perhaps answer a portion of Mr. Haydon's inquiry to mention that in Yarrell's *British Birds*, vol. ii., p. 99, he gives notes of a rook's nest with eggs at Gainsborough; rook's hatching young in a warm sheltered valley in Cornwall, and also of rooks building and hatching in Oxfordshire; and another instance (without locality recorded) of rook's nest with young in it: all these during the month of November—the respective dates of the three first mentioned being 1817, 1836 and 1844. With regard to the early hatching I cannot find in such books as I have at hand any information beyond reference to the "general hatch in April" and the young being able to fly about the end of May.

Here (in the vicinity of Isleworth) the note altered about the 20th inst. this year, and last year a thorough egg-shell was found under the trees on April 26. The sitting was then under exceptional difficulties from the late snow, and the birds were much disturbed by it on their backs, and (reasoning by analogy) very fretful.

Many of the nests were new last year, so that the whole operation of twisting off live twigs, building and plastering, could be watched throughout; this year the repairs have been limited to sticks put in—no new plastering appears yet requisite. O.

— In reply to your correspondent relative to the earliest and latest periods when rooks are hatched, I may state that, as near as I can judge, the first rooks were hatched with me about April 9. Many of the young rooks are now quite strong. The number of nests in my trees is thirty-two: the hatching still continues. This rookery has only been in existence about five years; it commenced with one nest. The rooks are fed every morning, and are now so tame as to come within 3 feet of my breakfast-room window. Their nests are close to my house—some in a tree which covers a portion of the roof. I have, therefore, ample opportunity of observing their curious and most intelligent ways—a pleasure to myself much greater than the ignorant and useless and barbarous custom of shooting these most useful birds. *K. K., Tullyfort, Exeter.*

— The earliest period I have known rooks to hatch is the end of March, the latest about the middle of May. I think it is generally known that the male regularly supplies the female with food during the period of incubation. I suppose it is equally well known that they have their regular roosting places, only occupying the trees where they breed for a few months in early spring and summer. I may add the roosting place they frequent is a wood five miles distant from this place. *W. E. T., Wandsworth, N.W.*

Florists' Flowers.

THE annual exhibition of the ROYAL NATIONAL TULIP SOCIETY is fixed to take place at the Manchester Botanical Gardens on Whit Friday, May 25, but, judging from present appearance, there is every probability of a scarcity of flowers, the season being late; and the dull weather and cold north-easterly winds are very much retarding the flowers. If mild sunny weather, with warm genial showers, were to commence at once, there would be some

chance of flowers being in at the time; but another week of the prevalent unspring-like weather will seriously affect the show. So far the Tulip bloom is full of promise; it is now only a question of suitable weather to bring the flowers out. A bold, vigorous growth characterises Mr. Samuel Barlow's beds at Stakehill House, Chadderton; and there is the promise of many breeders breaking into rectified flowers. This tendency manifests itself in the foliage while the plants are forming and throwing up their flower-stalks. The leaves take on a kind of streaked yellow appearance, just such an indication as an uninitiated person would associate with ill-health; but all these plants are not only in good health, but will certainly produce rectified flowers. There will be a greater number of "breaks" than usual in the Stakehill beds. The physiology of the Tulip is indeed a wonderful feature in plant life; and it is only those that are constantly engaged in cultivating it that come to fully understand these remarkable characteristics. Let us hope the face of Nature will yet smile on the efforts of the cultivators, and reward them with fine bloom at the time it is required for exhibition purposes.

— The condition of the DWARF ROSES in the grounds of Stakehill House, Chadderton, the residence of Samuel Barlow, Esq., forcibly illustrates the difficulty of cultivating the queen of flowers in the open air in the environs of Manchester. In the beds on the lawn the Roses have died down nearly to the ground—in remarkable contrast to the South, where the plants have scarcely ceased to grow vigorously all the winter. The atmosphere appears to be charged with conditions destructive to the well-being of many plants, and the Rose suffers keenly. In the Tulip garden, which is at a higher elevation, and in a sheltered position, the plants look a little better, but sadly at the best. Hollies and Rhododendrons, among evergreens, succeed the best, but their leaves become quite overlaid with a sooty deposit, that clings to them with such tenacity as to need an alkali to effectually cleanse them. Primroses and Pansies, in the open border, have a bad time of it during the winter months; the most durable plant is the Daisy, and the beds of those of the crimson, pink, and white varieties are becoming very effective on the lawn. Gardening in certain localities has its disadvantages, as well as its pleasures, and in the neighbourhood of large manufacturing centres all that forethought can conceive and skill apply is necessary to ward off, or at least mitigate, the effects which, if unchecked, lead to direful results.

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—Gloxinias intended to come into flower later in the season, and which are wanted for use in conservatories kept a little closer than an ordinary greenhouse, must not through the early stages of their growth be treated to so much warmth as those that are to remain altogether in the stove; and quickly, as with most other plants, if pushed on quickly by too much warmth, it is essential, and is necessarily much tender and less calculated to bear a cooler atmosphere when in bloom than if they had been grown slowly all along. These remarks apply also to Achimenes and Tydies, the whole of which should be kept near the glass, with a moderate amount of air and very little shade. The temperature of an intermediate house will suit them better than the ordinary stove, which is too close and moist. They will do very well on the front shelf of a vinery where there is upright glass, so as to give them the requisite light, or, still better, in a low pit, where they can stand near the glass. It is essential, in this respect, to look well ahead and see that there is a sufficient number of such plants as these prepared for conservatory decoration during the latter part of summer. Plants of *Clerodendron Balfourianum* started late and kept moving slowly are fine and long-enduring objects for the same purpose; for them a slight shade, even at 55° is essential, and it is surprising the length of time the flowers will last. The stately growing *C. fallax* can be employed in the same way, as also the exquisitely scented *C. fragrans*, a plant now seldom seen, but which possesses the advantage of occupying little room, being headed right down to the surface in the winter, and from its unsurpassed perfume it deserves a place wherever sweet-scented flowers are held in estimation. It is

now a good time to put in cuttings of the *Clerodendrons*, to be grown slowly and kept in small pots through the summer, in which case they will occupy very little space, and do not rot, and with a liberal water supply will make decorative plants of more general use than larger specimens. If a little Balsam, *Globe Amaranthus*, and Cockscomb seed is now put in they will be ready for use in the autumn. The advantage in the use of such plants as these is, that they can be stood about without hesitation when in flower under other things, and in dark corners, where their flowers are not so conspicuous. It will be advisable to put subjects of more permanent character and greater value. The stock of *Bouvardias* should now be looked over, to see that there is sufficient for next winter and spring use. One-year-old plants that have flowered through the winter, should be cut down, placed in a close warm temperature, and syringed daily overhead, but too much water must not be given to the roots. As soon as they have broken into growth turn them out of the pots, reduce the ball fully one-half, replacing them in the same pots, and adding to the soil a good portion of leaf-mould and a moderate quantity of sand. When they have well rooted into this, give them a size larger pot, or, still better, if they are convenient at hand, to put them into the pots, and plant in frames, lifting and repotting them in the autumn. The latter system of management is much to be preferred with young stock that has been struck during the winter, as so many conveniences attend it. The plants will grow much larger than they will under pot culture, with a proportionately increased ability to produce flowers in quantity. Large old plants may be cut back and treated similarly. The young shoots that break after cutting in the same pots, and which in length will make good cuttings if taken off with a heel; some of these should be put in, as it is always well to keep up a sufficiency of young plants. For the like purpose, when the stools are shooed out, some roots may be taken off. At the present time the potted early and are strong and in good condition at the roots will now be furnished with a plentiful supply of flowering shoots, which in the case of those that have been pushed up with strong heads will be showing long. With this in view, it is the practice to train the shoots over the trellises as soon as the flower-heads are discernible, yet whatever purpose the plants are grown for, whether for home decoration or exhibition, it is not to be done until the buds are open; they are thus bent down it causes the buds near the base to break into growth, which has the effect of starving the advancing bunches of bloom. It is much better not to train the plants until the flowers are open. The best plan is to insert half-a-dozen tall sticks inside the rims of the pots, with a strand of bast tied round the top, so as to enclose the shoots, and keep them in an erect position until the time comes for bending them down. Where they do not done their work, and when wet with the syringe, causes them to break out from the bottom. Pot specimens of *Bougainvillea glabra* should have their stools similarly supported, for they, like the *Allamandas*, unless kept in an erect position, do not set their flowers freely at all, as the shoots, when bent down by their weight in a horizontal position, cease to grow longer, and commence breaking out from below. The omission to note the habits and requirements of these and other things in little matters of this sort is frequently attended with strong, well-grown, and in other respects well-managed plants not flowering in any like the profusion they otherwise would. *T. Baines*.

FLOWER GARDEN, ETC.

In sheltered places that are not subject to late spring frosts, and where early flower gardening is desired, some of the hardiest plants, such as *Campanula*, which has previously well prepared, may be planted out in the beds they are to occupy for the summer, as the ground in most gardens has had a thorough soaking of rain last winter and spring. The plants now turned out will require less water than usual—merely enough to settle the soil about their roots as the work proceeds, and after each bed is finished let them be shaded with a few branches, which will protect them from cold winds, and keep the plants from taking any harm from a slight frost, and not an unfavourable early earthing as a general rule, especially in situations where it is attended with risks, but in certain places where such work can be done with safety and an early cutting is expected, under the conditions I would say, may be done at the time when the weather is favourable, and much may be done with careful management and attention. Perhaps it is scarcely necessary to say that at this time, and a season like the present, all watering should be done in the early part of the day. Any plants that are turned out after mid-day will not suffer if left without water until the following morning. Keep the hoe going wherever weeds make their appearance, and I find that this season they are a very plentiful crop, the weather

having been so favourable for their growth. Let the grass be well kept down at this time; when the attention and labour is so much occupied with other matters the proper keeping of the place is apt to be neglected. The sowing of walks may be done before the ground gets too hard and dry for the operation, and let every part of the ground be left in the best order possible. *T. Blair, Strathland Park*.

FRUIT HOUSES.

STRAWBERRIES IN POTS.—In general these plants are the easiest of those with that terrible pest, the red spider, which, at this time, most abound, and increase in number so rapidly that it is scarcely possible to have them in the houses where high degrees of heat are kept up without it being communicated to the permanent occupants. Under such hazardous circumstances caution should be exercised in the distribution of them about the houses, or most probably the common crop of fruit may thereby be much deteriorated, if not spoiled altogether. In the case of vineries, Peach-houses, or Melon-houses, where the crops are considerably advanced, they should now be excluded. In some places, however, it is indispensable to use the late vineries for these plants; if so, keep the plants free from contact with them. Plants which are placed on shelves and fully exposed to the air and light should be well syringed every two days, and have special care bestowed on the watering, particularly if means, in the way of saucers or turves, are not employed, by which a certain degree of moisture is constantly secured to the roots. An occasional sprinkling should also be given to plants in pots where they are closed up in the afternoon. As soon as from six to twelve perfect fruits are well set remove the rest. As those plants which have not set sufficiently matured to get out into the ground, it should be done without further delay. Care should be given to imbed the balls of soil firmly in the ground, or they will not succeed satisfactorily, and water should be applied after they are planted. This method is a very commendable practice, as the yield of fruit from such plants in the succeeding year is sometimes enormous. *G. T. Miller, Wycombe Abbey*.

THE CHERRY HOUSE.—From the time the fruit commences colouring and henceforward until it is gathered, the trees and fruit should be kept free from moisture; to supply the deficiency in this respect in some cases, a portable smoke-plant, which may be in the house should be syringed and damped occasionally as the case may be. At this stage the borders in which the roots are placed should also be kept well supplied with water, and the water should be especially large and finely-mashed fruit should not be expected. Permit all the terminal shoots and others which are left to furnish a supply of young wood for the subsequent season to develop themselves, and when the limit of their growth is delayed, further progress; keep these tied-in neatly as they advance, and pinch-in the rest at about the fifth leaf from the starting point. Should insects, such as the black or green fly, be present in any degree on the surface of the leaves, they may be removed without delay; for this operation select a calm evening, and have everything inside the house perfectly dry. When the house is densely filled with smoke take away the appliance at once; a neglect of this precaution is sometimes attended with injurious consequences, through the flaming of the materials which are left unexhausted. If a thinning of the fruit be necessary this should be done as soon as sure indications of its progress are visible. At this time the plants may be secured from frost by being covered with safety, but with an increased degree of heat a little air should be retained on at the apex of the house constantly. Let the apertures for ventilation be covered with netting before the Cherries are ripe, or the same may be done after the usual manner, but do not make an attack on them immediately. *G. T. Miller, Wycombe Abbey*.

ORCHARD-HOUSE.—The dark, sunless weather which prevailed throughout April having considerably checked vegetation, at one time very forward, fruit trees in the unheated orchard-house as well as out-of-doors are now later than they have been for some years past. The sowing of seeds, therefore, will be more favourable to trees under glass, and there is now every prospect of excellent crops of fruit. Where precautionary measures have not been taken before the trees in this structure come into bloom it frequently happens that the fruit, when it becomes mature, is not fruit is properly set, when fumigating cannot be resorted to with safety. Where this is the case the affected trees should be well dressed with Pooley's tobacco-powder, which may remain on the foliage until it has blown out of the house, and the fruit should be well fumigated with tobacco-paper. Always syringe the trees after smoking, which should be repeated after an interval of three or four days. Give sufficient water at the roots to thoroughly moisten the soil when necessary, but avoid the pernicious practice of

constant dribblings. Syringe freely on fine days, and apply the garden-engine occasionally on bright evenings, when all danger of severe frost has passed away. As soon as the fruit on the Peaches and Nectarines have attained the size of Peas, they should be slightly thinned; rub off all small, badly placed fruit, which would rob those intended to ripen, and, if plentiful, leave only those which are placed on the upper side of the branch, and which are the most desirable. The disbudbing of pot-trees does not always receive the attention it deserves. The process should be carried on gradually to avoid checking the flow of sap, until, by disbudbing and pinching, the requisite number of shoots are left forming a cone-like tree. When the present bearing wood has been removed in the autumn it sometimes happens that two or even three shoots may be allowed to extend from the base of the bearing branch, but as a rule one will be found sufficient. Stop all the leading shoots on full-sized trees when they have made six or eight leaves. Train the succession shoots above alluded to outwards, and stop the strongest when they have attained a foot or more in length. *H. Coleman, Eastnor*.

HARDY FRUIT GARDEN.

The cold cutting winds that prevailed during the middle of last month passed like a blast over this part of the kingdom, and have had a most injurious effect on the tender foliage of Peaches and Nectarines, causing them to curl and blister in the most alarming manner. The trees are now in a state of prostration over them and pick off any leaves that show such malformation as to preclude the possibility of their righting themselves again, which they are rarely able to do even under the most favourable conditions. The general rule prevalent this year, that the leaves are so injured, for the part affected to thicken and go on enlarging till the whole energy of the tree is taken for their support, as the young growth seldom makes any headway to the most monstrous are removed, and the trees are confined to the leaves, but extends to the bark of the young wood likewise, which enlarges at the particular part in like manner, and in such cases that too must be cut out, and the next best situated leaf to take its place. This may be done the first disbudbing, which should now be proceeded with without delay, and in carrying out the operation due regard should be paid to so leave the young shoots as to keep the wall well supplied with young wood. In some instances, if considered, a few handsome well-formed trees are desired, what young growth is left for laying-in should be on the upper side of the branches, as then the training can be of the most regular and uniform nature. In other cases, if not the case were they left indiscriminately above and below, as is frequently done where the work is entrusted to inexperienced or improperly trained hands to perform. Not only is blister or frost prevalent this year, but it is equally troublesome owing to the same causes, and a close watch must, therefore, be kept, for if left to themselves for only a few days, they increase at such a marvellous rate as to quickly spread over the trees and the ground. As with all other insects that attack plants, the best way is to assail them directly they put in an appearance, which is a great saving of both time and material, and is the only way of leading to satisfactory results. By having at hand some tobacco-water with which to wet any shoots infested, or tobacco-dust with a proper distributor with which to put it on while the disbudbing is taking place, the further spread of these pests may at once be stopped, and with a good watering from a garden-engine or syringe, the trees may be kept in the morning and fine day, the trees may be thoroughly cleansed when they will be able to advance in growth without further check or hindrance. All the harder fruits, such as Apples, and Pear, which are now in the state of abundant crops, and with anything like fair weather the present season will, from all appearances, be one of the best as regards these that we have had for many years past. Any of the above that may have been grafted should now be looked over to see that there are no cracks in the clay to let air to the scions, for if this takes place and is not remedied, failure is inevitable. In cases where such has occurred, it will be advisable to remove it altogether and replace it with fresh, but this can only be done in such a way as not to disturb the grafts, which are now effecting an union, and are easily detached. Advantage should be taken of the moist condition of the ground to get all Strawberry beds mulched down with short stable litter, by doing which at once many times the labour will be saved later on when the foliage is more advanced, and there is greater difficulty in moving about amongst them. No more is this early littering down advantageous in this way, but it is the means of securing the plants from frost, which is a great consideration with such a plant as the Strawberry, that requires the greatest uniformity and a cool medium for the roots to feed in—a condition they would not enjoy unless sheltered in this way. It has been stated to rest on the soil. *J. Sheppard, Worcester*.

THE
Gardeners' Chronicle.

SATURDAY, MAY 5, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	May 7	Sale of Shells at Stevens' Rooms.
TUESDAY,	May 8	Sale of a Collection of Shells and Natural History Specimens at Stevens' Rooms.
WEDNESDAY,	May 9	Sale of Shells and Greenhouses Plants at Stevens' Rooms.
FRIDAY,	May 11	Sale of a Collection of Specimen Plants at Terry Hill, Sittinsborough, by Stevens.
SATURDAY,	May 12	—Crystal Palace: Great Flower Show.

NO one who knows the uphill work which the Council of the ROYAL HORTICULTURAL SOCIETY have had during the last few years in their relations with the Commissioners and debenture-holders, in their efforts to diminish the debts of the Society, and to extricate themselves from the fetters of South Kensington, will grudge them their triumph of Wednesday last. True, the debenture-holders cling on like the old man of the sea in the *Arabian Nights*. True, the South Kensington fetters are as yet not one whit loosened. Wherein, then, lies the triumph which was undoubtedly legitimately won on the occasion in question? It was not in the exhibition, grand as that was, for all through last year the shows were generally excellent, and on one or two occasions particularly so. The triumph consisted in having the arcades and conservatory densely packed for hours with visitors. Last year and the year before, as we have said, splendid shows were held, but the public kept aloof. The exhibitors, however, have stuck to the Society through all its evil days, and that they were largely disinterested in so doing is proved by the fact that on some occasions the prizes were not claimed in order not to add to the Society's embarrassments, and specially by the fact that though fine displays were made the general purchasing public did not come to see them. This time, however, their patient, persevering endeavours to prop up the old Society were rewarded by the approval of Royalty, and by the presence of such a crowd of visitors as has not often been seen at Kensington, even in its best days. It was, then, the visit of the QUEEN which brought this crowd together, and which may prove the turning point in the Society's fortunes. So long as circumstances compel the Society to maintain the South Kensington garden, so long will it be essential to success that the countenance of Royalty, and the support of the general public as distinguished from horticulturists proper, be secured. While admitting the desirability of conciliating the general public, spreading a taste for horticulture among them, and inducing them to contribute to the Society's coffers, we trust that the interests of pure horticulture will always be made paramount, and the proper functions of the society duly fulfilled. Better by far to have a small society doing its own work efficiently than a large one striving, by means of floral bazaars and other more fashionable means, to cater for fashionables and sight-seers, and wasting its means and its energies on objects not horticultural. To keep the Society to its proper work the active support of the horticulturists of the country is required, and if now they do not come forward when the ball is at their feet, they must not complain if their interests are not sufficiently cared for. Horticulture, in its widest and best sense, must be the aim of the Society, and to make it so horticulturists must come in, assert their unquestioned rights, and keep the management of the Society in their own hands. In any case, the success of Wednesday last proves the soundness of judgment of those who deprecate the attempt to found a new Society, but who have sought, and are seeking, to reinstate the Society in popular favour and to increase its power of doing

good horticultural work. As to the show itself, it was, as we have said, one of the largest and best ever got together at South Kensington. Being held in the arcades, there was little scope for that picturesque grouping which is so grateful when the large tents are made use of. But the groups of plants were of such unusual excellence and variety, that a right royal display was fittingly made. The QUEEN, accompanied by the Duchess of EDINBURGH and the Princess BEATRICE, broke in upon the committees when engaged in their work, so that HER MAJESTY had so far the opportunity of seeing how the work of the Society is done. Escorted by the President and the members of the Council, the QUEEN sauntered slowly through the building, examining now this, now that collection, and receiving the loyal homage of the members of the several committees.

The Scientific Committee was specially honoured—its President, Dr. HOOKER, who is also the President of the Royal Society, accompanying the Royal party and explaining the more noteworthy objects exhibited. The QUEEN on leaving expressed her pleasure at her visit, and we do not think these were mere words of courtesy, for HER MAJESTY looked pleased; and undoubtedly the horticulturists, who yield to no class of HER MAJESTY'S subjects in their loyalty were delighted to see among them once more their QUEEN, and to feel that their efforts to diffuse a knowledge of the glories and wonders of Creation and to contribute to the material and mental welfare of mankind, are still sanctioned and approved as they were in the days when the broad-minded PRINCE CONSORT had the sagacity to include horticulture among those arts and sciences which in the interests of the nation at large he did so much to promote.

AT the present season, when the preparation of PRIZE SCHEDULES will be brought under the consideration of the managers of flower-shows, it may be useful to invite attention to one or two points which past experience has shown to be important.

And first of all, we would indicate that Fitness—fitness to the locality and the materials which it affords for making a show—should be well studied in the framing of a prize schedule. What are the most fitting subjects to invite in each locality will be, or should be, best known to the very persons most immediately concerned. It generally happens in country districts—and it is for the framers of schedules for country societies that we chiefly write, since in the larger towns and cities which can support a good horticultural society there is generally a well-trained and experienced staff to make the arrangements—that there are certain subjects not far off, known to be cultivated with success, and the schedule should be so framed as to draw out these, and at the same time stimulate competition in these particular directions. The first object in holding a show should be to ensure a successful gathering by all fair and honourable means, and therefore every facility should be afforded for bringing in the materials existing in each locality. Once popularise a show by this means, so as to gain and retain the support of the public, and all the beneficial influences arising from its stimulating effect on competitors will follow in due course.

Then, again, Definiteness of Purpose should be made a leading principle in framing the classes of a prize schedule. Competitors cannot set up their exhibits advantageously, nor can the judges render full justice to their merits, if there is anything indefinite about them—anything left to the discretion of the judges, for example, as is too frequently the case. If a class requires each exhibitor to stage, say, eight Pelargoniums in pots below a defined size, the competition is equal; and as a consequence, every exhibitor knows exactly what to do; the

judges also can exactly compare the collections, and the best wins. But if the groups are undefined as to number, and unlimited as to size of pots, and one man brings ten plants and another six, the pots, moreover, being various in size, the largest exhibitor generally wins, unless his plants are so much inferior to those competing against them that they are hopelessly beaten. Or, to take another very common case: perhaps a "group of plants" is asked for. Now if, in such a case, A. brings a score of moderately meritorious examples, well set up, and B. a group of half as many really good plants carelessly staged, the chances are that A.'s poor plants get the prize, which does not properly belong to them, simply because the setting up finds most favour with judges. A "group" should be defined somehow, both for the exhibitors and the judges' sakes. The fairest way, if it be a group of large size, is to define the space it is to occupy; but if a smaller one, the number of plants to be admitted; but in any case it should be defined, and the wording of the schedule should define it clearly.

Another point in show management should be prominent. The regulations say that exhibits are to be ready by a specified hour, yet exhibitors will hang over their arrangements, and secretaries and stewards will allow them to do so, till that hour is often long past. Then the judges have to scramble with undue haste over their work, with the risk of making mistakes in distributing the rewards. There is no need for this laxity of management. Ten o'clock, if that be the hour named, should mean ten o'clock and not one minute later. The work of arrangement can just as easily in almost all cases be completed by ten or eleven o'clock; it only requires courteous whipping-in by those in charge of this part of the arrangements.

Then again some person or persons, who may be forthcoming when wanted, to guide the judges, should know exactly what is the extent of competition in every class, and where every exhibit is to be found. Valuable time is lost when judges are turned in to an extensive exhibition without this kind of information, and have to find out the exhibits as best they can. Being strangers generally, they cannot be expected to know at sight the whereabouts of the competing subjects, which they can only ascertain by a laborious search through all the exhibitors' cards—these latter, in many cases, not too legible, nor, according to some systems of entry, always giving the required information. We call this state of things Inconvenience, and it is one of the evils to be guarded against by every possible means, as also is that of failing to show distinctly by some well-defined mark the exact limits of adjacent collections.

In the interest of fair and just judgment the competing plants, or sets of plants, should, if it be possible, be staged in close contiguity. It is simply impossible to compare satisfactorily two or three collections of a dozen Pelargoniums or Orchids, let us say, if they are set out of sight of each other, and the judges have to carry them far "in the mind's eye," and yet judges are too often required to accomplish such and even greater impossibilities. Everything which can be done to do away with or avoid any or all of the evils at which we have hinted, will be found to be something accomplished towards bringing a flower show to a successful issue; and should be provided for in the schedule and its accompanying regulations.

— The plant, *EULALIA JAPONICA* VAR. *ZERINA*, of which we give an illustration (fig. 89, p. 565), has been figured previously in the *American Agriculturist*, from which publication we learn that the grass in question was introduced from Japan by Mr. HOGG. Since that time it has passed into the hands of Mr. W. BULL, Messrs. VEITCH, and perhaps

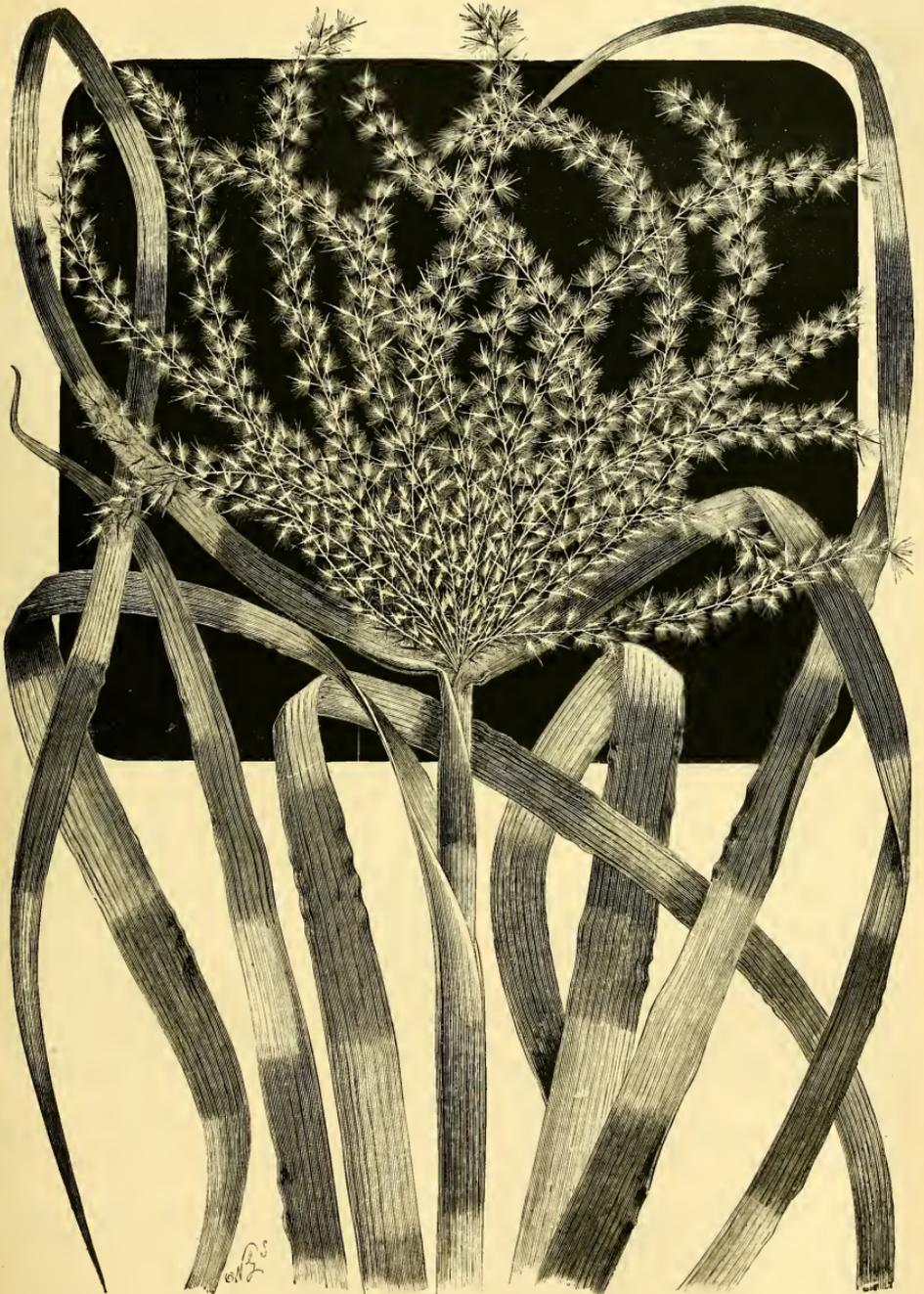


FIG. 89.—EULALIA JAPONICA VAR. ZEBRINA.

others of our nurserymen. Our plate was taken from a specimen furnished us by Mr. BULL, and in order to show the beautiful character of its inflorescence a dark background was rendered necessary. It is, however, for its foliage that the plant will principally be prized. As in the case of the Rush lately figured by us the variegation is transverse, taking the form of cream-coloured bars crossing the green ground of the leaves at tolerably regular intervals, hence our American contemporary has proposed to call it the *Zebra Eupalia*. The plant will probably prove hardy, and in that case it will form a very desirable addition to the garden, by reason of the novelty and peculiarity of its variegation.

— We learn that it is proposed by the growers for COVENT GARDEN to hold an EXHIBITION OF FRUIT AND VEGETABLES as sent to market, in the ensuing autumn, at South Kensington. Much praise is due to these exhibitors for the spirited way in which they carried out their novel and interesting exhibition at South Kensington at the two last meetings. As illustrations of successful culture, the exhibits were remarkably instructive.

— Probably few of the many horticulturists who visited the recent Auricula show at the Crystal Palace failed to notice the two splendid specimens of the climbing *RUSCUS ANDROGYNUS* that form such a superb evergreen covering to a portion of the galleries close to the fountain at the southern end of the building. A more useful plant for the purpose it is desired to serve it would be difficult to find, and it is as a greenhouse climber, enabled to display its luxuriant growth only in some such giant building as the Crystal Palace. Mr. THOMPSON, the garden superintendent, and his directors, have good reason to be proud of these fine plants, as this *Ruscus* is somewhat rare, and probably these specimens are the finest in the kingdom. This variety, although herbaceous in its habit of growth, is yet evergreen, as the long shoots that emanate from the roots, much like the growth of the Hop plant, retain their vigour and leafage for several years, and those that die off are annually replaced by others that run up to a height of 30 feet like bare rods before a leaf is developed. The highest growth of fully developed shoots is not less than 40 feet, and on these, right to the floor, hang the long deep green branches covered with pointed leaf-shaped phyllodes. These branches are about 30 inches in length, the phyllodes being alternated on either side to the extremity of the stem. These leaf-like organs hang down one over the other in rich luxuriance, and form a screen of deep flossy green. The flowers resemble small green buds, and are borne in triplets on the edges of the leaf-like branches. The plant is singularly difficult to propagate, as layers, cuttings, and hybridisation of the blossoms have been tried in vain, and only by division of roots can stock be produced; this, however, would in the case of these noble plants be partial destruction, at least for a time, and therefore their increase appears to be indefinitely adjourned.

— We have received a schedule of prizes amounting to upwards of £350, to be awarded at a flower show to be held at the Orleans Club House, Twickenham, the late residence of the Duc D'AUJALE, on May 25 and 26 next. The show will be under the superintendence of Mr. THOMAS R. ROLLISSON, of Tooting.

— We are informed that Mr. C. GREEN, of Reigate, so well known in connection with the garden of Mr. WILSON SAUNDERS, has been appointed to superintend the gardens of Sir GEORGE MACLEAY, at Pendell Court, Bletchingley.

— Mr. JACKSON, late gardener to the Right Hon. Lord KESTEVEN, Caswick Hall, Lincolnshire, has been appointed gardener to Sir CHARLES DU CANE, at Bixtard Park, Essex.

— We have received from Messrs. BACKHOUSE & SON, of York, a specimen of the very beautiful *PRIMULA SPECTABILIS*, a dwarf hardy perennial, of Auricula-like habit, found on the Eastern Alps. It belongs to the section of Primroses with fleshy leaves, the form of the leaf being elliptic-lanceolate or lanceolate, and the margins cartilaginous and entire.

The flowers grow about six in an umbel, and are about $\frac{1}{2}$ inch across, and of a pure dense puce purple, very showy. According to the late Mr. WOOD, it affects mountain gravel. It will be quite an acquisition amongst alpine flowers.

— We learn that Mr. ROGER CUTLER, the active secretary of the Gardeners' Royal Benevolent Institute, has, after thirty-five years' service at the Westminster Office, retired upon a liberal pension, and carries with him the hearty goodwill and esteem of the directors. Mr. CUTLER will henceforth devote the whole of his time to the duties connected with the Gardeners' Benevolent.

— We notice with much pleasure that the University of Edinburgh has conferred on Mr. J. B. LAWS, of Rothamsted, the honorary degree of Doctor of Laws. Professor MACKAY, in the absence of the Dean of the Faculty of Law, on presenting him to the Chancellor of the University, said:—"I now present to your lordship JOHN BENNETT LAWS, a constant patron of the Horticultural, who has done more than any Englishman for the application of science to agriculture. Educated at Eton and Oxford, Mr. LAWS commenced in 1834 the experiments which have rendered his estate at Rothamsted the classic ground of scientific agriculture. He has supplemented and corrected the theory of LIEBIG with reference to the fertilising agents necessary to call forth the productive properties of the soil, and by the use of the comparative method has given valuable indication of the different manures appropriate to different crops. His experiments, tested by rigorous scientific method, are recorded in the four volumes of the Rothamsted Memoirs."

— The injury to crops by worms, maggots, flies and insects generally, having recently been engaging considerable attention, YOUNG'S PARAFFIN LIGHT AND MINERAL OIL COMPANY have issued a circular which calls the attention of agriculturists and others to the value of paraffin oil as a preventative remedy. "Experiments have shown that this oil can be applied so as to produce no injurious effects on the seeds and plants, while at the same time it is so obnoxious to animal life as greatly to lessen, if not altogether to prevent, those destructive insects which every farmer has occasion to deplore." The following directions for the use of paraffin oil are added:—"Add a wine-glassful of paraffin oil to a 30-gallon cask of water, agitate thoroughly, allow the mixture to settle, skim off the oil that rises to the surface, and employ the water—1. For soaking the seeds before use; 2. For sprinkling the ground between the rows or drills after the plants have been sown. Care should be taken to avoid sprinkling the plants." The experiment is well worth trying, and we shall be glad to have the experience of any of our readers who may apply the test.

— We have received from Messrs. DOWNIE & LAIRD, of Edinburgh, a truss of a very promising seedling RHODODENDRON, named JOHN DOWNIE. It is of good size and very compact, the individual flowers being large, and of a pale rosey claret colour, with darker spots.

— A fine plant of the magnificent COCHLIOSTEMA JACOBINIANUM is profusely flowering in the stove at Kew. It has eight or more panicles, three of which are together in full bloom. It is even grand as a foliage plant, but possesses also the most beautiful flowers of pink and blue, of large size and in great number, interesting as well from a botanical point of view for their venous structure. An explanation of this was given in our volume for 1868, p. 264, and subsequently in the *Journal of the Linnean Society*, where some corrections of the original statement were made. The present specimen is one of a group with several others of beauty and much botanical interest. One of these is the *Tillandsia usneoides*, referred to last week, now flowering; for the first time in cultivation, of which a figure, with description, will appear in the *Botanical Magazine*. Another Bromeliad, as if for contrast, is here in flower. This is *Nidularium fulgens*, with broad imbricating leaves, the inner of which are coloured scarlet, and form a gay nest for the inflorescence, above the level of which it does not seem to grow. The habit of *Nidularium* is perhaps too well known to need further

description. There is also a plant of *Pitcairnia tabulariformis*, showing a table-top spread of light-green leaves, the level of which is just being disturbed by the issue of an inflorescence. Not the least interesting is a pan of the rare *Streptocarpus Saundersii*, each plant now composed of only one solitary leaf, or rather one of the cotyledons, with one or more panicles of pretty white and lilac flowers, appearing to come from its base. Next in point of interest is a specimen of the very curious and grotesque *Atractis Cristata*. As regards showiness, specimens of *Medinilla magnifica* is second only to the *Cochliostema*; though not large it is very floriferous. Among the smaller growing Gesneriaceae and Melastomaceae are found some of the most beautifully coloured leaves in cultivation. Here is a specimen of *Crotonia fulgida*, with bronze and silver leaves and crimson flowers, perhaps the most handsome of its genus in cultivation. On another shelf is a fine pan of *Bertolonia Van Houttei*, having more brilliantly coloured leaves than any other plant of the Melastomaceae, and, by-the-way, showing an unusual feature, that of growing from leaves, just as a Begonia; several species, however, may perhaps do the same, as does also *Phyllagathis rotundifolia*, a very rare plant of the same order. An elegant specimen of *Cocos Weddelliana*, so large as likely soon to flower, is a conspicuous member of the group. Lastly requiring notice is *Torenia Fournieri*, a new species of this extremely pretty but much neglected genus. The other species in cultivation are *T. asiatica* and *T. pulchra*, both grown in the Royal gardens. *T. Fournieri* is most nearly allied to the former; it has smaller flowers, but more deeply coloured, and with a yellow blotch on the lower lobe in addition.

— The May number of the *Journal des Roses* treats at some length the characteristics and history of the Rose Beauty of Glazenwood (Fortune's Yellow), and gives a pretty full account of our newly formed National Rose Society. The principal paper, however, and one that English rosarians will probably enjoy, is on THE ROSE IN ENGLAND (La Rose en Angleterre), by Mr. WHITLEY HERBER, who amidst his many employments finds time occasionally to contribute original articles to foreign periodicals.

— Several very charming PLANTS are IN FLOWER on THE ROCKWAY at Kew. First, there is *Tillium grandiflorum*, than which no spring-flowering plant, has more chastely-formed white flowers, with such handsome foliage. Another white-flowered plant of the highest merit is *Ranunculus alexandricus*. It might, from the purity of its aspect, be justly styled the Queen of Crowfoots. *Houstonia coriaria* is without rival for rockwork, as one of the most diminutive and sweetest of sky-blue gems to be found. *Lithospermum prostratum* is also blue, but with great depth and mass of colour. It is quite an essential for the present position. *Anemone palmata*, with rich yellow flowers, is always considered a most select species. It does not, however, make much display. Several *Primulas* are very pretty, among which are *P. spectabilis*, with pinkish purple flowers; the more common *P. viscosa*, and its variety also, which always will be one of the most indispensable. *Lithospermum orientale* is a great ornament, and will be so for almost any climate, producing as it grows a multitude of yellow flowers; this, with all its desirable qualities, is somewhat of a rarity. The old *Cardamine trifolia*, bearing a profusion of white flowers, with dwarf and dense foliage, still retains an important position with choice plants. *Dentaria digitata* is very showy, with large purple flowers. *Arenaria baccata* covers the ground with a level cloth of green, and is sprinkled over with an infinite number of white star-like flowers.

— Mr. BERNARD DYER, F.C.S., of 17, Great Tower Street, London, Member of the Society of Public Analysts, has been appointed Analytical and Consulting Chemist to the Devon County Agricultural Association.

— Some boxes of SOLOMON'S SEAL (*Polygonatum multiflorum*), shown by Mr. R. S. YATES, of Sale, Cheshire, at the meeting of the Manchester Botanical Society, on the 27th ult., attracted much attention by the splendid growth of the plants and the abundance of bold spikes of flower they carried. The clumps are lifted from the open ground when

they have made a growth of from 4 to 6 inches, planted in the boxes, and brought on into flower under glass. When the boxes are neatly covered with bark they are very ornamental in entrance halls, window conservatories, and in any place where they can be protected from external cold and have light and a little air. The flower-stems are much prized in a cut state for decorative purposes, their bold, arched appearance being highly effective in large vases. After the clumps have done blooming they rest for a year, and are again similarly employed as necessity arises.

— In some parts of Cheshire the common PRIMROSE is utilised in a pleasant manner by the cottage residents on the highways. In cases where a Quick hedge fronts the cottage garden by the way-side, a bank is thrown up on the road-side, with a border some foot or so in width, and on this is sown a line of common Primroses, and very pretty they look in full bloom. The woods being so full wayfowers would no doubt respect the bright little Primrose garden; but near to large towns it would be in considerable danger of molestation.

— We are informed that The Highlands, Jersey, the property of CHARLES KIPLING, Esq., a notice of which appeared in our columns of December 25, 1875, is to be sold by auction at the Grand Hotel, May 15, by Messrs. G. & H. LUMLEY, of St. James's Street.

Home Correspondence.

Royal Horticultural Society.—Dr. Allbutt finds fault with the Horticultural Society for not establishing schools and lectures for teaching young gardeners scientific gardening. Perhaps Dr. Allbutt is not aware that there is such a school for gardeners already at the public gardens at Chelsea, and that he is not aware also that a grant of public money was lately made to provide the young gardeners with lectures on scientific gardening, but the young gardeners to a man refused to attend them. So long as there is this public school for gardening in the immediate neighbourhood of Chiswick, and so long as the experience of that school is similar to what I have stated, I certainly shall not be inclined to spend the money of the Horticultural Society in trying to compete with King. I do not agree with Dr. Allbutt respecting the work done at Chiswick. The lists of fruits and their synonyms, and the reports of the trials of flowers and vegetables, are known to many in foreign countries as well as in England, though they seem not to be known to Dr. Allbutt. As far as I know, these reports are the only means by which a purchaser can learn whether the multitude of plants advertised as new are really such or only old varieties with a new name. No doubt there is room for more work of this kind to be done at Chiswick than is done at present, and I hope that, if a few more of those who care for gardening will join the Society, it will be able, as it certainly is willing, to undertake more of this work. At present I fail to perceive either the justice or common sense of finding fault with the Society in the manner that Dr. Allbutt does, so long as not one in ten of those throughout England who are interested in horticulture either belongs to the Society or in any way helps in carrying out any work for the promotion of horticulture. Allow me also to say, in answer to the letter signed "Exhibitor," that the change of day was made solely for the convenience of the exhibitors, and in consequence of a memorial signed by all the principal exhibitors at the Society's shows, praying that the day might be altered from Wednesday to Tuesday. C. W. Strickland, Hildesley, Malton.

— If not my argument, I hope his own appropriate quotation (p. 3) will convince Dr. Clifford Allbutt to throw in his lot with us, and to influence his horticultural friends to do likewise. George F. Wilson, Hatherbank, Weybridge Heath.

The Tulip Literature at Amsterdam.—As you have mentioned the collection of books, pamphlets, &c., relating to the Tulip exhibited at the Amsterdam horticultural show, allow me to say that these books, &c., are all from my private collection. There are about a hundred volumes, comprising several collections of drawings of Tulips from the time of the Tulipomania (1624-1637), and as well all the editions of the pamphlets of that time. This collection, which could have been made yet more extensive if time had permitted, was made up in a hurry a few days before the opening of the show, amongst much other business, in consequence of the desire expressed by one of my friends abroad, who wished to look over the Tulip literature. As it was a collection not asked for in the programme,

I was not sure sufficient space would be allowed to it, therefore it was not shown in that extent which would have given a perfect oversight of it. Had there been time to do so, I would have given a critical list of the various things shown in this collection too, with the intention of soliciting offers of such books, pamphlets, drawings, manuscripts, &c., which are wanting in this collection, and which belong to it, as it is my intention to complete my collection on the Tulip (as I am trying to do for other bulbous plants) as much as possible. F. H. Krings, Haarlem.

Dasyliiron longiflorum.—In our notice of this plant at p. 493, we stated that the flowers had been produced in the garden of M. Geoffroy St. Hilaire. It appears, however, that this is an error, and that the plant really bloomed in the garden of M. Genotens, of Hyeres. Several of the flowers were more or less



FIG. 90.—FLOWERS OF DASYLIIRON LONGIFLORUM.

imperfect; those that we now represent were among the most perfect. They were drawn by M. Germain de Saint-Pierre—a well-known French botanist.

Drechsler's Fanigator.—Several years ago, when Mr. Drechsler brought out his patent fanigator, he was, for want of suitable mechanical means, obliged to adopt wire for its rotary cage, and which experience has proved does not last long enough to give satisfaction. In carrying out improvements on the first machine

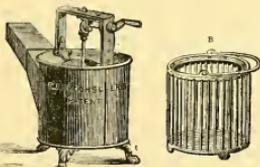


FIG. 91.—DRECHSLER'S FANIGATOR.

Mr. Drechsler's object was to keep to the round bars, to avoid forging, drilling, and rivetting; to get the whole cage cast in iron, and, if possible, in one piece; to hold the cage firmly at the two ends by a central spindle without obstructing the passage of the tobacco-pan; to make more room inside for a larger cage by removing the gearing to the outside; to remove the useless lid, as by turning no smoke passes out there; and to make the top of the outside funnel-shaped to receive the materials. These things are easy enough of conception, but to make a suitable cage like this for the foundry was the difficulty, which has, however, now been got over, the whole being cast in iron in one piece, even the spindle by which it is made to revolve being also cast into it; and the whole so fixed that it cannot be shaken out of its place, nor get broken or worn out by fair means. To put the fanigator into use, first procure some dry paper, shavings, &c., and set fire to it in preference to using coal or coke. By turning, the machine has a tendency to form a whirl of fire in the centre, and

as long as this is in the centre of the material it works all the faster, but the cage must be kept full to prevent the fire passing to the spot, and when the machine gets too hot it must be sprinkled. The machine, of course, made for speed, and to operate from without. There is no need of stopping to refill, as the ashes fall out as fast as produced. It may, of course, be used inside a house where there is no other choice. The plain cage (fig. 91 B) is also made of cast-iron, and is nearly identical with the one (fig. 91 A). As coke has to be used in this, small pieces only should be selected. This has been made to meet the wants of those who do not care to go to the expense of the more perfect machine, which costs two-thirds more than the cage.

Adiantum Capillus-Veneris cornubiense.—I have not the least objection to Mr. Teyrman's description of the Adiantum Capillus-Veneris cornubiense, which is very accurate; but I cannot help saying that it has been well known to me and other Cornish gardeners for more years than I like to name. I have grown it freely here for more than thirty years, and an glad that Mr. Trevithick has found it; I fear, however, that this fresh notice of it will lead to its destruction, as a new railway is now open to a terminus too near, I fear, to save it from the hands of excursionists. Happily, there is another habitat on the same coast some miles distant, where I hope it may still escape; but, at any rate, will not help to expose it. T. Phillips, Forthgoulden, Truro.

Enterprise in the Seed Trade.—The latest development of enterprise in the seed trade consists of a London seedsmen sending some sharp lads—not at all too well-bred or polite—into the suburbs to leave at the houses of respectable persons a packet addressed to the occupier of the house, containing an illustrated pamphlet on the growth of flowers, and twelve packets of flower seeds, with the intimation that its value is a shilling, and that, if not returned and a shilling paid for it, it may be given up to a person calling for it later. The seedsmen appears to be borrowing the idea from the vendors of packets of needles, &c., which are generally left by one ill-looking fellow, and called for by another, who is not slow to abuse non-purchasers, especially when the refusal is made through a timid female. On Tuesday, the 1st, a lad left one of these packets at my house, and, on opening it and discovering its contents, I called to him to take it back, but he refused to do so. On the 2d inst. an even more disagreeable fellow called for the packet, when I informed him that as the lad who left it with me had refused to take the packet, the goods had been left in my care for one night, and for the custody of the packet I made a charge of one shilling, which I had to pay before he would give it up to him. He said nothing, but went away and amused himself by copying the name of the house in which I reside. The babbiat of this enterprising seedsmen is in the vicinity of Haverstock Hill, N. Y. Z.

Marchal Niel Rose.—A charming sight is at present to be seen in the Rose-house of E. Mastone Grahame, Esq., of Coltongrey, near Crieff. When visiting this place the other day, I saw one plant of Marchal Niel covering the entire roof of the house, 20 feet by 14 feet, and having upwards of 300 blooms fully expanded and of large size, and as many buds were still unexpanded as will render it attractive for many weeks longer. Mr. McAra, the gardener, estimates that, when done flowering, upwards of 1000 blooms will have been produced. As some renders may not be aware of the suitability of the Marchal Niel Rose as a stock for Marchal Niel, I may state that for some years a yellow Banksian was trained up the centre rafters of the house. This was previously cut in to supply young wood, and in the autumn of 1874 every shoot was built up the stem, producing the above grand result. Mr. McAra's success induced him last spring to bud newly-rooted cuttings of the Banksian with the Marchal Niel, and he has succeeded in producing beautiful table plants from 2 to 3 feet high, forming a single stem, with six to eight blooms on each plant. G. C.

Cucumber Disease and "Salus."—I shall be very glad to give Mr. Fish my opinion of the disease he mentions if you will allow me. I consider Mr. Fish to be wrong in both the points he brings forward; first in attributing his disease of Cucumbers to a fungus, and second, in dressing his Cucumbers plants externally with "Salus." I may be allowed to ask Mr. Fish if he or any one else has seen the fungus he mentions? If not, I may say that I have not seen it? For my part I have never seen any fungus of moment destroying a Cucumber plant. I have little doubt that the disease mentioned by Mr. Fish is in some way brought about by the presence of microscopic "salus" or "salutis" on the Cucumbers plants. These (as present unnamed) worms were first described in the *Gardener's Chronicle* by Mr. Berkeley as affecting the roots of Cucumbers, and causing the well-

that it would be profitable if some of these dwarfed plants were grown and offered for sale. I have sent them home from China in pots with no other protection than the sky of an American clipper, and they were much appreciated. Great praise is due to the enterprising nurserymen who send out collectors for foliage plants, &c., that would have passed without a notice a few years back, and I admit to be about as common in China as they are here. There is always a demand for novelty in plants, especially when such plant will last and requires little care and can be kept in a room or at a window. C.

Reports of Societies.

Royal Horticultural: May 2.—*First Great Summer Show*.—On Wednesday last Her Majesty the Queen paid her first visit to the Society's gardens at South Kensington since the death of the Prince Consort, and as the weather was fine, the display of flowers one of the finest that has ever been seen in the gardens, and the attendance of visitors very large, it may be confidently hoped that a very favourable impression on the Queen's mind has been passed, and that good management only is now required to maintain and extend the popularity and enthusiasm manifested on all sides as a consequence of Her Majesty's visit. For the last twenty years the exhibitors have endeavoured to pass through the depression in the Society's affairs, not so much through the reduction of the prizes, or the non-award of prizes at all, as from the absence of visitors to the shows. The exhibitors have more-over to their shoulders to the weight of a medal, would send splendid displays at a very short notice, but when it became known that the Queen intended to pay a visit to the gardens they determined to exceed all former efforts, and make a show such as would be worthy of the occasion. As we have already stated this was done, and the result was more than could have been anticipated, all the available space in the large conservatory, both the arcades and the long galleries, and the exhibition arranged for the most part with gay flowering plants. It was indeed a success—and the thanks of the Society are specially due to Mr. Barron for his untiring exertions in getting the show together; for his admirable disposition of the various exhibits in the conservatory; and for his judicious arrangements that he carried out for the comfort and convenience of visitors and exhibitors alike. To Mr. Wills also thanks are due for the spirited way in which he contributed to the decoration of the entrance-alcove, and the exhibition was so arranged that it was made without any ceremony. Her Majesty, accompanied by H.L.H. the Duchess of Edinburgh and H.R.H. the Princess Beatrice, and attended by the Countess of Caeldon and Lady Emma Osborne, Sir Thomas Biddell, General Pombey, Colonel Lyndock Gardner, arrived at the Queen's Gate entrance at a quarter to 12 o'clock, and was received by the President, Lord Aberdare, Lord Alfred Churchill, H. Webb, Esq., Colonel Trevor Clarke, G. T. Clark, Esq., B. Eckford, Esq., W. Perry, Esq., and Mr. Hogg, members of the Council. Her Majesty was conducted through the exhibition by the President and Dr. Hooker, C.B., who pointed out the more interesting subjects exhibited. When Her Majesty reached the conservatory the Duchess of Bedford, accompanied by the Marquis of Tavistock, had the honour of meeting the Queen; and Her Majesty was also pleased to accept a very handsome bouquet from the hands of the Duke of Wills, and the Princess Beatrice a similar one from the hands of Messrs. Veitch & Sons. She appeared to thoroughly enjoy the floral treat that had been prepared, and seemed especially to be interested in the hardy flowers common in English gardens. She seemed now to be interested which more closely concerns us—the plants and their exhibitors. We may preface our remarks by stating that, with the exception of the novelties shown before the Floral Committee, and noticed in another place, there was nothing that called for the large notice which it has received; hence we must treat the exhibits in a general rather than a detailed manner. We may commence in the large conservatory, in the centre of which were exhibited by Messrs. Whitburn & Young, of Millford, a set of ornamental window flower boxes, showing the adaptability of their zygorphic process for that style of decoration, and which Her Majesty did not fail to inspect. Mr. John Wills contributed an extensive and admirably grouped collection of fine-leafed and flowering plants in the centre of which he had arranged one of his delightful little decorative surprises, an irregular bed of *Selaginella denticulata*, studded with *Roses*, *Gloxinias*, &c., with the central path of S. densa, the group as a whole securing for Mr. Wills the award of a gold medal. Mr. B. S. Williams also received a gold medal, for a very effective group of flowering and fine-leafed plants.

From Messrs. Kollison & Sons, Tooting, came a group of about three dozen admirably-flowered staminate *Azaleas*, which gained a silver medal; and a similar award was made to Mr. Terry Slough for a showy group of *Palms*, *Azaleas*, &c., and a fine display of show and alpine *Azaleas*. Messrs. Lane & Son, Great Berkhamstead, staged about thirty very beautiful plants, and received a silver medal; and from Mr. Bull came a small collection of *Orchids*. Several examples of *Mimulus moschatos* Harrisoni came from Messrs. Harrison, of Leicester. A fine assortment of stove and greenhouse plants came from Messrs. Les & Sons, of South London, and a beautiful display of *Orchids* was made by Sir Trevor Lawrence, M.P., which gained a silver-gilt medal. Smaller groups of *Orchids* were also shown by Sir Henry Peck, M.P., Wimbledon (Ollenhed, gr.); W. Terry, Slough, Peterborough House, Fulham (Mr. Roberts, gr.); and J. W. Miles, Esq. Shirehampton (Mr. Perry, gr.), both of the last-named exhibitors receiving bronze medals.

The Western Arcades contained a remarkably fine group of *Cyclocladon* plants, which deservedly gained a gold medal for Mr. William Bull; a magnificent collection of too seedling *Dracenas*, of medium size, well grown, and highly coloured, from Mr. John Standish & Co., Ascot, which also gained a gold medal; a very extensive and beautiful group of forced *Khan-dodendrons*, Ghent *Azaleas*, &c., from Messrs. Lane & Son, which also gained a gold medal; a very effective group of fine-leafed plants from Messrs. Veitch & Sons, which gained a silver medal; a nice group of miniature succulent plants from Messrs. Croucher & Boller, 73, South Row, Kensington Town, which gained a bronze medal; a handsome group of fine-leafed plants from Messrs. Osborn & Sons, Fulham, to which was awarded a silver medal; a group of fortysplendidly-flowered *Rhododendrons*, which gained a silver-gilt medal, from Messrs. Lane & Son; a group of well-flowered *Roses* in pots, and a handsome box of cut blooms of *Roses*, from Messrs. Paul & Son, Old Nurseries, Chesham, which gained a silver Banksian medal; and a group of fine-leafed plants from Messrs. J. G. Water & Co., to which a bronze medal was awarded.

In the Eastern Arcade the visitor first came upon a display of Fern cases, made by Mr. J. Brownish; and next upon a very choice group of plants from Messrs. John Standish & Co., Ascot, which included some gracefully grown specimens of *Adiantum gracillimum* and *Conium maculatum*, together with *Clematis*. A silver medal was awarded to the group. A silver medal was also given to Messrs. G. Jackman & Sons for a beautiful group of a dozen and a half well flowered *Clematis*. From Mr. T. Spear, Eastleigh, came a nice group of hardy spring-flowering plants, which gained a bronze medal. To Messrs. John Laing & Co., Stanstead Park, S.E., a silver medal was voted for a large and good group of fine-leafed and flowering plants; and Mr. J. Ley, Royal Nursery, Croydon, received a silver-gilt medal for a fine group of *Palms*, Ferns, *Crotoms*, and other handsome-leaved subjects. A similar award was also made to Messrs. Barr & Spedden, for a magnificent display of cut blooms of *Narcissus*, numbering 100 species and varieties. The same firm also received a silver medal for Fern cases, and a bronze medal for window decorations. A nice collection of well-grown gold and silver Tricolor *Pelargoniums*, shown by Mr. C. G. Water, of South London, was highly Commended. Mr. John Burley, Hereford Road Nursery, Bayswater, received a silver medal for a good group of large *Palms*, &c.; and to W. E. Hubbard, Esq., Leonardslote, Horsham (Mr. S. Osborn, gr.), a silver Banksian medal, which was also awarded to R. Thompson, Esq., of the same nursery (Mr. A. Katty, gr.), for a group of about thirty flowering *Azaleas*; and to J. G. Heppner, Esq., Sidecup Place, Kent, for a fine collection of about thirty *Orchids*. Mr. C. G. Water, of South London (Mr. James, gr.), contributed a showy group of *Cyclamen*s, *Cinerarias*, and *Calceolarias*; and *Polyanthuses* in numbers came from Mr. H. Parr, The Gardens, Harrow Weald Park, Stanmore, and Mr. William Caudwell, of South London.

The Eastern Corridor was devoted almost exclusively to collections of plants, fruits, and vegetables, exhibited by growers for Covent Garden market, and a magnificent show they again made. Messrs. J. & J. Hayes, Edmoneton, were awarded a silver-gilt medal for a large and fine bank of flowering plants, consisting of *Cinerarias*, *Deutrias*, *Pelargoniums*,

Fuchsias, *Hydrangeas*, *Roses*, *Heaths* and *Liliums*, &c., all of splendid quality. Messrs. Hawkins & Bennett, Lily Gardens, Twickenham, received a silver medal for a grand display of *Campanula*, *Rose*, and *Zonal Pelargoniums*, tastefully arranged in the form of festoons; and Mr. J. Puttick, Acton, had a bronze medal for a group which consisted mainly of *Mignonette*, *Richardias*, *Pelargoniums*, and very dwarf *Hydrangeas*, &c. Mr. Keenan, of South London, had a group of plants, including numbers of *Richardias*, *Pelargoniums*, *Coleus*, *Hydrangeas*, *Lilies*, *Heliotrope*, *Spiraeas*, &c., and was awarded a silver-gilt medal for a grand display of *Campanula*, and a group of beautifully grown *Mignonette*, consisting of 1000 plants—a wonderful show in this sweet little favourite, for which he also received a silver medal. Mr. Thomas Pearce, Hayes, Kent, contributed a collection of *Campanula*, *Rose*, and *Fuchsias*, all cleanly and well grown, and was awarded a bronze medal. From Mr. J. Poulton, Fountain Nursery, Angel Road, Edmoneton, came a group of 200 beautifully flowered plants of *Spiraea japonica*, which also gained a bronze medal. Mr. J. Seahrough, Ponder's End, Enfield, received a silver medal for a fine batch of *Pelargoniums* and *Fuchsias*; and Messrs. G. Beckwith & Sons, Edmoneton, were voted a large silver medal for an enormous collection of splendidly flowered *Pelargoniums*. Bronze medals were also awarded to Mr. P. Ladds, Bexley Heath, Kent, for an excellent group of *Spiraeas* and *Pelargoniums*; and to Mr. T. Petridge, Brentford, for a nicely coloured, low, small bronze *Pelargonium* group, consisting of *Campanula*, &c. Westbourne Grove, W., for a fine bank of flowering plants and cut flowers of *Pelargoniums*; and to Mr. E. Sawyer, Edmoneton, for a collection of plants, numbering about 250, and consisting mainly of *Deutrias*, *Calceolarias*, *Lily of the Valley*, *Pelargoniums*. Silver medals were awarded to Mr. T. C. Paget, Royal Nursery, Clapham, for a grand group of *Spiraeas*, *Palms*, *Ferns*, arranged in lines of each and dotted with *Dracenas*; and to Mr. H. B. Smith, Ealing Dean Nursery, for a large and most effective group of beautifully flowered little *Fuchsias*, *Spiraeas*, *Dracenas*, and *Ferns*, good and silver Tricolor *Pelargoniums*, &c.; to Messrs. H. K. & G. Wright, Turner Road, East Ham, for a group of fine-leafed plants, principally *Palms* and *Dracenas*, mixed with a few *Orchids*; and to Mr. James Sweet, Leyton, Essex, for a group of *Pelargoniums*, *Heaths*, *Fuchsias*, and *Cyrtis*, &c., all of fine quality. Mr. G. Brad, Witcomb Road, Tottenham, was awarded a silver medal, and a similar award was made to Mr. Poupart, Mortlake, for a collection of cut flowers of *Pelargoniums*, *Primroses*, *Fansies*, *Narcissus*, *Wallflowers*, *Sweetwills*, &c.

Fruit and vegetables were represented here in only small quantities, but those staged were of very high quality for the season. Messrs. Webber & Co., Central Avenue, Covent Garden, took a silver-gilt medal for an interesting group of flowering plants, which included two dozen handsome *St. Michael's Pines*, new black and white *Grapes*, *Apples* and *Pears*, and Sir C. Napier's Strawberries; and Bronze medals were awarded to Mr. J. Poupart, Twickenham, for a remarkably good display of vegetables and herbs, some forced and others from the open air; to the Rev. J. R. Watson, Gunnersy, for new Black Hamburg and Muscat of Alexandria *Grapes*; and to Mr. W. Farley, gr., Valentines, Ilford, for a fine collection of *Apples*, *Grapes*, and *St. Michael's Pines*. Mr. W. Ingram, Vine Nursery, Aylesbury, also sent a nice sample of Black Prince *Grapes*; and from Mr. E. C. Mott, Potter's Bar, came half-a-dozen bunches of the Improvements of *Cucumbers*, in the shape of baskets of *Ferns* and *English salad* materials, were contributed by Mr. W. J. Smith, 374, Kingsland Road, N.E.; and a very good sample of *Muskmelons* shown in clumps, as grown, by Mr. J. Walker, Thame, Oxon.

TABLE DECORATIONS, BOUQUETS, &c.—The competition and display in this, as in the other classes, much exceeded what we have chronicled in the previous show. Perhaps it would not be going too far to say that on this occasion the metropolitan decorative florists were fairly represented; but if this assumption is correct, then the results were disappointing. In the table decorations, many were admired and deserving of the highest praise, there was, on the other hand, also much meriting condemnation. The great and principal faults were, in the bouquets, the large size and crowded packing of the flowers, and in the table decorations, many were made in disregard of natural and agreeable contrasts of colour. Of course these faults were not common to all the exhibits, but, according to our notion, the bouquets were nearly all too large. A bouquet for the hand should be of considerable number, but not so burdensome or inconvenient to the bearer, and each of the few different kinds of tastefully contrasted flowers and foliage used should show its natural characters. Quantity, even with quality, cannot make for bad taste, and although Her Majesty graciously

"Herewith I send three flowers of a curious Erynean Daffodil—*Narcissus muticus* of J. Gay. It is evidently very near to our own wild Daffodil, but has a much longer, narrower cylindrical corolla, and is very variable, as will be seen by the three forms sent, all picked from the same small bed of collected bulbs. I also hand you two flowers of the large lance-juncus coloured *Narcissus*, and also two forms of the pretty little *C. Mawi*, sometimes known as *C. carulea* in gardens. The larger form of *C. Mawi* has its stem stamens in a curious petaloid state. *F. W. Barbidge*."

Plants Exhibited.—The Rev. Mr. Harpur-Crewe showed flowers of the handsome *Tulipa Orphanides*, *T. Clusiana*, *T. Haageri*, *T. fragrans*, *T. Eichleri*, and others; also the Mentone form of *Scilla italica*, &c. Mr. Green showed flowers of a *Crimson* from the garden of Sir George Mackay, called *Scabro-pedunculatum*. Mr. Elwes showed, among other things, *Hyacinthoides* of Boissier—a species in the way of *Susiana*, but less effective.

FLORAL COMMITTEE.—W. B. Kellogg, Esq., in the chair.—First-class Certificates were awarded to Messrs. James Veitch & Son for the magnificent Anemone Brownii figured and described in this journal at p. 745, vol. vi.; for *Lomaria discolor bipinnatifida*, a beautiful fern, raised for Cole; and for a very fine reddish brown-coloured, deep-cut leaf—a novelty certainly, but it is difficult to see why it was certified.

To Mr. John Wills, for *Dracena Mrs. Bland*, one of the best specimens raised from *D. concinna*, crossed with *D. Reginae*, dwarf, dense-habited, and brightly-coloured plant, that will prove valuable for decorative purposes. To Mr. E. S. Williams for *Aralia filicifolia*, a beautifully-cut Fern-like plant, with Mr. James and Deafus, &c. and barred, and for *Adiantum Willamitii*. A second-class Certificate was also awarded to Mr. Williams for *Xytopetalum Clavii*, the result of a cross between *Z. maxillare* and *Z. crinitum*. To Mr. W. Bull for *Phlox Lindleyi*, and *Phlox multicolor*. Mr. B. Kellogg, Esq., for *Agave schidigeri* princeps—a striking plant with somewhat narrow leaves, boldly and distinctly banded in various directions with white, and is numerous rather broad filamentous processes. It is a very interesting raised plant, and the specimen on the Certificate, was awarded a gold medal. To Messrs. W. & A. Brown, of Hendon, for show *Pelargonium Mrs. J. A. Dickson*, Sultan, Fascination, and Commander. To Mr. Turner for show *Auricula Sarah*, a beautiful self, and also a blue and white variety; purple; for *alpine Auricula John Ball*, noticed in our last. To Mr. Sweet, Leyton, for *Pelargonium* Empress of India, a white show variety, with darkly banded petals, and very suitable as a decorative plant.

To Messrs. Paul & Son, for *alpine Auricula* new H. P. Rose, Emily Laxton. To Mr. James, for *Cineraria Mrs. Beck*, a large, smooth, recurved flower, of a rich lilac shaded magenta colour, and fine white eye. To Mr. James, for *alpine Auricula F. Withnar*, Esq., Loxford Hall, for *alpine Auricula Prince*, a large black-velvet-coloured self, with a rather pale yellow paste; and for *alpine Auricula Florence*, a very large, almost black self, with a yellow centre. The flower measures nearly 2 inches across, and is of fine form. G. F. Wilson, Esq., Heather-ink, Weybridge, sent a flowering plant of *Mitella cordifolia*, a rare hardy plant for rockwork and borders, with white flowers, and a habit of growth somewhat similar to *Tilimna*. Mr. Stevens, gr. to the Duke of Sutherland, Trentham, showed a late flowering variety of *Cologne cristata*—a plant about 3 feet across and splendidly fringed. In addition to the plants above named, Messrs. Veitch exhibited several plants of the *alpine Auricula*, named Thomas Hogg, but the flowers were too green to warrant an award from the committee.

FRUIT COMMITTEE.—John Lee, Esq., in the chair. Sir Henry W. Peck, Wincoblen Hill (Mr. Overhead, gr.), exhibited several very fine ripened fruits of *Musa Cavendishi*, and received the award of a gold medal. A Cultural Commendation was awarded to Mr. P. Batters, gr. to Mrs. Tristram, Fowley, Liphook, for a good sample of Black Hamburgh Grapes. From Mr. C. Haycock, gr. to R. Leigh, Esq., Barham Court, Maidstone, came a fine dish of James Veitch Strawberries, and three brace of Colonel King of the Carabots and G. H. Miles, Wyncombe Abbey Gardens, exhibited three nice Jamaica Pine-apples and a ripe Melon, for which he was awarded a Cultural Commendation. From Mr. W. Cox, gr. to Earl Beauchamp, Madresfield Court, came some examples of some grown Grapes, from Mr. Batters, gr. to Mrs. Willis Fleming, Chilworth Manor, sent a good dish of Maclean's Little Gem Peas, grown in 8-inch pots in a cool house. Mr. Stevens, Trentham, contributed some fine fruit-bearing branches of *Chaenactis*, and Mr. Viscount Eversley, Heckfield, had a Cultural Commendation for a fine dish of Auguste Nicotise Strawberry. An excellent dish of Oscar Strawberries came from Mr. Hills, gr. to Sir T. Edwards-Moss, Bart., Otterspool, Liverpool.

Manchester Botanical and Horticultural: April 27.—One of the pleasant monthly meetings of this Society was held on the above date, and with it took place the annual Northern exhibition of the National Auricula Society. Some of the leading plant growers of Manchester are invited to attend these meetings, which bear the same relationship to the Manchester Society as do the meetings of the Floral and Fruit Committees to the Royal Horticultural Society. The only regret is that the plants are not so numerous as the public appear to desire. The Manchester Town Hall, which is very imperfectly lighted from without.

The great feature of this meeting was a magnificent group of plants sent by J. Broome, Esq., Didbury (gr. to Mr. Wills). Among the most interesting and finely grown and flowered examples of *Cypripedium caudatum*, *Odontoglossum vexillarium*, *O. species* in the way of triumpans and charmingly marked; *O. luteum*, with two very fine spikes; *O. Halli*, *O. Alexandræ*, *O. hystrix*, *Aerides Fieldingii*, *A. virescens*, *Clasium Mendelii*, *Oncidium serratum*, nicely bloomed; *O. sphacelatum*, very large; *Phalaenopsis Luddemannii*, *P. Schilleriana* and *P. amabilis*, *Strobilium* and *Strobilium curvatum*, *Strobilium Indian Atacama cristata*, *Anthurium Scherzerianum*, *Clerodendron Balfoarium*, *Geonoma gracilis*, said to be one of the finest plants in cultivation; *Cocos Rheediana*, *Raphia fabeliformis variegata*, some of the best of several kinds of *Yucca filamentosa*, &c. The gold medal of the Society was awarded to this fine group. W. Leech, Esq., Fallowfield (Mr. W. Swan, gr.), had the bright, clear yellow *Dendrobium* *D. D. devonianum*, with ten capital spikes; *Odontoglossum Patriciæ* and *O. species*, in excellent form, and very handsomely spotted with purple; *Madevalia Veitchii superba*, having more of the purple glow on the flowers than is generally seen; *Exochilus Frederici*, a bold and striking form, the long tube and sepal bright rosy crimson, white crest and rosy purple lip—awarded a First-class Certificate; *Colax japonica*, *Cattleya citrina*, &c. S. Schloss, Esq., Osborn Villa, Bowdon (Mr. Cardwell, gr.), had *Polioth violacea*, bearing racemes of white berries, changing to a purple tint with age; a very fine *Anthurium Scherzerianum*, a superbly grown example of *Terminalia elegans*, a capital specimen of *Gleichenia dicarpa*, admirably well grown, &c. The silver medal of the Society was awarded to Colonel Clay for a seedling *Xytopetalum*, the petals claret-brown, the lip wholly suffused with pale purple. This was raised between *Z. crinitum* and *Z. maxillare*, having the growth of the latter, and the colour of the former. The same award was made to *Sarracenia Filides*, a large bold form, the pitchers handsomely tinted with gold, from James Filides, Esq., From Samuel Barlow, Esq., Sticklehill Hill, Chadderton, Manchester, came a large plant of a new and fine *alpine Auricula*, several of the fine hybrid *Rhododendrons* raised by Miss Davies, Ormskirk; baskets of show and *alpine Auriculas*, *Polyanthus*, *Primroses*, &c., and a well-grown specimen of *Cypripedium villosum*, with forty-three flowers, all of which were interesting. To Mr. R. S. Yates, Sale, sent some boxes of Solomon's Seal, finely grown and flowered; a vase of lovely forced Roses, a box of cut blooms of some early flowering hardy *Rhododendrons*, &c.

The National Auricula Exhibition.—This annual show was scarcely so large as that of last year, owing to the flowers of several of the leading exhibitors not being in bloom; and especially was this true of those residing in the Todmorden district, which is looked upon as one of the best in England, as far as the Auricula is concerned. It is always the means of bringing together a great number of the Northern florists; and so far from the taste for the Auricula declining in the North it would appear to be on the increase, and our enquiries are daily being made for varieties to cultivate. The Auricula has long been a favourite with the Lancashire florists. When it was first introduced to the county is not exactly known, but it is generally supposed to have been brought into the present possession of the county when the Flemish weavers, driven by atrocious cruelties from their native land, came to England about 1570, and settled in Lancashire and Norwich. Lancashire then became a manufacturing district, and it is well known that the Flemish weavers brought their collections of Auriculas and Tulips with them, and thus they were distributed to different places in England. In 1725 the Auricula was extensively grown by the florists of Middleton and the surrounding neighbourhood, and since that time the cultivators have steadily advanced weavers.

The more elastic conditions under which Auriculas were recently shown at the Crystal Palace were absent this year, and, in consequence, the supports allowed to the trusses in the South are not so numerous as in the North, the reason being that it is considered if the flower-stem will not maintain its truss of flowers in an erect position it shows want of adequate cultivation. The result is that the

strongest of stems, though the plants being turned out of the pots to assist in lightening the carriage to the show, added to the heat of the room, become limp and ungainly in appearance, and with a great loss to the floral effect. Visitors desirous of inspecting the flowers have to handle them, and it is sometimes quite snapped off. There is no class for twelve Auriculas at Manchester, the premier prize being for six plants, in order to give the growers of small collections a chance of competing; and in all the classes for pots, Anna Frey, one of our best plants are competing, as much difference in class as possible is required. The short grass used at Manchester for stuffing the pots to keep the plants in an erect position is not nearly so good as the moist green moss used at the Crystal Palace, and the extra attention paid in the North to the general effect in the arrangement of the competing collections of plants than there is in the South. The lessons taught at the Crystal Palace will no doubt be pondered, and bear fruit by-and-by.

At Manchester the Rev. F. D. Horner, Kirkby Malzeard, Ripon, was again for the fore, being placed 1st with six dissimilar varieties, one at least of each of the classes. The varieties were, green-edge, Booth's Freedom and some others, Anna Frey, one of our best plants and Lancashire Hero, the last named having a truss of ten splendid pipes; white-edge, Smiling Beauty; and self, C. J. Perry; as perfect a half dozen of each of the flowers have to handle them, and it is sometimes quite snapped off. There is no class for twelve Auriculas at Manchester, the premier prize being for six plants, in order to give the growers of small collections a chance of competing; and in all the classes for pots, Anna Frey, one of our best plants are competing, as much difference in class as possible is required. The short grass used at Manchester for stuffing the pots to keep the plants in an erect position is not nearly so good as the moist green moss used at the Crystal Palace, and the extra attention paid in the North to the general effect in the arrangement of the competing collections of plants than there is in the South. The lessons taught at the Crystal Palace will no doubt be pondered, and bear fruit by-and-by.

In the class for two varieties it is required they be dissimilar both in variety and class. The first condition is the variety winning the premium prize may be really intended to prevent the same flowers being shown in two classes, as for instance grey-edge George Lightbody, which can sometimes be shown both as a grey and green edge. Here the Rev. F. D. Horner was again 1st with grey-edge C. E. Brown and white-edge Smiling Beauty. 2d, Mr. T. Mellor, Ashton-under-Lyne, with grey-edge General Bolivar, and self, Pizarro. 3d, C. S. Roys, Esq., with green-edge Prince of Wales, the edging being of a vivid dark green; and with as many long and fine pipes. 4th, Esq., Timperry, with green-edge Emperor, and self Mr. Sturrock. There was a good competition in this class, not less than ten pairs being staged.

In the classes for the best grey, green, white edge, and self, a large number of flowers were shown, and the task was before the judges a most difficult one, being their patience and endurance of judgment to the utmost. A premium prize and eight other prizes are given in each class, and it is a condition of the competition that the variety winning the premium prize may win once more in the class; others only once. In these classes competing plants have not less than three expanded pipes, but in the pans there must not be less than five pipes. As a rule the plants were shown with as many good pipes as possible.

The premium grey-edge was Lancashire Hero, so destitute of meal on the edge as to be practically a green-edge. It came from the Rev. F. D. Horner. Then followed Emperor, shown by Mr. B. Simonite, Geo. Lightbody and Lancashire Hero followed in the order of merit. The green-edge was also shown. The premium grey-edge was George Lightbody, shown by Mr. S. Barlow; and the Rev. F. D. Horner came next with a pair of white and green edge, the Lancashire Hero, Dr. Horner, a fine new variety, raised by Mr. J. Read, of Market Rasen; Samuel Barlow, new and very promising; C. E. Brown, General Bolivar, Syke's Complete, and Alexander Melkiele, the pip fine, but somewhat rough on this occasion. The

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, MAY 3, 1877.

Table with columns: MONTH AND DAY, BAROMETER, TEMPERATURE OF THE AIR, Hygrometric Data, WIND, RAINFALL. Rows for April 26-30 and May 1-3.

April 26.—A dull cloudy day. Cold. Cloudless at night. 27.—A fine day, cloudy and cold. Strong wind. 28.—Overcast, dull and dull throughout the day. 29.—A dull rainy day. Steady rain from 3.30 P.M. to 6 P.M. 30.—Fine but dull and cloudy. Cold. May 1.—A dull, overcast day. Cold and raw. 2.—A fine day, but cloudy and cold. Cloudless at night.

LONDON: Barometer.—During the week ending Saturday, April 28, in the suburbs of London the reading of the barometer at the level of the sea decreased from 29.80 inches at the beginning of the week to 29.55 inches by the afternoon of the 23d, increased to 29.93 inches by the evening of the 26th, decreased to 29.72 inches by the morning of the 28th, and increased to 29.83 inches by the end of the week. The mean reading for the week at sea level was 29.77 inches, being 0.09 inch lower than that of the preceding week, and 0.19 inch below the average.

Temperature.—The highest temperatures of the air varied from 61° on the 22d to 43° on the 28th; the mean value for the week was 54°. The lowest temperatures of the air ranged from 34° on the 24th to 38° on the 22d; the mean of the week was 38°. The mean daily range of temperature in the week was 16°, the greatest range in the day being 23° on the 24th, and the least 8° on the 28th.

The mean daily temperatures of the air and the departures from their respective averages for the week were as follows:—22d, 51° 7'; 23d, 45° 1'; 24th, 44° 7'; 25th, 43° 2'; 26th, 41° 8'; 27th, 43° 1'; 28th, 45° 6'; 29th, 45° 1'; 30th, 44° 3'. The mean temperature of the air for the week was 44° 3', being 3° 6' below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 124° on the 22d, 121° on the 24th, and 118° on the 23d; on the 28th the reading did not rise above 53°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 27° on the 24th and 29° on the 24th; the mean value for the week was 34°.

Wind.—The direction of the wind was mostly from the E.N.E., and its strength moderate. The weather during the week was generally dull and cold for the season. Thunder was heard on the 22d, 23d, and 24th.

Rain fell on three days during the week; the amount collected was 0.12 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 71° at Portsmouth, 61° at Nottingham, and 61° at Blackheath; at Bradford 50° was the highest temperature; the greatest at all stations was 53°. The lowest temperatures of the air observed by night were 29° at Cambridge, and 29° at Nottingham; at Truro 42° was the lowest temperature; the general mean from all stations was 54°. The range of temperature was the greatest at Portsmouth, 33°, and the least 13°, at Bradford; the mean daily range of temperature from all stations was 23°.

The mean of the seven high day temperatures was the highest at Portsmouth, 60°; at Nottingham at Bradford, 47°; the mean value from all stations was 51°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 34°, and the highest at Truro, 45°; the general mean from all stations was 37°. The mean of the seven days of temperature in the week was the least at Bradford, 8°, and the greatest at Portsmouth, 19°; the mean daily range from all stations was 13°.

The mean temperature of the air for the week from all stations was 43°, being 41° lower than the value for the corresponding week in 1876. The highest were 49° at Portsmouth, and 49°, at Truro; and the lowest 41°, at Wolverhampton, Sheffield, Bradford, and Sunderland.

Rain.—The fall of rain was generally larger in Yorkshire and Durham than elsewhere. At Bradford, Leeds, and Hull about 1 1/4 inches, and at Sunderland 1 1/2 inch (nearly) was measured, whilst at Blackheath one-tenth of an inch only fell. The average fall over the country was six-tenths of an inch. The weather during the week (with the exception of Sunday, the 22d) was generally dull and cold. A slight thunder-storm occurred generally on the 22d inst. Lunar halos were seen at Bristol on the 22d and 24th.

SCOTLAND: Temperature.—The highest temperatures of the air varied from 55° at Paisley to 46° at Leith; the mean value from all stations was 50°. The lowest temperatures of the air ranged between 31° at Paisley and 35° at Glasgow and Greenock; the average value from all stations was 33 1/2°. The mean range of temperature from all stations was 16 1/2°.

The mean temperature of the air for the week from all stations was 41°, being 3 1/2° lower than the value for the corresponding week in 1876. The highest occurred at Glasgow and Aberdeen, both 42 1/2°, and the lowest at Edinburgh, 29 1/2°.

Rain fell to the amount of 1 1/4 inch at Paisley and 1 inch at Greenock; at Perth half an inch fell; the average fall over the country was three-quarters of an inch.

DUBLIN.—The highest temperature of the air was 56°, the lowest 29°, the mean range 27°, the mean 45°, and the fall of rain 0.05 inch.

JAMES GLAISHER.

Variorum.

THE WOODMAN'S CRAFT.

O, the woodman's craft is a godly craft, He sings through sun and showers; As strong and brown as his hatchet's haft, As simple as the flower;

Of pleasure or toil he nothing lacks, As he carols his song and he swings his axe In spring-drenched forest-lowers.

When all the winds of March are blown, The Apple-boughs nod and sigh, When swallows from the South have flown, And little clodders, scudding

Across the sun, scatter seeds in their rays. Full merry and fair are the woodland ways When April streams are flooding.

With throatslooms the groves ring out; Round hut and byre and shieling, High, low, and near and round about, The blue-backed birds are wheeling;

And saucily boasting his robber name, The cuckoo prides, nor cares for shame, Where eggs are for the stealing.

Beneath the Ash, whose barren head Still looms all dark and frowning— Beneath the gracious green and red That maketh the young Oak's crowning—

Last autumn's leaves can scarcely hide The tufts of Primrose, morning-eyed, With cloak of winter's browning.

Then merrily ring the axes keen Where the willow trees are swinging; And goody shows the broad blade's sheen, The sunbeams backward flinging,

The hicket's many a leafy glade Ring clearer than the ringing blades With woodmen's jovial singing.

A godly craft, and a gentle craft, And a craft no evil fearing, Is that who live by beave and haft Where thicks are for clearing,

As the good man's hatchet swings aloft, And the good wife sings from the binding-croft.

When summer days are nearing, B. Montgomery Ranking, in "London Society."

Answers to Correspondents.

BLUE LIGHT: B. D. We have had no practical experience, and theoretical grounds should doubt the advisability of using blue glass.

CAMELLIA LEAVES: W. P. D. There is no trace of fungi on the leaves, and we cannot otherwise account for the spots.

DOUBLE VIOLET: J. Laing. The double white violet you send is a very fine thing, the flowers pure white, fully double, and quite an inch across.

HOTEL: W. E. The correct name is Astilbe barbata, the other name synonym.

INSECTS: S. Burton. The insect found feeding on your Vine leaves is a weevil, Otiorhynchus sulcatus, a well-known pest of gardeners.

INSECT IN POTATOES: A. G. B. Said by hemipterists to whom it has been shown to be the pupa of Kevdus

personatus, but the opinion not given with confidence, and seems doubtful, A. M.

MAIZE: W. H. G. Bath. From the leading American seedsmen, Orange Phoenix, A. N. odors, A. N. MEASURING: Novice. Your question does not come under our province. Get the nearest carpenter or painter to give you a lesson on the subject.

NAVES OF THE JAMES SCRIBNERI maxims.—C. A. Stringer.—Parmanium africana.—Rob. The Montpellier Maple, Acer mopansuense.—A. Novice. Fritillaria Melegris.—John E. Daniel. Corrected names.—Orange Phoenix, A. N. odors, A. N. Harrison; a. Lycaete aromatica.—P. H. G. The Dendrobie bought at Stevens' is D. Fiedlyanam, which has not been seen with Sir Trevelyan before. The flowered variety was on July 15, 1875; of Schlimmia trifida may be the first time it flowered in England. H. G. Kitchin.—U.S. 1. Narcissus incomparabilis var. Orange Phoenix, A. N. odors, A. N. Pittosporum undulatum.

POLYANTHUS: 7. W. An ordinary gold-laced variety. The lacing is too narrow for the florist's standard.

SEAKALE LILYWHITE: Stuart & Mein. The sample received proved, when cooked, to be of good colour, very tender, and of excellent flavour. There can be no doubt about its being a great improvement on the ordinary variety.

SEEDS FROM ABBEY: J. Meadows. 1. Desmodium; 2. Desmodium gyrans, a native of the East, India, and of herbarious habit; 3. Desmodium cajanifolium, an evergreen from Caracas.

SPIREA JAPONICA: A. Novice. Divide the crowns after flowering, in June, in a rich soil. They require plenty of moisture while growing. In Holland this plant is grown in great quantities for green manure, amongst the Hyacinths, in pure sand and cow-dung. See 566.

VINES: C. B. P. The injury done to your Vine leaves has not been caused by any constitutional disease in the Vine, but, as we believe, by the action of a brief period of bright sunshine after the dull weather lately experienced, intensified perhaps by delayed ventilation. Scalding is the term applied by gardeners to this form of injury, and there is plenty of it this spring.

CATALOGUES RECEIVED.—Messrs. S. Dixon & Co. (54, Moorgate Street, London, E.C.), Descriptive Catalogue of Chrysanthemums, the Exotic, Indica, and Pelargoniums, &c.—Messrs. J. Warner & Sons (The Crescent Foundry, Cripplegate, E.C.), Catalogue of Horticultural Ironwork, &c.—W. Vander Swaelmen (The Nursery, Genneuges, Ghent, Belgium), Special List of Liliums, Azaleas, Rhododendrons, Herbarious Plants, &c.—W. Rumsey (Joining's Nurseries, Waltham, Essex), Catalogue of Choice Seed Plants.—The Detroit Seed Company (Detroit, Michigan, U.S.A.), Catalogue of Vegetable and Flower Seeds.—Messrs. Dicksons & Co. (1, Waterloo Place, London, W.), Descriptive Catalogue of Florist's Flowers.—W. B. King (King's Road, Chelsea, London, S.W.), Retail List of New, Beautiful, and Rare Plants.

COMMUNICATIONS RECEIVED.—S. P. O.—J. N. W. V.—D. J. D. F. C. British (See Ph. O.).—Schubert, W. G. E. J. A.—T. R. C. A.—D. Martin.—O. G.—E. J. A.—P. M.—L. A. R.—C. E. J. N. F. D. M.—Equiper (See Ph. O.).—J. G. H. W.—O. J.—C. A. G. R.—H. E.—T. W.—C. R. (next week).—J. C.—A. B.—C. D.—A. F.

Markets.

COVENT GARDEN, May 3.

A fair amount of business has been doing during the week, a good supply of all kinds of fruit being to hand. Grapes still continue to fall in value, the demand not keeping pace with an increased supply. Forced vegetables remain the same. James Webber, Wholesale Apple Market.

VEGETABLES.

Table with columns: Articles, per bush, Horse Radish, per bush, Leeks, per bush, Lettuce, per doz, Cauliflowers, per doz, Spinach, per bush, Tomatoes, per doz, Peas, per doz, Beans, French, per doz, Potatoes, per bush, Onions, per bush, Mushrooms, per doz, Carrots, per doz, Parsnips, per doz, Cabbages, per doz, Celery, per bundle, New Frs., per doz, Cauliflowers, per doz, Lettuce, per bundle, Spinach, per bush, Tomatoes, per doz, Peas, per doz, Beans, French, per doz, Potatoes, per bush, Onions, per bush, Mushrooms, per doz, Carrots, per doz, Parsnips, per doz.

FRUIT.

Table with columns: Apples, per 4 lbs, Peaches, per doz, Pears, per doz, Grapes, per lb, Fine-apples, per lb, Strawberries, per doz, Oranges, per 100, Figs, each, 1 lb.

CUT FLOWERS.

Azaleas, 12 sprays . . . 0 6-10	Lily of Valley, 12 spr . . . 0 7-10
Bell Bells, 12 bunch . . . 2 0-0	Mignonette, 12 bun . . . 4 0-0
Bonarias, per bun . . . 1 0-0	Mystic, 12 bun . . . 3 0-0
Camellias, 12 bloom . . . 2 0-0	Narcissus, 12 sprays . . . 1 0-0
Campanulas, per dozen . . . 1 0-0	Pelargoniums, 12 bun . . . 1 0-0
Cornwallis, 12 bunch . . . 1 0-0	— zonal, 12 sprays . . . 6 1-6
Cyclamen, per dozen . . . 0 3-9	Primrose, per dozen . . . 0 1-0
Delphin. double, 12 . . . 3 0-0	— single, 12 . . . 2 0-0
— bunches . . . 3 0-0	Roses, indoor, p. doz. . . 3 0-10
— single, 12 bunch . . . 2 0-0	Spiraea, 12 sprays . . . 1 0-4
Eucharis, per doz . . . 1 0-0	Stephanotis, 12 bun . . . 6 0-0
Euphorbia, 12 sprays . . . 2 0-0	Trachelium, 12 bun . . . 1 0-4
Geranium, per doz . . . 4 0-10	— purple, 12 bun . . . 3 0-9
Heliotropis, 12 spr . . . 0 10-0	Violas, 12 bun . . . 1 0-4
Hyacinths, 12 bunch . . . 6 0-10	Wallflowers, p. doz. . . 3 0-0

PLANTS IN POTS.

Azaleas, per dozen . . . 12 0-0	Hydrangeas, per doz. . . 12 0-0
Begonias, per doz . . . 6 0-10	Lily of Valley, each 1 6-0
Calceolarias . . . 12 0-0	Mignonette, per doz. . . 3 0-9
Cineraria, per doz . . . 6 0-10	— Myrtle, do. . . 3 0-9
Clematis . . . 12 0-0	Palms in variety, each . . . 3 0-10
Coleus, per dozen . . . 3 0-0	Pelargoniums, scarlet . . . 6 0-0
Cyclamen, per doz . . . 0 10-0	— white, do. . . 6 0-0
Cyperus, do. . . 6 0-10	Rhodanthe, per doz. . . 10 0-10
Dracœna, do. . . 6 0-10	— Richardia, do. . . 10 0-10
— viridis, per doz. . . 0 10-0	— do. . . 10 0-10
Ferns, in var., p. doz. . . 6 0-0	Roses, per dozen . . . 12 0-0
Ficus elastica, each . . . 2 0-0	— fairy, per dozen . . . 0 10-0
Fuchsia, per dozen . . . 0 10-0	Spiraea, per doz . . . 12 0-0
Genista . . . 9 0-10	Tulips, per dozen . . . 3 0-10
Heaths, variety, doz. 12 . . . 0 10-0	Valeriana, do. . . 3 0-0

SEEDS.

LONDON: May 2.—Inactivity of demand, and a tendency to lower prices, characterise just now the trade for agricultural seeds. For the moment, indeed, owing to recent failures, the seed market must be described as quite disorganised, and for some articles it is almost, and in fact impossible, to fix the value. For some two or three weeks longer a dragging demand may be expected. As soon as the present backward season is over is over we may look for greater steadiness; and an approximate idea can then be formed as to holding-over rates. For grass seeds there is a moderate request at unsatisfactory quotations. Sainfoin and Lucerne move off on former terms. Spring Tares, in sympathy with the strong advance in all descriptions of grain, are 12s. to 22s. per cwt. dearer. Hemp, Rape, and Linseed are also stiffening in price. Canary seed, under the influence of a strong speculative inquiry, exhibits a marked advance. Fine Peas, with a lively sale, are also considerably higher. *John Adams & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday Wheat was from 6s. to 8s. per quarter dearer than on Monday 28th night, and at this advance holders were not very ready sellers. Barley was quoted about 3s. per qr. higher. Malt was very much more money. In Oats there was a rise of from 2s. to 3s. per qr. on the week; Maize effected an advance varying from 2s. to 4s. per qr.; Beans and Peas were about 2s. dearer; while as regards four countries' Corn, the market was 5s. to 6s., and American barrels from 3s. to 4s. more money than on Monday 28th night. The top price of town-made flour, 100s. was raised 6s., or to 106s. per sack. On Wednesday trade was quieter, and offered sales some reduction from the rates of Monday had to be submitted to. This applies to all classes of produce.—Average prices of corn for the week ending April 28.—Wheat, 55s. 10d.; Barley, 40s. 6d.; Oats, 25s. 8d. For the corresponding week last year.—Wheat, 44s. 11d.; Barley, 34s. 1d.; Oats, 26s. 3d.

CATTLE.

At the Metropolitan Market on Monday prices for beasts advanced, and a fair clearance was effected. Trade was not very active for sheep, and prices on the average were scarcely as good as last week. Scarcely any advance was noticed in lambs, but choice carcasses were scarce and dear. Quotations.—Beasts, 4s. 4d. to 5s. 4d., and 5s. 6d. to 6s.; calves, 5s. 10d. to 6s. 10d.; sheep, 5s. to 5s. 6d., and 5s. 8d. to 6s. 4d.; lambs, 4s. 4d. to 8s. 4d.; pigs, 4s. to 5s. 6d. and 5s. 10d. There was very little change in the trade. The few beasts to be sold still at about Monday's value, though quotations did not range quite so high. Sheep moved off at a moderate demand. Prime calves were in fair request, but lambs met no inquiry.

HAY.

Business at Whitechapel market was firm on Thursday, with a steady demand. Quotations.—Clover, best, 102s. to 125s.; inferior, 85s. to 95s.; hay, best, 102s. to 125s.; inferior, 75s. to 85s.; and mixed, 45s. to 57s. per load.—Camden Market quotations.—Superior meadow hay, 122s. to 140s.; inferior, 110s. to 120s.; superior Clover, 122s. to 140s.; inferior, 110s. to 120s.; and straw, 55s. to 60s. per load.

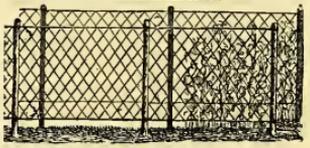
POTATOS.

The Borough and Spitalfields markets reports for Monday gave business as being steady. Kent Regents, 95s. to 120s. per ton; Essex do., 85s. to 120s.; Scotch do., 90s. to 120s.; Victoria, 130s. to 160s.; do. Scotch, 115s. to 120s.; Hales, 140s. to 170s. On Thursday English and Scotch were firm, and foreign sold unevenly. Quotations.—Victoria, 140s. to 160s.; Kent Regents, 120s. to 150s.; Scotch do., 120s. to 140s.; French round, 8s.; German reds, 8s. to 8s.; Belgian kidneys, 10s. per ton.—The imports into London last week, comprised 19,524 bags from Antwerp, 14,710 Hamburg, 1845 Bremen, 124 Harting, 1200 London, 1289 Ghent, 1000 Danzig, 153 packages 50 bags Malta, 116 bags Calais, 76 Rotterdam, and 50 sacks Rouen.

SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to JOHN SHAW AND CO., 97, Oxford Street, Manchester.

EDGINGTON'S GARDEN NETTING is the cheapest and most durable, at 1d. per square yard, or in quantities of 100, 500, or 1000 yards, carriage free. EDGINGTON'S MARQUEES AND GARDEN TENTS are the best. EDGINGTON'S MARQUEES for Hire are the most handsome and capacious. EDGINGTON'S RICK CLOTHS for 75 years have maintained their celebrity as the best. HAYTHORN'S and WALLER'S NETTINGS. A quantity of good Second-hand Government Tents from Abyssinia for Sale, Cheap. Samples of material sent on application. Be particular—FREDK. EDGINGTON AND CO., 57 (only) Old Kent Road, London, S.E.

THOMAS'S IMPROVED PEAS TRELLISES. GALVANISED AFTER MADE. FOR TRAINING PEAS, INSTEAD OF STICKS.



Prices, in Panels of the undermentioned sizes only, without stakes. 6 feet wide, 3 feet high 2s. 6d. each panel. 6 feet wide, 4 feet high 3s. 6d. 6 feet wide, 5 feet high 4s. 6d. The above engraving shows the arrangement of the panels tied to ordinary wood stakes. Improved Framed Standards for ditto, galvanised, 2s. 6d., 2s. 9d., and 3s. each.

Thomas's Pea and Seed Guards. NEW PATTERN, GALVANISED. 8s. per dozen, 3 feet length.

Five per cent. discount allowed for prompt cash on Orders amounting to 20s. and upwards.

Illustrated and Priced Catalogues of every description of Horticultural Wirework on application. J. J. THOMAS & CO., FADDINGTON WIREWORKS, 295 and 365, EDGWARE ROAD, LONDON, W.

HORTICULTURAL IRON AND WIRE WORKS.

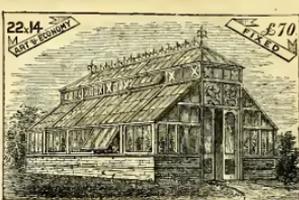
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 - Illustrated CATALOGUE.
- R. HOLLIDAY, Iron and Wire Works, 2A, Portobello Terrace, Notting Hill Gate, London, W.

NETTING FOR FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.

TANNED NETTING for protecting the above. Frost, Blight, Birds, &c., 2 yards wide, 3d. per yard, or 100 yards, 2s.; 4 yards wide, 6d. per yard, or 50 yards, 4s.; NEWTANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s. per yard; 6-inch mesh, 4 yards wide, 1s. 6d. per yard. TIFANY, 6s. 6d. and 7s. 6d. per piece of 20 yards. EATON and DELLER, 6 & 7, Crooked Lane, London Bridge.

E. T. ARCHER'S "FRIGI DOMO."

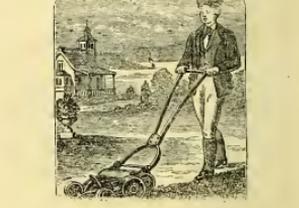
Patronised by Her Majesty the Queen, for Windsor Castle and Frogmore Gardens, the late Sir J. Paxton, and the late Professor Lindley, &c. MADE OF PREPARED HAIR AND WOOL. A perfect non-conductor of heat or cold, covering a fixed temperature where it is applied. A good covering for Pits and Forcing Frames. PROTECTION FROM COLD WINDS AND MORNING FROSTS. "FRIGI DOMO" Non-conducting, 1s. 6d. per yard. "FRIGI DOMO" CANVAS. 2 yards wide 1s. 10d. per yard run. 3 yards wide 1s. 3d. per yard run. 4 yards wide 1s. 10d. per yard run. ELISHA T. ARCHER, only Maker of "Frige Domo," 181, St. Paul's Church, Forest Hill, London, S.E., and of all other Plants and Seedsmen. NOTICE—Removed from 3, CANNON STREET, CITY.



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THE BEST LAWN MOWERS RANSMOS' AUTOMATON & REVERSIBLE

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See Coloured Plate (after Mrs. Duffield), "Gardeners' Chronicle," this day.

Perhaps the finest of all the English Seedling Roses of recent introduction. It is *par excellence* a really Bedding Rose in every sense of the word—requires no pegging down, support, or training of any kind, and is a continuous early and late bloomer.

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that a plant 18 inches high had eighty-four buds and expanded flowers upon it on September 6, 1876,

A CONSTANT SUPPLY OF BUDS WAS OBTAINED FROM EARLY JUNE TO NOVEMBER OF THAT YEAR:
OVER FIVE MONTHS!

Good Plants are now being sent out, in strict rotation, at 10s. 6d. each.

COLOURED PLATES ONE SHILLING EACH.

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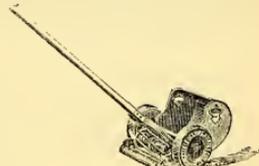
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New Patent "Roller" Lawn Mower.



New Patent Lawn-Edge Cutter.



Royal Prize Medal Patent "Anglo" American Lawn Mower.

Upwards of 37,000 of these celebrated Machines have been sold during the past few years.
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Awarded Medal for Merit, Vienna, 1873 (the only Medal given for Lawn Mowers), **Large Silver Medal** (the First Prize) at the Meeting of the Royal Horticultural Society, Birmingham, 1872, and in addition, every First Prize wherever these Machines have been brought into competition in actual trial with other makes.

FOLLOWS AND BATE here abstain from enumerating in detail the various good points "claimed" for other Machines, and content themselves with saying that their Lawn Mowers possess them all, and more also; they therefore solicit the favour of an application for one of their CATALOGUES, with Testimonials, before purchasing.
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F. & B. are the sole makers of the well-known Patent "CLIMAX" LAWN MOWER, with Back Delivery, from 22s. each; NEW PATENT LAWN-EDGE CUTTER, which entirely supersedes the Shears; PATENT GARDEN PLOUGH, &c.

Machines of any make Repaired or allowed for in Exchange.

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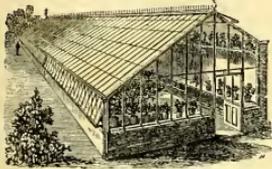
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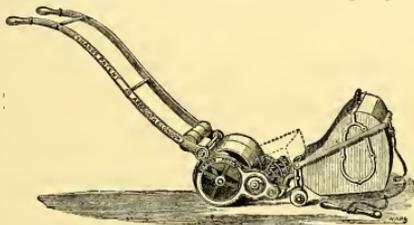
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 LAWN MOWERS,**
 Under the Patronage of Her Most Gracious Majesty the Queen, and
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The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. A. S. & SON would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The *Sole-Plate or Bottom Blade* is made with *Two Edges*, enabling the cutting parts to last twice as long as in other Machines. A *Wind-guard* is also introduced, which prevents the Grass escaping the Box when the Machine is in use during the prevalence of wind.



PRICES,

Including Carriage to any Railway Station or Shipping Port in the Kingdom:—

NEW HAND MACHINE.		NEW PONY and DONKEY MACHINE.	
10-inch Machine	£3 10 0	25-inch Machine	£13 10 0
12-inch Machine	4 15 0	28-inch Machine	15 15 0
14-inch Machine	5 15 0	30-inch Machine	17 0 0
16-inch Machine	6 15 0	The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.	
18-inch Machine	8 5 0	Price, for the 28-inch and 30-inch Machines, 30s. extra;	
20-inch Machine	9 0 0	for the 28-inch Machine, 35s. extra. Silent Movement, 12s. 6d. extra.	
24-inch Machine	9 10 0	Roots for Horse's feet, 20s. per set.	

The Hand Machines are all fitted with Silent Movement, and can be used either with or without the usual Front Rollers.
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 30-inch Machine £30 10 0
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 The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.
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A Staff of experienced Workmen always kept in London, so that Repairs can be done there as well as at the Manufactory.

SHANKS' PATENT LAWN MOWERS

Are warranted to give ample satisfaction, and if not approved of can be at once returned.

ALEXANDER SHANKS & SON,

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27, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can choose from a Stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power. Orders executed same day as received.

Small Lawn Mowers—6-inch, 25s.; 7-inch, 35s.; 8-inch, 50s.

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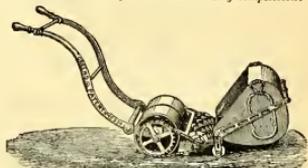
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Metallic Hothouse Builder to Her Majesty.
HENRY HOPE
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 55, LISEBURY STREET, E.C. Established A.D. 1828.
 BOOKS OF DESIGNS, 5s. each.
 24" The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed at this Establishment.

SIR J. PAXTON'S HOTHOUSES for the MILLION.—Price List free. Conservatories, &c., built to Architects' Plans, or Designs prepared, and Estimates given to Rough Sketches, with sizes required. Heating apparatus fixed complete. Pamphlet, with Illustrations, post-free, 3d.
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**GREEN'S
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 Collecting Machines for 1877.

The Winner of every Prize in all cases of competition.



The superiority of these Machines over those of all other makers is universally acknowledged. They will cut either long or short Grass, Bent, &c., wet or dry.

These advantages no other Lawn Mowers possess.

They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant.

The largest stock of Mowers kept in London is to be found at our Establishment, 54 and 55, Blackfriars Road, where purchasers can select from upwards of 500 machines of hand, pony, and horse power, and have their orders executed the same day they are received.

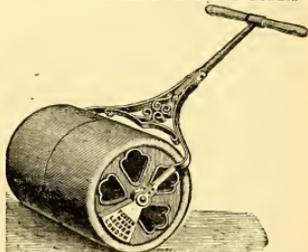
Every Lawn Mower sent out is guaranteed to give entire satisfaction, otherwise it may be returned at once free of cost to the Purchaser.

N.B.—Those who have Lawn Mowers to repair will do well to send them either to our Leeds or London Establishment, where they will have prompt attention, as an Efficient Staff of Workmen is kept at both places.

Descriptive Illustrated Price List free on application.

GREEN'S PATENT ROLLERS

For Lawns, Drives, Bowling Greens,
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 SUITABLE FOR HAND OR HORSE POWER.



They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom; or direct from the Manufacturers,

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WANTED, for a Provincial Nursery of 12 acres, an energetic and steady Man as FOREMAN to be an expert Builder and Gruffer, and well versed in all departments of the business. A thoroughly reliable man will have every encouragement given him. Apply, by letter, giving references, to Mr. H. B. M. R. Cooper, Seed Merchant, Fleet Street, London, E.C.

WANTED, a JOURNEYMAN; a well one up in Growing Plants for Market—State wages required, and good references, to R. AND J. ALLUM, The Nurseries, Llanwrthwl.

Knifeman.

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NEW ROSES for 1877.—A Selection of all the most English and Continental varieties, in strong robust plants, in pots. Descriptive LIST with prices on application.
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PADMAN'S "LOBELIA EBOL," universally acknowledged to be the best out, post-free receipt of stamps, at 6d. per dozen, free to rail, 12s. per 100, 16s. 10s. per 1000. Send direct, when you are sure of getting it true. Provenance Nursery, Boston Spa, near Ldcastler.

Verbena, Verbena.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other mixed sorts, good strong spring-struck cuttings, well rooted, at 6d. per 100, 50s. per 1000, packings included, and ready for all orders.
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SURPLUS CARPET BEDDING PLANTS for SALE CHEAP.—A Gentleman Gardener can offer 2000 each of the following kinds by end of May or sooner.—*Alyssum aureum*, magnificum, paronychioides, 9 major, *Sedum carneum variegatum*, *Arabis variegata*, *Sedum glaucum*, *Mesembryanthemum cordifolium*, *Echeveria secunda glauca*, *Iresine Lindenii*, *I. Herbati*, and many others. Highest Offer will be accepted for the Lot or a Part.
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My Thousands of

FUCHSIAS, VERBENAS, GERANIUMS, PHLOXES, COLEUS, PENTSTEMONS, DAHLIAS, and BEDDING VIOLETS AND FANSELS. They are now just right for shifting on, and will make a grand display all the season. **H. CANNELL** will send in good plants—

- 50 FUCHSIAS, all distinct varieties, for .. 12 0
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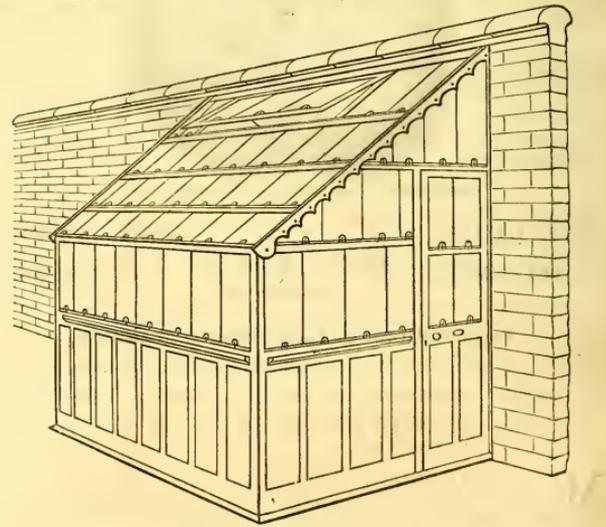
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This house is constructed of the best yellow deal, painted three oils and 21-oz. glass, is portable, like all the Patentees' Structures, and is sent out carefully packed. It is 8 feet in length and 6 feet wide, 4 feet 9 inches high in front and 3 feet 6 inches high at the back, and contains nearly 120 feet of glass. Illustrated Price List of Larger and other Structures on application.

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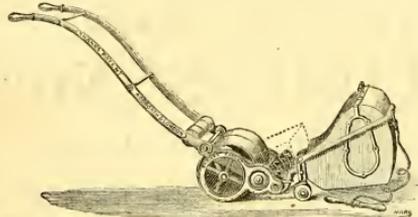
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Under the Patronage of Her Most Gracious Majesty the Queen, and most of the Nobility of Great Britain.

The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. As S. & S.O. would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The Sole-Plate or Bottom Blade is made with Two Edges, enabling the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced, which prevents the Grass escaping the Box when the Machine is in use during the prevalence of wind.



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A Staff of experienced Workmen always kept in London, so that Repairs can be done there as well as at the Manufactory.

SHANKS' PATENT LAWN MOWERS

Are warranted to give ample satisfaction, and if not approved of can be at once returned.

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Dens Ironworks, Arbroath; and 27, Leadenhall Street, London, E.C.

27, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can choose from a Stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power. Orders executed same day as received.

Small Lawn Mowers—6-inch, 25s.; 7-inch, 35s.; 8-inch, 50s.

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Reg to inform their numerous Patrons and the Public generally that having erected new, more extensive and commodious works, fitted with the best steam-power machinery, for the construction of Horticultural Buildings in wood or iron, plain or ornamental, large or small, they are in a position, from their great facilities and experience, to carry out with dispatch, in the best manner, at very moderate cost, the orders with which they are entrusted. Only thoroughly well-selected timber used. Glasshouses erected on Messinger's patent principle are, owing to mechanical arrangements, very strong, most durable, light, elegant; perfect efficiency for purpose intended is guaranteed; are economical in cost and maintenance. Messinger's Patent Boilers, Flexible Jointed Hot-water Pipes and Valves, are now in use in many thousands of instances, with the greatest success. Particulars on application. Plans and Estimates forwarded. Ladies and Gentlemen waited upon.

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By Her Majesty's Letters Patent

ENDLESS FLAME-IMPACT HOT-WATER BOILERS.

GUARANTEED

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

"The 'Boiler of the Future.' I have no doubt about this."—WM. THOMSON, Dundee Fireworks.

From the "Gardener," March, 1877.

FRAME-PATENT

ENDLESS FLAME-IMPACT BOILER.

"This boiler is attracting a good deal of attention in the horticultural world at the present time; and as I have just laid one of their largest-sized ones fitted up here, and have now got it well tested, perhaps a few lines from me up to your gallows may not be without some advantage to some of your numerous readers. I have had some experience as to the annoyance and extra labour caused by badly constructed boilers, and my improvement effected in these is save labour and fuel demands the attention of all interested parties.

"To give your readers a better idea of the work this boiler has to do, I may begin by stating that our hot-rooms consist of a range having a total length of 100 feet, of which the two lower-roofed greenhouses being in the centre, two lean-to Vuesires on each side, with Cannel, more or general plant-houses, each end; on opposite side of wall we have a Fern-house, partly lean-to and partly span, 95 feet in length, varying in width from 20 to 30 feet. Attached to end of boiler-house is my laundry, with a drying chamber fitted up with about 250 feet of 4-inch piping.

The whole of the above houses are heated with hot water, and have a total of about 300 feet of 4-inch piping. We had formerly two oval flue boilers, one being 10 feet long, the other 4 feet long. With these two boilers kept hard fire we always found great difficulty in keeping up the temperature during frosty weather, and had frequently to keep a single sleep attending to the fire. On the last day of last year the larger boiler came to the end of its life, and was blown down the fire; and in taking down some of the brickwork it was found to have cracked beyond repair. To be thus left in the middle of winter with only one boiler was a very serious matter, and I was obliged for another without delay. I have given a good deal of attention to the construction of hot-water boilers, and I can assure I had never seen one that would give up to me what a boiler should be after some time ago my attention was called to a drawing of Wright & Co.'s Boiler.

"After talking the matter over with my engineer, W. S. Mitchell Jones, Esq., he at once granted permission to get the boiler I had mentioned such an order was sent to the works and into the hands of Messrs. Mickle & Philip, hot-water builders and hot-water engineers, of the Leam Street, and in a few days they fitted it up and attached the piping in the most complete manner. I also got some additional tight valves attached, so that if anything should happen at any time it could be attended to without disturbing the piping.

"And now as to the capabilities of the boiler for the work. As formerly stated, I had considerable difficulty in keeping up the heat with the two oval flue boilers kept hard at work. I now find that with the present boiler, with a low fire, I can heat up the whole of the houses and the laundry to a degree they never were before, and that with much less coal than it took to fire out of the oval flue boilers.

"Our chimney consists of a fire 70 feet long, led horizontally through centre of back wall, with 18 feet of a perpendicular stalk. Some doubt was expressed that, as we required a chimney pipe attached to boiler about 6 feet long, there would be deficiency of draught; but we have found the opposite to be the case. I attached a 6 feet length of 8-inch stove pipe, with elbow at boiler, and cleaning door at single angle, and it worked very strong. I used a large iron flange fitted into the band of the stove pipe, and am able to regulate the fire to a nice degree by making use of a damper at the top, and I can regulate damper fully half round. I can leave it to its work with the greatest confidence till the usual time of commencing labour in the following morning, and I am satisfied as to its capability to sit up firing the half of the night at times, and sometimes whole ones, with no trouble, and no loss of portability. We had not the slightest difficulty in putting it down in our courtyard, and fitting it through a trapdoor, 10 feet long by 2 feet in height, and fitting it up in a room 6 feet square, and I am confident that with the assistance of two men I could take the whole to pieces and reassemble it in full working order in two hours. I have no hesitation in saying that for rapidity of circulation, small consumption of fuel, portability, and cleanliness, it has no rival, and have no doubt this boiler will do its way in, and where coils are high in price it will effect a considerable saving, and so there is good fire space in it, and I will be a capital boiler for burning wood and other fuel."—J. CLARK, The Gardens, Farnham Green, Edinburgh.

[We have a very high opinion of this boiler, and predict that it will take a foremost place in heating hot-houses and all other buildings, and shall have some further remarks to make about the principles of it next month.—Ed. Gardener.]

"I think yours the most perfect 'Heat Trap' yet invented."—DAVID THOMSON, Drumwright Glasgow.

For details and particulars as to the various sizes made, and prices, please see our pamphlet, entitled 'The Best and Simplest Hot-Water Boilers,' which will be handed to all applicants, post-free.

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

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"ARCHIMEDEAN" AMERICAN LAWN MOWERS,

Will Cut Long and Wet Grass (as well as Dry and Short) without Clogging.
They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

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See Coloured Plate (after Mrs. Duffield), "Gardeners' Chronicle," May 5, 1877.

Perhaps the finest of all the English Seedling Roses of recent introduction. It is *par excellence* a really Bedding Rose in every sense of the word—requires no pegging down, support, or training of any kind, and is a continuous early and late bloomer.

First-class Certificate Royal Horticultural Society, August 2, 1876.

Its inflorescence may be imagined when it is stated that a plant 18 inches high had eighty-four buds and expanded flowers upon it on September 6, 1876,

A CONSTANT SUPPLY OF BUDS WAS OBTAINED FROM EARLY JUNE TO NOVEMBER OF THAT YEAR:
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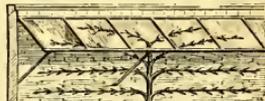
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A Crop of Fruit in Spite of Frost

Is made a certainty by the use of
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Price, with 21 ounce glass and iron framing, 2 feet wide, at 6d.; 3 feet wide 3s. 9d. per foot run.

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Holdfasts, 5 in. long, 12s. 6d. per dozen. Rainscreens, 3s. per dozen. Eyes, 4 in. long, 4½d. per dozen. No. 13 Wire, 2s. per 100 yards.

The Greatest Novelty of the Season.

MIMULUS MOSCHATUS
HARRISONI.

Awarded a First-class Certificate by the Royal Horticultural Society and Royal Botanic Society of London, 1876.

This exquisite plant is a Hybrid between the Large Spotted Mimulus and the Giant Musk. The flowers are as large as the former, with the rich golden-yellow colour of the latter, exquisitely spotted on the lower segments with brick brown. Its habit is recumbent and neat, blooming at every joint, thus producing an abundance of elegant flowers which are brilliant and interesting. A few plants will effectually brighten and scent a Conservatory or Greenhouse. It will succeed admirably in all situations where it can be freely supplied with moisture, although a cool shady place is the best. Being an excellent Bedding Plant, and especially adapted for Rockwork, it will be rapidly brought into requisition, and its universal cultivation will quickly be accomplished. Its easy culture and other qualities will secure for it a popularity and extensive sale. It continues to bloom from March until December, and retains its scent throughout the year. As a free-growing odorous plant it is admirably adapted for Asylums, Hospitals, and other Public Institutions.

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From Mr. J. SHERRATT, *Biddulph, May 5, 1877.*
"Herewith I enclose cheque for your New Musk. The first gardener who saw it ordered the whole lot. Please forward me twelve plants more forthwith."

Plants 5s. each; six for 25s.; twelve for 48s.
Orders booked and executed in rotation, as received.

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Having extensive Sawing and Moulding Mills, employing skilled workmen in all branches of the trade, and giving our whole attention to the business, we can execute any orders entrusted to us at *unusually low prices.*

From the "Gardeners' Chronicle," p. 813, December 23, 1876.

"Amongst the improvements now being carried out by Mr. Smith at Mentmore, the princely seat of the Baroness Meyer de Rothschild, near Leighton Buzzard, we would especially mention the New Palm Stove just erected by the firm of Messrs. James Boyd & Sons, of Paisley. This structure, which is a plain span-roofed building with a lantern ridge, is intended by Mr. Smith for the growth of large Palms, &c., in tubs. It is about 86 feet in length, 30 feet in width, and 27 feet in height. For a large house like this, totally devoid of all ornamentation or filigree work, it is one of the handsomest and best constructed we have seen, and is well worthy of inspection.

HOTHOUSES ERECTED BY US

MAY BE SEEN AT—

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- Charlton Castle, South Wales.
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- Crofton Hall, Wakefield.
- Sandgate, Faversham, Sussex.
- Pickharrow, Witley, Surrey.
- Sea View, Sunderland.
- Ashburne, Sunderland.
- Browtop, Kewick, Cumberland.
- Derwent Lodge, Cockermouth.
- Newbottle, Dalkeith.
- Oxford Castle, Dalkeith.
- Castle Kennedy, Stranraer.
- Stapleton Tower, Annan.
- Glasserton, Whitburn.
- Tondergill, Whitburn.
- Belle Isle, Ayr.
- Auchmore, Perthshire.
- Inverary Castle, Argyshire.
- Kilbride, Dundee.
- Argdown, Kewrenshire.
- Rossife Lodge, Glasgow.
- "Kibble Crystal Palace," Glasgow.
- Elie, Fifehire.
- Duart Castle, Mull.
- Powerscourt and Glamore Castle, Co. Wicklow.
- Phoenix Park, Dublin.
- Carton, Maynooth, Dublin.
- Lisnamoy, Creglere, and Garbally, Co. Galway.
- Swanerville, Limerick.
- Cameron, Co. Clare.
- Ashford, Coag, Co. Mayo.
- Tollymore, Gifford, Seaford, &c., Co. Down.
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SATURDAY, MAY 12, 1877.

SOME FRIENDLY FERNS.

IN an eloquent essay, called the *Queen of the Air*, Mr. Ruskin finds a mystery, "perhaps a personality," in every plant. He is not alone in this conception. Some wild Ferns collected and potted by a lady in Surrey, acquired in a little while an unquestioned quality of personality; we well remember these fascinating plants, and the fate that overtook them. The native Ferns of Surrey are numerous, and a beautiful collection had been removed from their birthplaces in shady lanes and obscure nooks to the home-made fernery of an old road-side house. On entering the front gate by a flight of steps from the road you found yourself in a narrow space between the house and the garden wall, and in this recess, shaded by old lichen-stained and Ivy-covered walls, and overlooked by windows filled with flowers, the Ferns flourished amid broken lumps of grey-tinted sandstone. In a conspicuous position was *Polystichum angulare*, with a magnificent tame toad generally at home in the central cavity of the plant. A number of the lesser Ferns were nestled among the stones, and a never-to-be-forgotten *Moonwort* had been removed by the lady's own hand from an adjacent down—where *Moonworts* grow by dozens—and set in an open corner in its own earth, in the centre of a spit of turf, just as it grew on the hill. Among the Ferns there was not one more personal and friendly than the little *Moonwort*, which had grown to the usual stature which distinguishes its kind, on some smooth turf in the immediate neighbourhood. The site borrows the name of "Rough" from some clumps of furze; its turf is as smooth as velvet, and well suited for a canter or a stroll; or you may stand on the crowning point, and breathe the fragrance of a furze and fern-clad broom-bedecked sandhill of sunny Surrey; or you may recline and sit upon a Cistus, or lay your head upon the wild Thyme growing on an ancient molehill. Persons afraid of rheumatism and sitting on the ground should by all means interpose something underneath, in order to avoid damp. A lover of forty, or thereabouts, once "popped the question," sitting on this very "Rough," but first he popped his gloves beneath to intercept the damp.

The view from the "Rough" is a perfect Surrey scene, such as scores of artists have transferred to canvas, and hung in the *salons* of the Academy, as invitations to the public to visit Surrey. To reach the "Rough" you arrive at Dorking, climb Coast Hill after passing Westcoate, and ask your way to Abinger. Once basking on the wild Thyme the prospect is delicious, and there are, or were, dozens of *Moonworts*, which we basked there as a boy, and peppered rabbits on the same spot, and having to leave it for a home elsewhere a *Moonwort*, potted in its own earth—a little 2-inch plant—went with us, and for years put forth its leaves in spring, and prattled, as it seemed, of the "Rough" at Abinger, of rabbit shooting, and other matters. The lady's *Moonwort* was dug from the same spot, close to the granite cross which marks the spot where Bishop Wilberforce centered those last steps across the velvet turf to his unexpected grave. She had removed it herself to an open end of the fernery, where it

might find the air it needs. And all her pets on an early summer had unfolded their first fronds, when, on a moonlight night, a score of them vanished, and have never since been seen.

The manner of their going has remained a mystery. The only facts we can relate are, that in the early morning a pair of eyes from an upper window peeped down into the fernery below. They were the bright eyes of the lady already mentioned. Without pausing to describe her dress, we shall only say that the sun has rarely risen on anything more pathetic than her aspect as she peered out of that upper window and missed her Ferns. The front door opened almost on the instant, and between two banks of flowers in pots glided a figure clad all in white, and passed at once to the fernery. This was the mistress of the missing plants, their sustainer and friend, whom we have already seen at the upper window. Looking down with her bright eyes in the early dawn, she had observed the rumpled state of the ground below, and her instantaneous suspicions were now being confirmed. Two score at least of her late companions had departed, and ever since we saw her in the early dawn lamenting her Ferns, with long-drawn "Oh's!" and little runs and keen inspections of each spot whence a Fern and a friend had departed, we have never for a moment doubted the "personality" of plants. Nor has the lady herself. The language she used on the occasion proves that her Ferns did possess a personality. "I am perfectly convinced," she said, "they would have never walked off themselves." They had been dragged forcibly away by persons coming for the purpose, like the Romans when they perpetrated the Rape of the Sabines; and as the Sabine ladies became reconciled to their new protectors, so the ravished Ferns, no doubt, each acquired another "personality" in some other garden, and became the pets of a new owner.

Every cultivated Fern and flower has been entrusted with the mission of attaching those who love them to their homes by indescribable ties, which, in the case just mentioned, only the toad remained to represent. "Poor toady!" the lady was heard to exclaim, "if there is only you and I left now—what shall we do?" And about this time the gloves were laid upon the ancient mollusc on the "Rough," and so she found another friend besides the toad. But this is only an aside; the main point of our narrative is the friendship and seeming "personality" of plants. It was not strictly true about the Ferns being the lady's only vegetable friends in that delightful, old, grey, and lichens-ensured residence, and the garden round about, for there was a feathered Sumach she was much attached to, and several Arums and other plants tended by her own hands, indoors and out. Still the remark, "Only you and I left now, toady—what shall we do?" shows how cruel a loss is suffered in the theft of Ferns of your own collection, and the sympathy which may subsist between plants and their owners. *H. Evershed.*

New Garden Plants.

DENDROBIUM GRIFFITHIANUM, *Lindl.*,
Bot. Reg. xxi., sub. 1756.

I only knew this in a wild state, from Griffith himself, in Dr. Lindley's and my own herbarium. I may perhaps have had it fresh, but in miserable, wretched single flowers, which are quite insufficient to ascertain a Dendrobium. It is a small elegant orchid, much in the way of the rare *D. Palpebre*, Lindl., but with yellow flowers, an entire elegant spur, not constricted below its apex, and small, very acute, thick leaves. Like *D. Palpebre* it has a lax inflorescence, and very obscure narrow bracts. The well known *D. densiflorum*, Walp., boasts its overlaid dense raceme, its broad conspicuous bracts, oblong leaves, and a much longer stem. I do not believe that *D. Palpebre*, Lindl.,

has to be combined with *D. Griffithianum*, Lindl., as Dr. Lindley himself suggested, since its spur and its lip (and its colour) appear constantly different. I have obtained it several times fresh, only through Mr. Low's kindness, and it is Mr. Low once more who has sent me the *D. Griffithianum*, as it was Mr. Low who introduced the beautiful *D. savissimum*. *H. G. Rehb. f.*

ÆRIDEES CRASSIFOLIUM, *Parv., Rehb. f.*

At length I have fresh flowers at hand, though I would not have them. It surprises me what I expected, and I have a certain feeling that it is just the kind of all the *Ærideas*. While the flower is of the warmest purplish colour, quite exceeding the flowers of *A. falcatum*, Lindl. (*Larpenite*, Hort.), and *Houlietianum*, *Rehb. f.*, it appears to keep its short leaves, since I remember well to have seen it at different times in the collections of Mr. Day and Messrs. Low, when the Rev. C. Parish's showy discovery was introduced with very high regard. I myself suspected it might be a local changing form of *A. falcatum*, Lindl.; now I have seen it fresh and compared with my dry specimens, I do not hesitate to believe it a very good distinct species, though it is scarcely possible to distinguish it by dried materials. The spur is straight in *A. falcatum*, Lindl., it is bent under an angle in this species. The side lacinia of the lip are much broader and shorter in this than in the old species. The two keels on the disk of the lip stand close together at the base, they then get contiguous, and diverge again, arching on both sides. Quite the contrary in *A. falcatum*, where they begin by being distant, and are convergent in the middle of the lip. For this beauty I have to thank my excellent correspondent, Mr. Stuart Low. *H. G. Rehb. f.*

BLUE GLASS FOR VINES.

A GENTLEMAN near Dundee has, as we learn from the *Dundee Advertiser*, taken measures to put to the test General Plesanton's assertions as to the influence of blue glass on the growth of Vines, already alluded to in these columns. General Plesanton's book is the work of a real humourist, so that we can have almost any notice of the matter, unless as a recreation from more serious occupations. The effects of blue glass on vegetation are pretty well known to physiologists, at least so far as laboratory experiments are concerned, and they are not such as to induce a practical man to grow his plants under a blue ray. The best of all ways, however, is to do as Mr. Spence has done, and try it on the large scale. We need hardly point out that the excessive growth alleged to have taken place is not likely to be of that nature which results in well-jointed, well-coloured Grapes, or sound constitution. Here is what the *Dundee Advertiser* has to say on the matter, and we should be glad in due time to hear what our friends in that neighbourhood have to report;—

"Some time ago a copy of General Plesanton's book came into the hands of Mr. Spence, of Coventry Bank. He read it, was amazed, and was inclined to laugh at the whole thing as absurd, or a piece of Yankee brag. It struck him, however, that although 'blue light' might not develop a hedgehog into an elephant, it might still have a stimulating influence on vegetation. He was struck by this conviction by the fact that General Plesanton read his paper in the first instance before a respectable scientific society; and, further, that Mr. Buis, having a reputation at stake, would have speedily contradicted the General's statements if they were not according to fact. It so happened that Mr. Spence was creating a conservatory, and he resolved on satisfying himself as to the effects of the blue-violet ray. Mr. Spence's vineries differ from those of General Plesanton, inasmuch as the roof is not double pitched. They are built against a lofty wall, and have a fine southern exposure. There are two forcing houses, each 30 feet by 15, separated by a transverse section of about the same dimensions running out from the wall. This construction necessitated a modification of the American plan, and Mr. Spence has, by an ingenious arrangement of the glass at the top of the wall, made sure of the violet ray travelling over all the plants. One of the houses is covered with blue glass in the usual fashion with white glass; the other is fitted up with rows of blue glass, casting a violet ray in the manner described by General Plesanton. With the exception of the rows of coloured glass, the two houses are exactly the same in every respect. As to soil, it may be mentioned that in the conservatory the manner Mr. Spence took a large quantity of turf off his lawn, which was allowed to rot, and in the fall of the year it was appropriated for the purpose of Vine growing. It was placed in both houses, and in both cases bones and bone-meal from Rosewell were used as manure. On January 13 last the two

houses were stocked with Vines, of equal age and of the same variety—Black Hamburgs. On the same day, in order farther to test the influence of the blue-violet ray, Potatoes were planted in both houses. The Vines and Potatoes were placed so as to ensure the same conditions. On the 15th morning the Vines were found to be gone, about with the advice and under the superintendence of Mr. Lawrie, an intelligent and experienced gardener. Heat was put on in both houses on February 6, and the temperature has since then been kept equal, the white house from position having if anything the advantage. On the 21st morning the Vines were found. The Potatoes which have had the advantage of the 'blue light bath' standing 3 feet above the surface, and so vigorous is the growth, although carrying the full strength of stem, they will require to be staked. In the white house they stood only 2 feet high. The Vines, again, which are bathed in violet, have grown 2 feet 4 inches, and have a strong vigorous look. Those in the white house, on the other hand, are only 13 inches. Those acquainted with Vine culture will be able to estimate the different results by the following details. A regular note of progress has been kept, and the results have been given in full as they came. The progress made under the colour ray averaged fully an inch every twenty-four hours. On March 8, exactly a month from the date of forcing, the Potatoes under the white glass stood 14 inches above the ground, while under the blue glass they stood 25 inches. The Vines, again, at same date had nearly doubled their growth. The white glass plants, while under the blue they had attained a height of 16 inches. As a further instance of the stimulating influence of the ray it may be mentioned that a Camellia was pointed out to us which had been removed into the 'blue' house because of the sickly look, but which in its new quarters had grown 3 inches in two days. Mr. Lawrie, who has had a life-long experience, says nothing like it has before come under his notice. It would seem, therefore, that there is 'something' in the blue lights, notwithstanding the ridicule to which General Plesanton's pretensions have been subjected. Had he confined himself to Grape culture, he would not have claimed for the 'blue light bath' greater virtues than were ever claimed for the Morrison Fil, the 'discovery' might have received more attention than it seems to have done from practical men. As it is, judging from Mr. Spence's experience, the matter is worth trying on a large scale. The Vines are growing. There is evidently enough in the 'discovery' to induce further experiment, and those who may be inclined to go into it need not be deterred by the experience of the Connecticut Cucumber grower, who—as the *Danbury Newsman*, with his usual veracity and fine appreciation of the finer points of horticulture, has recently endeavoured to convey the Mammoth Cucumber which he reared under 'blue glass.'"

SWEET-SCENTED GREEN-HOUSE PLANTS.

It always seems to me a pity that the plants in the mixed greenhouse are limited in variety, and that a show of flowers, even if only of one or two sorts, is the one point aimed at. We all know the look of the medium-sized greenhouse in small places, which is "always gay." In winter it is bright with Chinese Primroses and Dutch bulbs, succeeded in spring by *Cinerarias*, *Azaleas*, or *Pelargoniums*, *Calceolarias*, and *Fuchsias* in summer, with Japan Lilies and *Chrysanthemums* in autumn. If the owner of the greenhouse is omnivorous in his love of plants, the result is disastrous in the overcrowded state of full use. Mr. Lawrie's plants—Camellias with yellow foliage, Heaths in a drying state, or we might rather say dead, or in the amateur's mixed greenhouse when a Heath is observed to be unhealthy, hopeless mischief has been done. But setting aside Heaths, which are an acknowledged difficult family to grow in mixed houses, look at the wretched state of the so-called hard-wooded plants, and we must own that *Eperacis* and *Cytisus*, &c., are uninteresting when past blooming; and it strikes me in these ordinary greenhouses, so cramm'd up with plants, that no plant should be admitted that is not for some reason or other always interesting. For instance (1), plants of sweet-scented foliage; (2), those whose habit or varied growth is peculiar; (3), plants whose secret-vessels are interesting or ornamental, thus having two crops of beauty; or such as should be studied from the seed-pan and known in their different stages of growth, as *Acacias*, certain species of which in their young state could never be known by one unacquainted with the changes they go through; (4), climbing plants, including those that are not for some reason or other always interesting, viz., twining plants, leaf-climbers, tendrill bearers, hook and root-climbers. A selection

from these four sorts of plants, with a sprinkling of the ordinary flowering occupants of the greenhouse, along with Ferns, Aloes, and succulents, would make the amateurs' greenhouse always varied and instructive, enabling them to appreciate more highly and learn better from botanic or large establishments which they may be in the habit of visiting. I do not see why we should encourage growth and progress in our plants, and get mentally contracted and stunted ourselves.

SWEET-SCENTED PLANTS.

To begin with plants of sweet-scented foliage, both soft and hard-wooded, as they give an immediate return. Soft and succulent growth and sages are the most we have more than thirty varieties of Cape Polygoniums of distinct perfume, but half that number would be a choice selection of the sweetest, leaving out the beautifully cut Phacelia's-foot and glutinosum sections, as the greatly adheres to them, and they stick to the cut flowers they are mixed with, and stain gloves and dress when worn. Capitatum, or rose-scented, and its variegated variety, Lady Plymouth; quercifolium, or Oak-leaf; Fair Helen, an Oak-leaf; the oddest; Fair Emily, Prince of Orange and its variegated variety; lemon-scented, nutmeg-scented, Radula or Stag's-horn, citrodorum and its minimum variety, Lady Scarborough (of the citrodorum section), lotanum or Peppermint, abrotanifolium or Tansy-leaved, Citronella or balsage section, Laurencianum or serrulatum. There is great confusion with even these unsatisfactory names, but I have selected those by which they are most generally known.

Balm of Gilead (*Cedronella triphylla*) one seldom meets with, and *Verbena* (*Aloysia citrodora*) is never grown of sufficient size to cut freely from. The Pine-apple scented *Salvia*? is another pleasant smelling plant; *Lavandula Spica* (French Lavender), and *Prostanthera lasiantha*, are sweet and useful for cutting, lasting long in water, as are also *Cedronella incana*, and a *Scutellaria* (?) with pale lilac blossoms, both labiate plants of pleasant smell, while *Teucrium Marum*, not perfectly hardy, may have a place. *Humea elegans* overtops all other perfumes, and adheres to whatever it touches, but many are partial to it.

Of hard-wooded plants the sweetest are the *Diosmas* and *Adenandras* (heath-like plants), *Leptospermum* (allied to the Myrtles), and *Boronia*s. *Diosma*, capitata, fragrans, ciliata, and speciosa are fresh and fragrant, lasting weeks in water, and retaining their leaves and sweetness when dead; but beware of *D. crenulata*, the intolerable smell of whose foliage is not counterbalanced by its beautiful white starry flowers, in bloom in December.

The *Diosmas* and *Adenandras* are so mixed up in nurseries that it is prudent to see and smell the different sorts for one's self, and not vaguely order by a catalogue. Of *Leptospermum*, bullatum and scoparium are desirable. The latter is covered with its little Myrtle-like flowers, which ripen their seed and come up freely. All these small-leaved plants take up little room and are not affected by insects. *Boronia tetrandra* has a very sweet leaf when bruised, not unlike the smell of the flowers of the well-known *B. scrulata*, and the charming *B. megastigma*. *B. alata*, again, with a good-sized lilac flower, has as perfumous a smell as *Diosma crenulata*, and they are a pair to be avoided; nevertheless that great charm of foliage belongs to them—viz., that unless bruised or drawn through the hand they do not give out their perfume like flowers, and are therefore innocuous. At the same time the perfume of its opposite, is always there in its true character, unlike a flower which has an evanescent time of perfection, and which requires careful study to witness the change of perfume. In the case of the individual who looks for sweetness in foliage there will be a hundred who sniff at every flower, and yet never know the real delicious fragrance of a Rose, Carnation, Stock, or Mignonette in its perfection. How annoying it is to the thoughtful observer to have a sweet-smelling flower cut too soon, or when past its best; too early or too late in the day, when it has had too much or too little sun; too damp or too dry. Bees at flowers are like wasps at fruit, they do not see in perfection; not having their instinct, and not using our own reason and thought, we lose very much enjoyment we might have from sweet-smelling plants. Of greenhouse plants the Musk-scented *Aster agrophyllus* is worthy of a place, both for the silver-type of its perfume, which is brown underneath, as well as for its perfume, for those who like it. A Citron should be grown for its leaves alone, so refreshing; and Myrtle, say four varieties should certainly be included. Every one likes sprays of Myrtle, but because it is almost entirely a few give a place in the greenhouse for good-sized shrubby plants that will bear cutting and bruising *ad libitum*, and with foliage unbroken by frosts and winds. With the numerous new varieties of this evergreen I conclude the list of greenhouse plants with sweet foliage. F. J. Hope, Warley Lodge.

ANTIPODAL HYACINTHS.

WANDERING through the Amsterdam show lately, we came on a dozen or so of Hyacinths growing in the singular fashion depicted in our sketch (fig. 93). A glass pot filled with earth is placed on the top of a glass vase filled with water. In the upper pot two Hyacinth bulbs are placed, the one with its growing point directed upwards, the other in the reverse direction. The one Hyacinth shoots upwards into the air, the other is directed downwards into the water. The latter, of course, appears magnified by the glass and the water. There is no sign of the inverted Hyacinth endeavouring to regain its natural upward growth, as we should expect it to. Perhaps some of our Dutch friends who see this will kindly explain how the feat is accomplished. On the spot

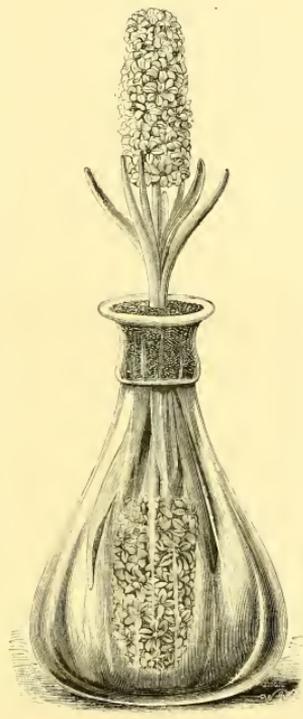


FIG. 93.—ANTIPODAL HYACINTH.

all the explanation we could get was from a wag of a Dutchman, who, in reply to our enquiry, stated that the lower bulb was an Australian, i.e., Antipodal variety!

THROUGH SARDINIA.

REMOTE from the busy haunts of tourists and the bustling centres of commercial life, Sardinia is a delightful retreat in which to enjoy the beauties of Nature, or to study the characteristics of Northern vegetation. Throughout the island the vegetable products of Europe are found side by side with those of Northern Africa. Palms grow along the shores, and their graceful outlines stand out clear against the bright blue sky; in sheltered nooks the Date tree waves its fanlike crown; huge Cacti stretch their thorny boughs, laden with Figs, along the ground; Orange trees delight the smell and sight with their

fragrant blossoms and golden fruits. In spring Almond trees display their branches laden with silver flowers; Fig trees, with their large leaves of pale green, shade the scorched ground; and the wild Vine covers the hill-sides with its vigorous shoots. Attempts have been made to add to the glorious vegetation by acclimatizing intertropical plants in the island. These attempts, made on a small scale in public and private gardens, have been attended with fair success; but it would be an error to suppose that these plants can ever become objects of extensive culture in Sardinia, where they require a special treatment, and succeed only in some favoured spots along the shores.

The climate of Sardinia would be one of the finest and healthiest in Europe were it not for the exhalations of the numerous marshes, which infect all the parts of the island adjacent to the sea. Winter can scarcely be said to exist; the sun is warm even in January, and the sky is seldom clouded. The moderate cold of January is succeeded by eight months of intense heat, and the thermometer rises to 86° and 90° in the shade. Rain is rare, and falls chiefly in March and April. The marshes are a great obstacle to the development of agricultural industries, and the labourers who are obliged to work in the plain, working on them esteem themselves fortunate when they escape with a few months' suffering from fever. The area occupied by these marshes is about half a million acres, and they have an average depth of 18 feet. The western part of Sardinia is the most beautiful and picturesque district of the island, and, indeed, is almost the only portion of it accessible to the ordinary traveller. In all other parts communication is almost impossible, especially in the northern and eastern regions, where there is scarcely a path, and which still are what they have been for centuries—an utter wilderness, traversed only by roving shepherds. The shepherds of Sardinia are a thoroughly nomad race, scattered over all parts of the island. Some are owners of the flocks they keep, others are only their guardians. They wander from place to place with their flocks, taking their families with them, and subsisting chiefly upon game, milk, and fruits. They visit the rude stone huts which serve them as homes not more than once or twice in the year; and abandon the most fertile parts of Sardinia, and is noted for its Grapes and Oranges. The town is beautifully situated upon a gentle slope, and surrounded by numerous low hills. The hills and mountain slopes are cultivated in terraces, and planted with Vines, Oranges, and Mulberry trees. To the north and east are extensive forests of Cork trees and wild Olives. Many of the former are remarkable for their size and age. A few miles from the village of Ploeghes there is a magnificent tree of this species, whose trunk at a few feet from the ground measures 40 feet in circumference, and the Olive trees also attain colossal dimensions. To protect them against the floods, which in winter frequently descend in torrents from the mountains, they are surrounded by low walls, the number of which gives a peculiar aspect to the landscape. The Olive is the most extensively cultivated tree in Sardinia, whose soil seems to be peculiarly adapted to its requirements. Until very recently a royal decree was in force which conferred letters of nobility upon every Sardinian who had planted a certain number of these trees, and on the other hand there was a law, dating from the seventeenth century, which declared those persons excommunicated who destroyed the Olive trees of their enemies. The tree is propagated by cuttings, and is planted in the proportion of about forty trees to the acre. It grows slowly, and begins to bear at four years, but does not yield a full crop until the tenth year, when the average return is 20 gallons of Olives per tree. The Sardinian Olives are plump, juicy, and full-flavoured, and only require improved culture to take a far higher place in the market than the Olive trees of Spain. From 7 to 9 gallons of ripe Olives are required for 1 gallon of oil under the primitive system of pressing practised in the island.

The most mountainous part of Sardinia lies in the vicinity of Macomer, midway between Sassari and Oristano. The mountains are almost all covered from their bases to their summits with dense forests of superb Firs, Chestnuts, Oaks, Beeches, and Larches. The underwood consists mainly of Pistacia, Cistus, Erica, Globularia, and the like. The soil of these mountains is reddish, and very fertile, but as yet it is wholly in a state of Nature. In this district there are barren desolate plateaus whose solitude is broken only by the flight of the eagle or the hoard of the savage mountain. Here and there are rich valleys, in which few miserable hovels built of loose stones and turf are the only signs of man's presence. These tuffs seldom contain more than one room; chairs and tables are regarded as superfluities, and the inmates sleep upon beds of leaves covered with goatskins. On one side of the hut a small piece of ground, seldom more than an acre in extent, is planted with Grapes and Maize in wild confusion. The wealth of the inhabitants of this district consists in flocks of goats and pigs, which are fed on the rich natural pasturage of the valleys, and on oats and acorns in the forests. The natives are a tall, well-made race, but almost African in the swartheness of their complexions.

On the royal road, about 70 miles to the south of Sassari, lies the town of Oristano, near which is the village of Milis, justly celebrated for its Orange groves. Milis is a lovely little village, whose white houses and picturesque church contrast pleasingly with the verdure of the orchards amid which it is embosomed. The road thither from Oristano leads through a well cultivated piece of country, with a row of low hills on either side. The old Oaks and Chestnut clothe the heights, and the hedges are composed of Laurels and Cacti. The soil round about Milis is of volcanic origin, and particularly suited for the growth of Orange trees. The orchards are 300 in number, and contain upwards of half a million of trees, which produce twelve millions of Oranges annually. From a pavilion which stands higher than any of the others, the visitor can obtain a magnificent view over the surrounding district, which is certainly the garden of Sardinia. Hedges, and thickets of volcanic rocks, and an orchard in all directions over the country. The Orange groves are surrounded by hills, which with their heavily wooded summits, protect them on all sides. Here and there upon the slopes are rude huts, encircled by wild, neglected vineyards. The Orange orchards are the most attractive feature, and merely to enjoy a walk through them is alone worth the voyage to Sardinia. One of the finest is that belonging to the Marquis di Boyl. This orchard contains 10,000 trees, many of which reckon their years by centuries; it is grafted for 400 years. One of the finest in this garden is especially worthy of notice—the trunk is 4 feet in diameter, and to the splendour and sweetness of its flowers and fruits it joins the height and majesty of the Oak. The productiveness of these trees is enormous, and some individuals yield as many as 5000 Oranges yearly. Early in the month of May is a good time to visit Milis, as well as the island generally. The Orange groves are then in their spring beauty, and animated by the song of birds, and by the murmur of thousands of little brooks, which water the huge black rock.

On the way from Oristano to Cagliari lies (near the village of Monastri) the broad plain of Campidano, one of the richest and best cultivated parts of the island. The soil in this district is also volcanic, and very fertile—it often returns 50 bushels of Wheat or Maize for one; but at present, despite the patient industry of the inhabitants, the plain does not produce one quarter of what it would under a modern system of culture. The agricultural implements have not been altered since the days of the Romans, and are in the main almost identical with those of the Sardinian peasant toils hard but earns little, and is heavily oppressed by the agents of the Spanish and Italian nobles to whom the greater part of the island belongs, and who squander their revenues in Madrid or Rome. The peasants are wholly without capital, and conduct their operations in the most primitive manner. The estates are very large, but the farms rarely exceed 20 or 30 acres. The tenure is hereditary, and the tenants are, to a certain extent, serfs, they cannot alienate their farms unless they provide other occupants on the same terms. Upon the death of the tenant, his heir pays a fixed sum to the proprietor, and about 20 per cent. of the annual produce to the State; in the collateral line the last sum amount:—to 50 per cent. In the case of sale a year's

extra rent must be paid to the proprietor; this condition renders sales very rare, and binds the tenant to the soil. The land-tax, which amounts to about one-fourth of the revenue, is borne on the official valuation, which is very inexact. The farmers are restricted to the culture of certain crops; Wheat is the chief grain crop, but Maize is also largely grown. The harvest begins in June, and the grain is trodden out by the feet of horses in the fields. Beans are largely cultivated as fodder; they are sown in November, as the hot dry winds of spring retard their growth. The tenant depends chiefly upon his Olive crop for his rent. Palms are also largely planted, and every village has its grove of these graceful trees. Attempts have been made to establish the culture of the silkworm, and Mulberry trees have been largely planted; but the intense heats of May and June are as fatal to the insect as the fickleness of the weather elsewhere. The houses of the farmers are constructed of bricks or stones, have only one storey, and each of the rooms is entered from an outer balcony. The farm offices comprise a large barn, a poultry-house, and an open yard for cattle. The peasants seldom eat meat, green vegetables preserved in oil, cheese and bread compose their fare. Agricultural labourers live in large villages far from the fields; and during the busy season they are lodged in temporary huts at the scene of work.

Beautiful as many parts of Sardinia there is a general air of barrenness and wretched neglect lying heavily over the land, and in traversing its uninhabited plains and dense forests it is difficult to believe that one is still in Western Europe. Sardinia, with an area of six millions of acres and a highly fertile soil, could support in comfort two millions of people, yet its present population does not exceed half a million of badly-clothed, ill-housed, semi-starved peasants and herdsmen. J. D. W.

COCHINEAL IN THE CANARIES.

A VERY depressing report on the general prosperity, or rather the reverse property, of the island of Grand Canary reaches us from the British Vice-Consul. The immediate cause of this decline, we are told, is to be met with in the depreciation of cochineal, the only important product of a country that depends exclusively on its agriculture. The ultimate causes, however, seem to be many and complicated. The large profits realised from cochineal in former years led to its exclusive adoption wherever the Cactus could be made to grow. These profits were squandered in extravagance, even before they were made, and as the merchants of the article fell, the growers themselves fell in debt to the merchants. At last a time came when the production of cochineal yielded little or no profit, but there was no other product to take its place, and the growers were unwilling to cut down the Cacti on which they had employed so much of their capital. The production continued to increase, and the prices to diminish. The advances made by the merchants to the growers not being in many cases covered by the value of the crops, credit was to great extent suspended; merchants would sell goods only for cash, and the wages of the workers diminished, but had to be made at smaller profits. Coined bullion also had to be exported to cover the adverse balance of trade, and this increased the difficulty of exchange.

It has been stated that the immediate cause of the decline in property was the depreciation of cochineal, and that this was brought about by the too-extended production, consequent upon large profits. But these profits were driven to an abnormal height by circumstances independent of any legitimate supply and demand. One was (and still is) the competition among the buyers, who are generally dealers in imported goods, and who are not only compelled to make their returns in cochineal (there being no other article of export), but obtain a readier sale thereby for their importations, either through barter, or by causing more coin to circulate. This caused the price of cochineal to rise in the island and to fall in the consuming markets, the loss by the shipper being covered by the profit on the sale of his importations. The margin between the profit on one article and the loss on the other, became gradually less and less. Another circumstance consists in the gigantic frauds that have been committed in the island, the effects of which are still being painfully felt. One of these frauds was to ship a

large number of bags filled with Barley and stones on board a vessel called the *Candida*, and to insure them as holding cochineal; the vessel was lost under most suspicious circumstances, but the shipper received the insurance money.

The present depressed state of the island is clearly attributable to its almost sole dependence upon its agricultural produce, which is chiefly centred in one article—namely, cochineal; and the depreciation of this article, together with the difficulty or impossibility of at once substituting another product that may yield better returns.

FLOWER FARMING.

THE JASMINE cultivated in the South of France for perfume's purposes is *Jasminum grandiflorum*, which is propagated by grafting on the common wood *Jasmin*, J. officinale. The whole process of cultivation, together with the cost of labour and the average returns, are given in the last number of M. Dehérain's excellent *Annales Agronomiques*. From this it appears that cuttings of *Jasminum officinale* are planted in rows nearly 3 feet apart, each cutting being at a distance of 5–6 centimetres from each other. In May the ground is hoed (*binage*), and water is applied during summer as may be required. In order to secure a crop of some kind, the first year vegetable cuttings are sown between the rows. Leeks are found to be beneficial, but Radishes and Peas (*Pisic chiches*) are deemed injurious to the Jasmies. The vegetable crop covers the expense of the yet unproductive *Jasmin*. In the second spring the Jasmies are fit for grafting. Ordinary cleft-grafting is practiced, the stocks being headed down to an inch or two above the soil. A good workman, aided by a woman to tie the graft, will work 1000 to 2000 Jasmies a day, the man earning five francs, and the woman a franc and a half a day.

In June the grafts are uncovered, and watering is freely practiced, according to circumstances. Stakes are then placed along the line, about 3 to 4 feet apart, and tied together by reeds fixed horizontally 18 inches or so above the soil. To this supports the young shoots are tied. At the end of August flowers are produced, but in the following years they are yielded considerably earlier.

It is necessary that the flowers be gathered perfectly dry: hence if there is seen during the night to be an imminent chance of rain, men are sent into the town at 3 o'clock in the morning to rouse the women and summon them to the farm to pick the flowers before the rain comes. The women are summoned by what is called in *Provence patois* the "gratia," this being a large shell (*coquillage*), which serves as a horn.

In November the plants are earthed-up to a height of 18 inches, so that the base of the grafts may be protected from frost. In the third year, in January, watering is effected by liquid manure, the earth is drawn away from the base of the stem, the stakes are removed, and all the dead branches are pruned. The stakes are removed, and the process of irrigation is practiced as before. The irrigation of the flower farms at Grasse have the right to make use of the sewage of the town, which is collected in cement tanks, and distributed by irrigation. In the early spring, as above stated, the solids of the sewage are applied with the liquid, the sewage being stirred up for the purpose, but during the summer the liquid sewage alone is used for purposes of irrigation. The irrigation for Tuberoses and Jasmies is effected at the rate of 60 litres a minute, or 43,200 litres per diem of twelve hours. A hectare of ground is considered to be sufficiently irrigated in eight days; at each operation then a quantity of water equal to more than 345,000 gallons is made use of. It is calculated by M. Haueyes that 1000 plants of *Jasmin*, grafted and planted in good soil, furnish in the second year after grafting 50 kilogrammes of flowers, but less in poorer soils. In subsequent years the production of flowers is very much larger, so that it is estimated that in the first year 3200 kilogrammes of flowers per hectare are produced; in the second year 5000. The women who pick the flowers get 45 centimes a kilogramme, each kilogramme being sold in the perfume-makers at 2 fr. 25 cent. The general duration of a plantation of *Jasmin* is stated to be fifteen to twenty years. The net annual receipts from a hectare of ground established as a *Jasmin* plantation are estimated to be about 5800 fr., but this is only in favourable seasons—at other times spring frosts, hail, wind, and other causes

greatly diminish the profits. The production of these beautiful perfumes from the foulest of matter, is one familiar enough to the gardener, but the general public hardly realise a fact of so vast practical moment to them, and one which might serve to point many a moral.

Another fact not generally known is, that many perfumes, called Lilac, Heliotrope, Sweet Pea, &c., are not extracted from the plants whose name they bear, and whose fragrance they more or less successfully simulate, but that they are fabricated by the perfumers who cunningly mixes together in certain proportions the essences derived from various flowers, and which when thus blended afford the required fragrance.

THYRSACANTHUS RUTILANS.

Of all plants that flower during the early spring months the above is, I think, without exception, the most graceful and beautiful, and quite unapproachable for its decoration—a purpose for which it is peculiarly adapted, and where it shows off its elegant tub-shaped blooms to the best possible advantage. These are suspended on long thread-like stems, that depend from the tops of the plants in the most graceful manner, and being of a bright scarlet colour the effect is greatly heightened by the contrast of the white cloth length, and the artificial light they are usually seen under. Besides being of such use in the above kind of embellishment, the *Thyrsacanthus rutilans* is particularly suitable for standing in vases on brackets or other elevated positions in rooms, or any situations of that kind, where it can stand clear above other plants. Considering its highly ornamental character, the ease with which it may be grown, and the great length of time it lasts in perfection, it is surprising one so seldom meets with it except where large collections are grown, but were it better known its merits would, I am sure, make it much sought after and more appreciated than it now is.

Those who are not so fortunate as to possess plants of it, will find the present a good time to obtain them for the purpose of growing for themselves, for they are got fresh from the nursery, the best way to do this is to keep the plants rather dry for a week or ten days and in such a position that they can have plenty of sun and light to harden the growth somewhat before taking off the tops to form cuttings. This may then safely be done with the certainty that each will strike, provided it is placed singly in a small pot in sandy soil, the pots being stood where they can get a brisk moist heat such as a propagating box affords. Failing this, the next best situation is to plunge them in damp moss on a slate in the stove, and to cover them with a bell-glass, over which a piece of paper or something of that kind should be laid during the day to keep off the sun. So treated they will soon root, when they will require more light and air to prepare them for shifting into larger pots. These should be 6 inches in diameter, which is the handiest size for table decoration and such-like uses. When required for this kind of work the plants should be grown with single stems, and therefore should not be topped, but allowed to grow to any height they may attain during the summer, which under good management will range from 2 feet to 2 feet 6 inches, and when furnished with their long pendulous flower-stems robed with blossoms and dangling in the graceful manner they always do, form objects of great beauty.

After severing the heads for cuttings, the old plants should be kept dry for a few days till the wound heads over, and then plunged in bottom-heat to induce them to break, when they should be partially shaken out and re-potted in fresh soil consisting principally of fibry loam and well decomposed leaf-mould, in which they greatly delight. Any that may be treated as above, will form several stems, varying in number according to the beds left at the time of cutting them back, and if these are regulated and tied out they will form good specimens for conspicuous places in warm conservatories or green-houses, where they can stand clear of other plants or be elevated above them. During the summer months *Thyrsacanthus* does best in pits or small hot houses plunged in some light loam material such as half-decomposed leaves or cocoa-nut fibre, to prevent a too rapid desiccation of the roots, which is sure to take place unless the pots are protected in some way.

Such subjects as these, and others of a like nature having thick fleshy stems, can always be grown and

made to flower in a much more satisfactory manner when they can be treated apart from the usual occupants of the stove, where as a rule they get a greater amount of shade than is desirable, and which therefore prevents their making that firm mature growth so essential for producing plenty of blossom. In pits or low houses the conditions are favourable to this, as they can have full exposure to sun and light, and are altogether more under control. The only insects that are at all troublesome are the brown or tartle scale, which may readily be got rid of by careful hand-washing, if done before they get from the stems to the leaves, where it is not so easy to dislodge them. Y. S.

Florists' Flowers.

THE WALLFLOWER.—The Wallflower has been termed "that sweet old flower, that has so long dwelt on walls and old ruins, hallowing their mouldering remains." The description is decidedly poetical, but quite true, and many an old piece of wall is beautified in springtime with this good old flower.

It is one of the most extensively grown of our common garden plants. Acres upon acres of the Wallflower are grown round London for supplying the markets of the rich and famous city with fragrant posies in the pleasant springtime. But this season the spikes of rich dark flowers are not being gathered so early as they were some years ago, and the Wallflowers are late in the early spring that so many were inclined to foretell, it is in many of its features a remarkably late one.

He who grows Wallflowers for market is particular in two respects: first, in having a good strain with a low bushy habit; and, secondly, in sowing early in the spring in order to have well established plants by the end of the summer to stand the winter. Any one who has observed the plantations of Wallflowers being grown for market will have noticed the dwarf and stunted bushy growth, the branches insinuating from the stalks almost down to the soil in which they are growing. From the point of each branch, and also from the points of the lateral growths, flowers are given forth, and thus a well-bloomed plant of a dark Wallflower forms a capital bouquet in itself; and as precocity is a matter of considerable importance—for happy is the man who can be first in the market with bunches of Wallflowers—the practice prevails among the market growers of marking a few of the earliest plants to bloom, provided colour and habit can also be had in combination.

Of the common Wallflower there are several varieties, not one of which but deserves a place in the garden. The fine dark-headed strain of the variety grown for market is one; a variety with larger and looser flowers, named Young Blood-red, is another, but it lacks the peculiar branching habit belonging to the market strain. Then there is the dwarf and early yellow flowering type, that is extremely pretty in early spring, and is best known as the Belvoir Castle Dwarf Yellow, plants of which are now to be seen in the Queen's Garden and other markets. When this is quite true in character the stalks and buds should be of a pale whitish green, without any trace of dark about them. This strain is much used by Mr. Ingram in his charming spring garden at Belvoir Castle, Grantham. To have it true to character it should be grown from seed every year, care being taken that it is saved from the correct type. What is known as the Golden Tom Thumb Wallflower is a fine strain for decorative purposes when true to character; the flowers are large, well formed, and of a pure golden-yellow colour. It is of somewhat vigorous growth, and almost too tall to deserve the name of Tom Thumb. It invariably comes very true from seed, and appears as if it had been well selected at the outset.

The German single Wallflowers, so called because the seeds are imported from Germany, supply tints of crimson, blue, purple, yellow, &c., some of which are very attractive, and when grown in beds of mixed colours make a good display. But they are generally deficient in habit, throwing out a thin spike, and having but few side branches. The choice old double kinds, such as the double yellow, double orange, double purple, double dark, &c., good and valuable though they are, are too much banished from our gardens in the present day; still they are occasionally met with in cottage gardens, grown so fine as to fill the observer with envy. These cannot be propagated

by seed like the single varieties, but are increased by cuttings, which root freely when properly managed. Then there is the strain of double German Wallflowers obtained from imported seed, some of which are very large and bold, but of quite a different habit of growth to that of our English double Wallflowers. The German strain is much prized for the large fragrant flowers it produces by those who have a fondness for double flowers, but they are much later in blooming than the English single varieties.

The Wallflower does well in almost any soil, but especially in a good rich sandy loam, where its numerous root fibres can fasten themselves in the soil. The ground intended to be planted should be deeply dug, and so made ready for the plants. A piece of soil that has been manured for a previous crop will do well for Wallflowers.

The market growers sow their seed early in February and March, so as to transplant at the end of April or early in May. It is a good plan to pinch off the top-root up to the fibres, and then the roots are put forth laterally in the soil. Advantage should be taken of showery weather to put the plants out, and the soil should be pressed in firmly about the roots. They soon lay hold of it, and the plants become well established by the time dry summer weather sets in. If transplanting be deferred later, it scarcely gives the plants time to make growth before dry weather comes, and they do not fill out and become nice and bushy.

The cooler and moister the weather at the time the Wallflower blooms, the richer are the crimson flowers that give the blossoms. The flowers of the finest strain of dark Wallflowers will turn yellow when hot dry weather sets in, as it sometimes does in early spring. The more holding the soil the better will be the flowers under any circumstances. The stronger and more firmly rooted the plants the better are they enabled to stand the rigours of winter. R. D.

Foreign Correspondence.

SPARTA: THE KERMES OAK.—I have been making a tour for some months in Greece, and now send you a specimen of the Holly-leaved Oak [*Quercus coccinea*], from the neighbourhood of Anafika, in Laconia, together with the small red gall, which is gathered from it in the summer, and which is still exported from Gythium, as it used to be from Marathonis, near Cape Matapan, in the days of the Phœnicians. This, like the cochineal, is not a natural product of the tree, but results from the attack of an insect, producing a similar result. While the public mind has been much attracted of late to the remarkable discoveries by Dr. Schlieffman of the extraordinary deposits of gold and jewels in the adjoining district of Argolis, in the supposed tombs of Agamemnon and others, it will be no doubt interesting to your readers to find that antiquarian matters of equal interest to them exist in the district of Laconia, celebrated for possessing, amongst others, the historical city of Sparta or Lacedæmon. The shrub in question abounds on the lower spurs of the range of Mount Taitjetum, and more or less through the part of Greece. Referring to this shrub, the late Panopæus writes, "ἡ ἄκρως ἀεικλήσθη φύλην" (*Hist. Plant.*, lib. 2, c. 8) and Pausanias refers to it as follows—"Ἔλας" The leaves are smoother than those of the Lentisk (*σάουρος*), which is equally abundant in the same locality; "but in other respects it resembles that plant." "The fruit is like that of the Nightshade (*σπέρχονος*), but in size is equal to the Yetch (*ἄροβος*). On this there breeds a small insect, which when the fruit is ripe becomes a fly resembling a gnat (*σάουρος*); the fruit of the cocculus is therefore gathered before the fly is hatched, and its blood is then a dye for wool." This is so far correct. It appears, moreover, that the insect has a great preference for the young wood. The berry does not appear, as some have described it, as a fruit would do, but is the result of the puncture of a gall-fly. As the fly seldom visits the plant when large, the mode of attracting it is by burning the bushes, which in consequence send out new shoots near the ground which are frequented by the fly. The gall so produced produces a finer colour, and labour of collectors is centralised. It is interesting to note the statement of Pausanias, that it is used as a dye for wool, as it is now almost confined to the African trade, and is sent to Tunis in order to dye the fez, a woollen cap. It is curious that the plant growing near it, and not, on a casual inspection, dissimilar, bears a somewhat similar name to the *σάουρος*,

viz, the *oxyris* or Leutisk. The Phoenicians, though celebrated for their grand dye, the purple—the use of which by any but imperial persons was forbidden in Rome by repeated edicts—would be only too glad to obtain a substitute, and indeed irrespective of such edicts a commoner dye would be required for the more numerous but poorer persons; and as the berry, described as “*επιρροια*” by ancient writers, was easy of access to the Phoenicians, it is reasonable to assume they would have stations on the coast, as Strabo and others state they had in Britain for the purchase of tin. There are two such settlements, or rather stations bearing their name, “Phoenicus,” close by this district—one near Hydmyd in Messenia, and the other at the eastern side of Cythera, now Cerigo, an island just south of the present place of export. It is interesting to note further that this article still continues in its old channel of commerce, while with us the cochineal is the rich red dye; the Tiansians, almost successors to the Carthaginians, are the great purchasers of the *επιρροια*, as no doubt the Sidonians and Carthaginians were of old. *J. S. Phoid.*

Apiary.

MASSACRE OF DRONES.—This could not escape the notice of ancient naturalists. Pliny and others considered that the drones were stung to death by the workers; but their views of the habits of the insects are too much mixed with the fabulous, in fact they considered that the queen bees were males. This false belief prevailed to the “middle ages.” Hunter, however, mentions the “workers harassing them [drones] to and fro without stinging them,” and nearly the same may be said of Bonnet, while Huber and Reaumur assert the “slaughter of drones is effected by the stings of the workers.” Those who hold this belief consider that the bees insert their stings between the segments of the abdomen of the drones. This, however, does not accord with my former statement of the bees throttling the drones with their mandibles in the vital part under the wings. Those conversant with bees know that they live a considerable time after their abdomens are crushed, nay, severed from their bodies, and the same with wasps. Again, Dunbar and Bevan speak of bees using their stings in combats among themselves. The latter, however, seems to have doubts, because he found the dead bees had their wings, meaning that they generally leave the poisoned darts in the wounds. Now if this be so in their combats with the drones, it would be equally fatal to themselves. Bevan, however, qualifies this a little, at least he observes:—“By allowing the bee to draw out her sting gradually when we ourselves are stung—which, if we have sufficient firmness to remain still she would instinctively do by bringing the barbs close down to the sides of the dart—the life of this insect might be preserved, and pain in the wounded part be much lessened, but the excitement of both parties seldom admits of such forbearance.” When stung by bees I pluck the stings from the wounds, without using prescribed remedies, because the pressure or rubbing when applying them tends only to excite the poison in wounds, as scratching does Nettle stings. *J. Wighton.*

Natural History.

TIME OF ROOKS HATCHING.—Bird nature is in many respects not unlike human nature. Some are precocious and hasty in their combinal arrangements, whilst others are dilatory and backward. Then, again, there are accidents to be encountered—death in the shape of poison, or the gun, often takes away the head of the family or his mate, even before the house is constructed (I picked up four dead birds in one day, under the trees here, that had evidently been poisoned), and a fresh mate has to be sought, and the family arrangements are delayed. During the severe gale that occurred on April 13 last year many of the nests were blown out of the trees, and the helpless young perished. The old birds immediately commenced putting the eggs to rights, and many of the birds, again, and there were young birds in the nest as late as the end of June, and perhaps an odd nest or so later. This year again the hatching is late, and will be very uneven, as during a gale that happened some time ago many nests were blown down. An old man that has worked here more than forty years says the rooks are later in building and hatching than they

used to be. However that may be, there is, I think, no doubt that rooks like ourselves are very much influenced by circumstances over which they have no control. Judging from my own observation, I should say the hatching season here extends from about April 4 to the end of June, according to season and circumstances. *E. Hobday, Ramsey Abbey, Hunts.*

THE STORK.—Our pages have recently contained, *A Propos*, of the great Exhibition at Amsterdam, a descriptive account of the bulb-fields at Haarlem, and of the method of culture there adopted. We have now to mention a gardeners' friend, and one

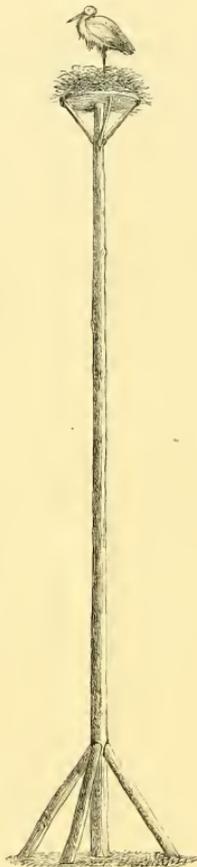


FIG. 94.—STORK'S NEST.

so useful, and so protected by the kindly feeling of the Hollanders, that it would be as great a sacrifice to kill a stork as to shoot an albatross. They are encouraged to build on the hoestops, and among them bulb-gardens may be often seen a tall pole, some 30 feet or so high, set up for the bird to build its nest upon (fig. 94). Curious is it to see the old birds encouraging the timorous young ones in their first flight from the top of one of these poles to the neighbouring house-roof. The stork arrives in Holland from the south early in April, and makes himself useful as scavenger-general, by diminishing the number of frogs, mice, moles, and other gardeners' foes.

EARLY ARRIVALS.—I heard the cockraze on the 3d, and the wyrrneck on the 21. *B. W. Hunts.*

Garden Operations.

PLANT OPERES.

GREENHOUSE HARD-WOODED PLANTS.—With young plants of all the varieties of *Pimelea* it is not advisable to let them bloom where the object is to get them on in size without the shoots, as they will be well now to cut back the shoots without waiting till the flowering is over as in the case of larger plants; if shortened back at the present time it will admit of the young after-growths being stopped once through the summer, and still give time for the shoots to be produced after this getting strong and fully matured before autumn. In the case of *P. spectabilis* especially, if the growth is not commenced sufficiently early in the season there is not time after stopping for the wood to get strong enough. A mistake that is frequently made in the cultivation of these plants, particularly the strongest growers, is not shortening the shoots sufficiently back, by which means, through the short duration of the leaves as compared with many greenhouse plants, they get naked and bare at the bottom—an unsightly condition they are much often seen in than any other hard-wooded subjects; the shoots should be cut back fully one-half from the point to which they were stopped last season. More than most other hard-wooded plants, it is also essential that whilst in a small state the strongest branches should be bent rigid down to the top of the pot, for if this is neglected in their first stages it is next to impossible, from the erect upright nature of the shoots, to accomplish this afterwards. All plants that are thus treated should be freely syringed through the summer, and the atmosphere about them kept as moist as circumstances will permit. Inattention to this is certain to result in the getting infested with red-spider to an extent that completely spoils them. Young stock of other strong-growing plants, such as *Chorozemas*, *Polygalas*, *Acanthas*, and *Eriostemons*, should be similarly cut back, and the strong growths kept tied to the stem. *Leschenalia biloba* ought also to have the shoots shortened; *L. formosa* and *L. intermedia*, being naturally of a more branching habit, do not require so much stopping, but in their case the strong growths should be kept tied out, which tends to throw more vigour into the weaker ones. Regularly attended to the training of all twining plants, such as *Kennedias* and *Gompholobiums*, so that their shoots are not allowed to become entangled; if neglected at a few weeks at this season extra labour is entailed, as well as injury to the growth. Young plants of *Daphne indica* that have been in a little heat for the last six or eight weeks, and that are in strong condition, should now have the points of the young growths pinched out; the after breaks will furnish them better than if allowed to go on without stopping. The different varieties of *Statice* should also be similarly treated as to warmth, by which means they will make as much progress in one season as they would in two with ordinary greenhouse temperature. Give them the lightest position the house or pit they are in will afford, with a thin shade when the sun is powerful. These, especially the more erect habited kinds, like *S. Holfordii*, must have their shoots attentively regulated, or from their upright tendency they soon become unsightly. The wood, although of a sturbon nature, will bend, the principal difficulty being in preventing their splitting in the forks of the shoots, to stop which they should be braced together with a strong bast. Use the syringe freely to these, as they are subject to thrips, aphides, and spider.

SOFT-WOODED GREENHOUSE PLANTS.—*Kalanthes*, for conservatory and greenhouse decoration.—There are few more effective plants than these for flowering in small or moderate sized examples, lasting, as they do, for a considerable time, and coming in at a season when the majority of spring blooming subjects are over. If grown in numbers as they deserve to be, they give variety to the sameness which too great quantities of *Fuchsias* and *Zonal Perargoniums* present. They strike readily in any part of the growing season. There is no better time than the present, if strong shoots that have not formed flowers are now taken off about 6 inches in length, and inserted singly in 3-inch pots, or if the object is to bloom them next year it will be well to put half-dozens in 6-inch pots. When well rooted give them a shift, and stand out-of-doors in the full sun. During the summer the growth will get ripened so as to ensure their flowering. Tropaeolums of the *Tricolorum* section should have their shoots kept trained so as to furnish the bottom of the trellis, or whatever support is given them. Seeds of these useful plants should now be sown in heat; they will make nice blooming stock in two years. They may also be propagated from cuttings. Large plants of *Calla schlipocarpa* may now be divided and planted out in light rich soil; they should be where their requirements for water are not likely to be overlooked, for, upon being duly supplied with this depends much of their ability to acquire strength,

which will enable them to bloom well the coming winter and spring. For general purposes they are much more effective grown in single pots than in pans, than a few large specimens. Planted out during the summer, lifted and potted in autumn, their growth is much more compact than when confined altogether to pots. *Chrysanthemums* should now shortly be required to begin flowering, and it is necessary to produce runners, more or less, according to the shape they are to be grown in; one-fifth of manure will not be too much, added to good loam and a moderate amount of sand. Pot firm, and in many cases they are better sown in a separate pot to which, syringe freely as soon as they have got fairly to growth. *T. Britica.*

ORCHIDS.—Whilst the *Odontoglossum-house* is now gay with many fine and showy varieties, more especially those of the *Alexandre*, *Pescadore*, and *triumphant* type, it will also be advisable to have a look forward to those of a different stamp that flower later on in the season. Where a number of plants of *Alexandre* are grown, so free and accommodating is it that all the year round there will scarcely be a week past but what some spikes of this will either be in flower or getting well advanced in bud; this, however, cannot be said of many of the others, and so long when the buds of any sort commences, it must be treated with care, so that in due time the desired spikes of flowers may be produced. Where a fine variety of *O. bicinctum* has been obtained, it is well worth growing; its tall, upright spikes, and the colour of the flowers, together with its very attractive blossoms; there are, however, some varieties of this that are so deficient in colour, and the flowers of such small dimensions, as to be quite worthless. Plants of *O. granatum* will be doing well; they need little water, and *O. Inesleyi*, and the *leopardinum* variety of this latter, to see that, as the breaks push up and the leaves expand, no water lodges in the heart of the breaks, for though when growing they may have a good deal of water, they are so very open and loose, it should run quickly away from them, otherwise the stout fleshy roots are very liable to turn black and rot, and when the roots of these are once checked, whether by rotting or by being injured in any way, they do not start rooting again so readily and freely as many of the smaller rooting species. *O. hastulatum* is a stately and beautiful one for summer and early autumn. This does not, however, always do quite satisfactorily with the same treatment as is given to the others; and if it is placed in the cool end of the *Cattleya-house* the few extra degrees of heat will help it to form finer bulbs and stouter leaves. The small-growing *O. Rossi majus* is one that, on account of its long lasting quality, should be obtained. In flowering, it is necessary during the winter months, the blooms will remain in freshness and purity for a period of from eight to ten weeks. This can be grown very nicely in small pots and hung up on the roof, but when such choice sorts are suspended in such a position it will be more incumbent upon those who have charge of them to see that they are not overlooked in the matter of water and cleaning. The young breaks of this, and, in fact, of many of the others, are liable to be attacked with yellow-tips; this increases so rapidly and injures the tender leaves so much that as soon as any such happens to be seen, the breaks must be carefully sponged, and in doing so hold the plants on their sides, then as the fly gets disturbed they will fall to the ground. If this precaution is not taken they will quickly run down the shoots and hide away among the roots and bulbs, and the plants in a day or two will be as bad as ever. At best they will need to be gone over once or twice a year, but with a little perseverance they will soon be got rid of. Should any yellow thrrips make their appearance in the hearts of any of the plants, pull a little tobacco dust in the centre of the young growth; this they cannot stand, and it will soon clear them away. On days, however, when the leaves have come up a bit higher, go over them carefully and sponge the dust clean off. *W. Spoon, Fallowfield.*

FRUIT TREES.

VINES. The long-winded-for change from dark gloomy weather to brilliant sunshine has already brought about a great improvement in forcing-houses. Vines especially have made rapid progress, and where the early closing principle has been followed up, firing will have been considerably reduced, notwithstanding the low night temperatures which still prevails. After so much hard firing red-spider must be closely watched, and if the inside borders have not been copiously watered, it will soon become troublesome, as the syringe in the hands of some is not used with a judicious hand. Early Grapes now ripe or approaching that stage will require just sufficient artificial heat to keep up a circulation of dry, warm air, and to prevent the temperature from falling below 58° at night. Gradually reduce manure but do not discontinue the damping of walls and floors on fine days, and ply the syringe freely to the foliage as the crop is cleared. In old houses the

small spinning-spides are often very troublesome amongst ripe Grapes, and must be prevented from getting on to the bunches, or, otherwise, they will soon disfigure the delicate bloom. Lady Downe's, Kempsey Alicante, and other shy-setting late-keeping kinds, should be treated as Muscats until the fruit is set, when the usual methods may be followed. We should have less frequently of Lady Downe's shrinking after removal from the Vines if they were encouraged forward with a little heat early in the spring. Muscats have set well in a temperature of 60°; also a certain number of the Hambrogs, which are not so quickly quenched by a bottom-heat of 60°. The Hambrogs may be thinned as soon as they are out of bloom, but Muscats should stand over for a few days to allow the perfectly fertilised berries to take.

Pot Vines which are intended for fruiting next year should now receive the final shift into 12 or 14-inch pots. Use good turfy loam and crushed bones somewhat dry, and let it be warmed before it is placed against the young roots. Shade from bright sunshine, and give but little water until fresh rootation sets in, when short-jointed wood must be secured by full exposure to light near the glass, plenty of air in the fore part of the day, and watering being continued with a moderate charge with ammoniacal fresh horse-dung. *W. Coleman, Eastnor.*

PEACHES and NECTARINES.—During the period which precedes that of the last stage of development in the fruit of these trees, every precaution should be taken in the way of freeing the foliage, &c., as far as possible of insect pests, being in the degree of excellence attainable in this form in the present season, and the fruit is so delicate that the leaves at this time. The most formidable enemy to contend with now will be that almost inextinguishable foe, the red-spider. If this pest does in the least degree abound now, it should be dislodged from the plants, as when springing must necessarily be somewhat abated. It often happens that even where a well-directed course of syringing is regularly observed at this pest, which in general infests the wider and more tender side of the leaves, will, and hereabouts will increase rapidly, and is spread unnoticed until severe havoc is made. This is more especially the case in houses where the trellis is near the glass, and the direction of the syringing is in the wrong way, and the light heat these should be lifted, and a forcible drenching be given from an engine, otherwise the water should be plied rapidly against the glass from inside the house. This, however, is not so the case with the fruit, and in many instances it can be had much more profusely by giving a little timely attention to such fruits as are placed on the weaker branches, which as the fruit increases will be naturally inclined to be so, to an untoward position for the purpose. Those fruits which are so situated, and will admit of being raised "carefully," should be elevated by placing them across the trellis and underneath them a thin pliable piece of cloth that will admit of their being operated fully and freely about them. As the colouring process is proceeding take advantage of favourable conditions to freely ventilate, and at this time somewhat drier atmospheric state will be beneficial. Maintain the temperature at night at about 65°, slightly open the house at top at 70°, and increase or diminish the supply of air throughout the day according to existing circumstances, and if these permit leave a chink of air on constantly. Proceed with the syringing of the fruit in the same manner as all exuberant growths checked; as the lateral shoots advance stop these above the first leaf; keep the mulching materials constantly moist, and the border containing the roots in the same condition. I hereby intimate that I am not a party to any of the proceedings hereinafter mentioned. *G. T. Miles, Wycombe Abbey.*

MELONS.—The early Melons are now swelling to a large size, and an excellent variety, the *Victoria of Bath*, is the first to show signs of setting. If not already done, the supports should be placed under them at once, as they never swell so kindly when their weight is supported entirely by the vines. Small pieces of deal boards 6 to inches square, suspended by a cord on a sloping position to prevent lodgment of water, best answer the purpose. The extra firing occasioned by the cold, unless weather having been favourable to the spread of red-spider in houses where a portion of the soil is not oblong, and the cement materials, the cultivator must be constantly on the watch, with the usual remedies for its extermination, as good Melons cannot be expected if the foliage ripens before the fruit. In good hands, the red-spider is prevented from doing much mischief, but the enemy, from making headway. Successions are now setting a profession of clean healthy fruit, and will require similar treatment to that recommended for the early crops. If the plants are not supplied with water as the fruit begins to swell; but if planted out on hills watering should be deferred

until they have attained to about the size of Walnuts, when the cutting and thinning of the laterals may be once more resumed.

Melons in frames must have abundance of light and full exposure to sunshine. Ventilate with caution until you have a chance to milder weather; close shut half-past two in the evening, and open the glazing when the fruit begins to swell. Keep up the linings, as Melons worn eating cannot be grown without heat, and use good dry mats for covering at night. Take advantage of a mild day for the setting of fruit; if still in bloom then use a warm and rank soil, and apply a fork for canker at the base of the stem, and watch a mixture of quicklime and sulphur. *W. Coleman, Eastnor.*

KITCHEN GARDEN.

The cold, sunless, and inclement weather of the last few weeks appears to have given a very retarding effect upon vegetation generally, but more particularly upon the young advancing plants of spring-sown crops, which are stagnated to an unusual extent, and not able to grow away out of the reach of frost, or vermin, have not for several years been the cause of so full of worms and slugs, and unless a relentless war is proclaimed against them we must not look for very great success with the tender young crops; since the want of a warmer and more genial atmosphere, to stimulate growth, is especially exposed to their ravages. Hence there has seldom occurred a season in which the liberal application of quicklime to all plots of ground in process of preparation for future cropping, is more likely to do good, than in the present season. The same must also be persevered in amongst all growing crops, to which also constant attention must be paid in regard to surface stirring in all departments, which is not only very favorable to the growth of the crops, by opening the soil to atmospheric influence, but disturbs and assists in the destruction of vermin.

If the early-sown main crops of Parsnips, Carrots, Onions, &c., appear likely to be deficient in quantity, no time should be lost in getting in a compensating later crop. Successional sowings of Peas in trenches with manure, for which such sorts as *Ne Plus Ultra*, Knight's Tall Marrow, and Calverwell's Prolific Marrow are well suited, should be got in. As this may be called a main sowing, and in such a way as when the crop is wanted, should double the usual quantity should be sown; and if the system of cropping will admit of very wide spaces between the rows there will be no fear of an abundant produce, particularly if, as they are sown, they are well kept well watered, & dry weather. Another good sowing of Broad Windsor or Early Longpod Beans should be got in; here also the quantity should be increased, as it will soon be getting too late to sow with advantage, for the purpose of obtaining several successional sowings of Lettuces and other salad requisites. Advancing crops also will require attention in thinning-out and transplanting, and liberal supplies of water will be necessary to keep them in a growing; and succulent state. Cucumbers and Melons, if Marrows sown in the frame some time back will now be ready to transplant on the ridges, which should be prepared at once, and the plants should be shaded at first, and have the protection of hand-lights until they are well established. It will soon be safe to plant out Tomatos against the open walls, for which purpose they should now be under a process of hardening off. Chillies and Capsicums supply depends upon the same rule where they are too much under the same rule, but are much more profitably cultivated under glass. Bary and Sweet Basil should now be hardening off for planting under a south wall. The pricking out of the various seedlings of the young plants should be done as fast as they become large enough; this is preferable to having them so thick in the seed-beds as to become drawn. The hoe or tormentor should now be at work in dry weather amongst the main crops of Potatoes, not only for the prevention of weeds, but also for opening up the soil to the influence of the sun and wind.

The planting out of new beds of Asparagus is by many practical gardeners deferred to this season of the year, when the plants have more time to settle, and the practice is a good one, as when the operation is carefully performed the beds will be well furnished throughout, as the plants will grow off at once in a well-prepared soil, and soon become better established than those that have been in the ground for a long time in the cold earth for a couple of months. The preparation of the beds will consist of deeply trenching the soil, and incorporating therewith a liberal supply of rich manure; during the winter a spring of the beds should be frequently forked over, and if necessary broken up and pulverised. A moist day should be selected for planting, an operation which should be carried out as quickly as possible when once the plants are lifted, as the roots will very soon begin to expand, and be blown and sun. After planting the beds should be liberally covered over with some rich, well-decayed manure and should receive a slight sprinkling of salt. *John Cox, Rolford.*

THE
Gardeners' Chronicle.

SATURDAY, MAY 12, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	May 14	Sale of Imported Orchids at Stevens' Rooms. Sale of Imported Greenhouse Plants at Stevens' Rooms.
TUESDAY,	May 15	Floral Committee Meeting of the Fruit and Floral Committees at 11, and Scientific Committee at 17, Royal Botanic Society: Summer Exhibition, Royal Botanic Society: Orchids at Stevens' Rooms.
WEDNESDAY,	May 16	Royal Manchester Botanical and Horticultural Societies: Grand Whitestone Exhibition (seven days).
FRIDAY,	May 18	

THE town of Hull was one of the first to establish a public garden for the instruction and recreation of its inhabitants, and the HULL BOTANIC GARDEN has long enjoyed a well-earned reputation, to which the labours of its present Curator, Mr. J. C. NIVEN, during many years, has not a little contributed. The old garden has, however, from another point of view, been gradually falling in the fulfilment of its mission, and has, indeed, almost entirely ceased to answer the purposes for which it was established, being almost crowded out by bricks and mortar. From the rapid growth of the town it has become surrounded by houses and submerged in a smoky atmosphere, whilst its position, so long as it occupies its present limited site of six acres or thereabouts, cuts off all hope of its being enlarged, and thus in some measure increasing, or at least retaining, its former usefulness. The time has therefore come, and this has been well urged in the comments of the local press, when the town must either be deprived of a public garden altogether, or else must set about providing a new one better adapted to its present requirements. The proprietors of the present garden have, it appears, determined to wind up the present Company; and the scheme for acquiring a more open and favourable site has been so far advanced that plans have been prepared and negotiations entered upon for the purchase of the ground.

The site selected for the new garden is the best to be found in the neighbourhood. It forms a triangle whose base is the line of the Cemetery, the dense plantations of which will afford ample shelter from the northerly blasts; the other two sides being bounded by the Beverley Railway line on the one hand, and the Hornsea and Withernsea line on the other. Within these limits is contained an area of 56 acres, which, with the exception of a small portion to be sold for villa sites, it is intended to devote to the purposes of the new garden, so that, including the cemetery and the railway lines, there is a space of more than 100 acres open for ever; and should the site, as possibly it may, at some future day become encircled by a widely extending town, it will be invaluable as a gigantic lung, and thus contribute largely to the health and well-being of the inhabitants.

The plan proposed to be adopted, and which we have reproduced at fig. 96, p. 599, has been prepared by Mr. NIVEN, who has evidently grasped his father's mantle, and proved himself a worthy son of the venerable landscape gardener of Dublin, Mr. NINIAN NIVEN. The plan indicates a breadth of conception which is highly creditable to him as a landscape artist. It is thus described by the *Eastern Morning News*:—

"A noble structure of glass, 400 feet long, will form the important feature of the place, and this, raised upon an ample terrace and flanked with smaller houses running north and south, will enclose a quadrangle of nearly 2 acres in extent, which will show out from the public view all the arrangements for the necessary manipulating processes. A vision of Palms with their graceful foliage, Tree Ferns and glorious Water Lilies—*azuræ*, erismone, and white—rises before us as we contemplate the proposed design for this noble structure; and fondly

do we hope, and, indeed, we have every faith, that a vision so agreeable will not prove visionary. Fronting this small crystal palace will be an extensive flower garden, arranged in sunken panels, where *Flora* will doubtless hold an undivided sway. An extensive lawn, nearly the size of the present garden, with an orchestra and refreshment saloon combined, where 20,000 or 30,000 people may find ample rooming, will be the central feature in the garden, and towards the apex of the triangle it is proposed to have a large sheet of water, surrounded by *Rhododendrons* and spanned by rustic bridges, of sufficient capacity, we apprehend, for boating purposes during the summer, and qualified to form a winter natural skating rink. Doubtless with the large extent of land available portions will be set apart for archery clubs, lawn tennis, croquet, and various other outdoor games, amongst which a good bowling-green would be a source of amusement, and would soon popularise a game at present little known in the East Riding. Alike, too, as a novelty would be a maze or labyrinth, to which, as shown on the plan, the north-west triangular corner may be devoted, where the seclusion of FAIR ROSAMOND'S bower and the stories of the siltken thread may at some future time be realised."

But, besides these provisions for mere amusement and healthful recreation, a goodly extent of ground is to be devoted to botanical purposes. A large collection of hardy plants, arranged in their natural orders, is intended to be introduced, which will afford the student ample and varied illustrations ready to his hand; groups of interesting trees and shrubs will be interspersed through the plantations, adding to the natural beauty of the place a botanical interest as well. It is further proposed to erect a building on the north side of the crystal quadrangle, which will answer the combined purposes of a council-room, lecture-hall, museum, and botanical library.

Most heartily do we wish success to a scheme which will tend to improve and elevate the town, as well as contribute to the healthy recreation of the inhabitants. A horticultural establishment, such as the proposed garden will be, has a very strong claim on the support of not only the inhabitants of the town, but of the entire East Riding of Yorkshire, whose large landed proprietors should willingly lend a helping hand should it be required.

The scheme for the establishment of a new garden was laid before the proprietors of the present garden at their annual meeting on the 2d inst., this being preliminary to a town's meeting being called. The difficulty, which at one time threatened to be a serious one, of getting all the proprietors to acquiesce in the sale of the present garden, has been surmounted, and the large majority of the proprietors here, as we have already mentioned, decided to wind up the present concern, with the object of facilitating the bringing out of the new scheme, which appears to have every prospect of being carried out, as about £6000 capital has been already promised, and there are numerous applications for the building sites.

We gather from the *Hull News*, that the capital of the new company is proposed to be £30,000 in 3000 £10 shares, but seeing that a large amount is derived from the sale of that portion of the land devoted to building sites, when such a sale is completed the capital required will not exceed £15,000. These sites, however, will not acquire their full value until the garden has become some little time established. A prospectus of the new corporation will shortly be issued.

— ABOUT the end of February last we were favoured by Mr. W. J. CROSS, gardener to Lady ASHBURTON, Melchet Court, Romey, a photograph of a fine example of the showy and useful *CELOCYCLE CHRISATA*. The specimen (fig. 95) bore some twenty-five spikes, or about 150 flowers, and measured about 5 feet over. Some ten or twelve years ago the plant was growing in a 6-inch pot, and that it should now occupy one 30 inches in diameter speaks well in Mr. CROSS' favour as a grower. The rustic pot it is seen growing in is mentioned by Mr. CROSS as being externally a good imitation of Elm bark. It was made by Mr. JOHN MATTHEWS.

— The son of one of our most respected nurserymen has again distinguished himself at the University of London. Mr. JOHN NEVILLE KEYNES, of Pembroke College, Cambridge, has at the M.A. examination secured the medal for Moral Philosophy.

— On the 23d inst. several of the leading nurserymen and florists of Edinburgh took advantage of the annual visit to Scotland made by Mr. JOHN KEYNES, of Salisbury, to invite the veteran florist to a complimentary supper at the Albert Hotel. The chair was taken by Mr. JOHN DOWNIE, and Mr. DAVID SYMES acted as croupier. The Chairman, in proposing the health of Mr. KEYNES, alluded to his long and successful career as an exhibitor, and to the high esteem in which he is held amongst florists, whilst the fact of his being at the present time Mayor of Salisbury proved conclusively that his fellow townsmen were not unmindful of his high character, and of the long services which he has rendered to the town in its municipal government. Mr. DOWNIE concluded by expressing a hope that Mr. KEYNES would be long spared to come among them. Mr. KEYNES replied in suitable terms, and said that he deeply felt the gratifying honour his brother florists had paid to him.

— We have received for publication the following copy of a letter received by the President of the Royal Horticultural Society from Sir T. M. BINDULPH, relative to the QUEEN'S VISIT TO THE GARDENS on the 2d inst. :—

"Buckingham Palace, May 2, 1877.

"DEAR LORD ABERDARE, — I have been desired by the QUEEN to express to you and to the Council of the Horticultural Society how much Her Majesty admired the magnificent exhibition of flowers and fruit displayed in the gardens to-day, when Her MAJESTY visited them with Princess BEATRICE and the Duchess of EDINBURGH.

"The QUEEN also was much satisfied with the arrangements made for her reception. — I am truly yours,

"T. M. BINDULPH.

"The Lord ABERDARE, &c."

— At a special meeting of the Scilly Isles Agricultural Society, held on May 1, at St. Mary's, several prizes were awarded for the best fifty heads of ASPARAGUS. The 1st prize was awarded to Mr. BARNES, of Holy Vale, St. Mary's, whose fifty heads measured 8 inches in length, and weighed 5 lb. 12 oz. Four lots were shown, the united weight of the 200 heads being 22 lb. 8 oz. One of the heads measured 3½ inches round and weighed 3½ oz. Prizes were also awarded for Asparagus at the meeting of the Society held in March. The Asparagus season began in the Scilly Isles in February, when the first cutting from the open air was made. It is now drawing to a close.

— Mr. THOMAS SHINGLES, lately of Bicton, has been appointed to succeed the late Mr. CRAM in the management of the gardens at Tortworth Court, Gloucestershire.

— We observe that the Rev. M. J. BEKKELEY, M.A. and Dr. MAXWELL MASTERS, F.R.S., have been re-elected Examiners in Botany and Vegetable Physiology to the University of London.

— In the Royal Nurseries, Acton, Messrs. JOHN STANDISH & Co. have a house containing four plants of STEPHANOTIS FLORIBUNDA, on which there are now over 1100 trusses of flowers, some of which have from twenty to thirty flowers in a truss. Such a sight is not often seen, and we are sure Messrs. STANDISH & Co. will be pleased to show it to any one who may care to pay a visit to the nurseries.

— In all probability a magnificent display of OPONTOGLOSSUM VEXILLARUM will be on view at Mr. BULL'S nursery next week. No less than about 150 plants will then be in bloom, and the number of flowers on the spikes varies from three to seven. In the matter of colour, too, there are great variations.

— Mr. JOHN KIRK has been appointed gardener to Lord BOLTON, Bolton Hall, Yorkshire.

— We have recently had an opportunity of seeing the new ROSE QUEEN OF BEDDERS, which Mr. NOBLE has advertised by means of a coloured plate in our

last number. Judging from the starchy nature of the stock and the abundant blossoms it is now throwing up it may be considered as likely to prove a good feeder, the flowers now produced as well as those borne late in the season are, as we learn from Mr. NOBLE, of the brilliant crimson tint shown in the plate, which is from a drawing by Mrs. DUFFIELD, but in the height of summer the colour takes on more of the purple or rosy hue. For the purpose indicated, namely, flowering in beds, it is no doubt well adapted.

— The following Orchids are flowering at the present time in Mr. H. G. ELLIOTT'S choice collection at Hackney:—*Cymbidium eburneum*, *Phalenopsis amabilis*, *grandiflora*, *Lil. Demianiana*, *rosea*, *Schilleriana*, and *Mammil*, with thirty flowers; *Cypripedium barbatum*, *barbatum biflorum*, *niveum*, and

dium caudatum, with twelve flowers, while *Saccolabium guttatum*, *Cattleya Mendelli*, and *Odontoglossum vexillarium* were also conspicuous in this excellent collection. A silver medal was most deservedly awarded.

— We learn from Messrs. WILLIAM PAUL & SON, Waltham Cross, that their collection of Roses in pots under glass, numbering some hundreds of plants, is now coming into bloom, and promises a fine display of flowers. The proprietors will have much pleasure in showing the plants to any one who may favour the nurseries with a visit.

— French papers record the death, in his 56th year, and on April 14, of M. AUGUSTE RIVIÈRE, the Superintendent of the Luxembourg Gardens in Paris. The gardens under his charge, and specially

as much as almost the whole of the prizes are offered by members of the seed trade or friends of Potato culture, and the Royal Aquarium Company. Out of a total of fifty-seven prizes not less than fifty are thus provided for, leaving only the small sum of about nine guineas to be found by the committee. In this respect the support received from the trade has been most encouraging, and shows how cheerfully that support will be given if the object be meritorious, and the promoters worthy of confidence. It is worthy of remark that, out of the large number of trade donors, only two insist upon the condition to close their donations against fellow-members of the trade; and so strong is the objection felt against these conditions, that the committee, strong in the liberal support they have so far received, have resolved to have none but open classes next year. The comparatively small amount of the prizes to be



FIG. 95.—*COELOGYNE CRISTATA*.

concolor; *Lælia cinnabarina*, *Aerides Warneri*, *Saccolabium carvifolium*; *Dendrobium Barberianum* (a fine variety), *crystallinum*, *Devonianum*, *nobile*, *thyriflorum*; *Cattleya Mossie*, *Odontoglossum vexillarium* (several nice spikes), *Rochila*, *Alexandra*, *membranaceum*, *gloriosum*, *Pescatorei*, *triumphans*, *septentrionem*, *niveum majus*, and *Andersonianum*, the latter being the finest variety Professor REICHENBACH says he has seen; *Masdevallia Harryana*, *Veitchii*, *ignea*, *Peristeria*, and *Benedicti*; *Oncidium nubigenum*, *Krameri*, and *Papilio*; and *Sophrontes grandiflora*.

— At the late exhibition at South Kensington a group of some forty or fifty fine specimens of Orchids was exhibited by J. G. HEPPEN, Esq., Sidcup Place, Kent (Mr. LOVELAND, gr.), and which we omitted to notice in our last issue. Mr. HEPPEN has but recently entered the horticultural arena, but what plants he has shown hitherto have been in splendid condition, and we believe a brilliant career as an exhibitor is before him. Among the plants staged we noticed a fine specimen of *Cypripedium*

the collections of Orchids and Bromeliads, were particularly noteworthy. M. RIVIÈRE was a man of marked intelligence—one who felt that a plant was a thing to be studied, and not merely grown. In consequence horticultural literature, and the meetings of horticultural societies were enriched by frequent pertinent observations from him. In a letter received from him but a few weeks since, he entered into some detail as to the plan of a memoir that he was drawing up on the Bamboos cultivated in France, and especially those in Algeria.

— The show of bloom of that almost unrivalled Orchid, *Lælia majalis*, promises to be finer with Messrs. JAMES BACKHOUSE & SON this season than they have ever known. One plant has two blooms from one stalk.

— The schedule of prizes of the International POTATO EXHIBITION to be held at the ROYAL AQUARIUM, Westminster, in October next, now being issued, is somewhat unique in its character, in-

provided by the committee, however, does not render a liberal subscription list any the less necessary, as the expenses incidental to the exhibition are large, and for the past two years have left a considerable deficit that has been provided for by a few members of that body. Only considerations of expense have prevented the carrying out of the proposal to have a good vegetable competition also with the Potatoes; and if the prizes and other necessary funds are forthcoming, the committee will be only too pleased to add such competition to their present specific work.

— The *Florist* has a coloured plate representing the PREMIER PEACH, a fine variety raised a few years since in the Royal Gardens, Frogmore, as the result of a cross between the *Grosse Mignonne* and *Belle-garde*. The fruit is large, round, and of even outline, with a slight suture extending generally to the apex; the skin is purplish red, becoming very dark when fully exposed to the sun, and often having spots and blotches of dark red on the shady side and near the base. The flesh is tender, juicy, and melt-

ing, with a delicious flavour, and the flesh peels freely from the stone. It is not subject to mildew, and is generally free from the other ills to which Peach trees are subject.

— The WHEAT RUST appears to have found its way to California. In a paper read before the San Francisco Microscopical Society (April 5, 1877), Dr. H. W. HARKNESS alluded to the great injury occasioned to the Wheat crop by *Erysiphe graminis*, D. C. He says:—"The pest, which appears for the first time this spring, termed by the farmers 'white rust,' or 'mildew,' is one which may well excite the fears of the agriculturist. It has already invaded the more mature fields within the limits of four or more of our heaviest grain-producing counties, where at least a half million acres of Wheat are in great peril, some of it already destroyed."

— We are pleased to hear that the annual White-side exhibition of the ROYAL MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY, which opens on Friday next, promises to be one of the—probably the finest of the series which has been held.

— LOVERS OF NOBLE TREES, and especially of those which have artistic associations, observes the *Athenaeum*, will regret to learn that one of the magnificent Elms in front of the Manor House at Chiswick, a tree which POPE and HOGARTH must have known quite well, and which the latter drew in the etching styled "Mr. RANBY'S HOUSE at Chiswick," was blown down in a late gale. Mr. RANBY was Surgeon to the King; he attended Sir R. WALFORD in his last illness, and is said to have sat to HOGARTH for the hero of "A Rake's Progress," probably in the marriage-scene. He was much in the confidence of GEORGE II., and attended at the battle of Dettingen; and is often mentioned in memoirs of the time, and was buried in Chelsea Hospital, near CHELSEAN.

— The *Revue d'Horticulture Belge* for the present month contains a coloured plate of ANTHONY DARWINI TESSELMAN, a variety with yellow mottled leaves, and red flowers. It is stated that this variety was obtained as a graft hybrid between A. Darwini and A. Thompsoni, the former having been grafted on the latter.

— The Swiss Government has made a proposal to the Vine growing countries of Europe to establish an International Congress to devise means of defence and mutual security against the ravages of the PHYLLOXERA.

— The opening lecture of the BOTANICAL CLASS in the UNIVERSITY OF EDINBURGH was delivered on the 1st inst. by Professor BALFOUR, for the thirty-second time, at the Royal Botanic Garden. Notwithstanding the early hour (8 A.M.) and the frosty morning (27° Fahr.), there was a large attendance, many being scarcely able to find standing room. The lecture hall, which is only seated for about 250, ought to be greatly extended. The enrolled students in 1874 numbered 354; in 1875, 343; and in 1876, 343. The walls of the hall were covered with large water-colour drawings illustrating different forms of vegetation, from the microscopic moving spore, to the giant productions of tropical countries. On the tables were arranged numerous living plants in pots, including many of medicinal and economic value. Amongst them were Winter's Bark, Chocolate, Tea, Coffee, Sugar-cane, Breadfruit, Cow-tree, Banana, Date, Ipecacuan, Pepper, Cocchineal-Cactus, Lignum-vitæ, Cassava, Oil Palm, Gum Arabic, Balsam of Peru, Quassia, Socotra Aloe, Camphor, Rice-paper, New Zealand Flax, Indiarubber, Gutta-percha, Blue Gum, Allspice, Sarsaparilla, and a large plant of Coca (*Erythroxylon Coca*) in fine foliage and flower. There were also on the table flowering plants of *Duringtonia californica*, *Sarcocolla flava*, *S. purpurea*, *Bowditchia volubilis*, and *Rhododendron Edgeworthii*, the flowers of which filled the room with a delightful perfume.

— The last number of the *Bulletin d'Arboriculture* contains a coloured plate of a PEAR called Monchallard, a suitable variety for market purposes, bearing well, and capable of transport without injury. The tree is vigorous habit, the fruit of medium size, turbinate, the peduncle is long, inserted vertically in a

shallow basin. The skin is thin, yellow, dotted with greyish green spots, and slightly flesh-coloured on the sunny side. The flesh is delicate white, melting, sugary, with a slight acid and aromatic flavour. The fruit is ripe in August and September. The Pear is of French origin.

— MESSRS. GEORGE JACKMAN & SON'S EXHIBITION OF CLIMATES, which opened on the 21 of this month, is held as usual in the long corridor in the Botanic Gardens, Regent's Park, and comprises a collection of about 250 plants, which are well worthy of inspection, though the collection as a whole is scarcely so advanced in flower as usual, owing to the sunless spring. Among the newer flowers the most noticeable are Mrs. Hope, a handsome, vigorous plant of the languinous type, satiny-mauve in colour, with a slightly darker bar; Maiden's Blush, a large-flowered variety of the patens type, of a delicate bluish-white colour, the bar rose lilac at the base, and of a creamy colour; Robert Hamby, with bold, well-filled flowers of the languinous group, in colour a bluish-lilac, flushed at the edge with a reddish purple, and having the bar tinted with the same; Duchess of Teck, also of the languinous type, is a pure white six-sepal flower; when freshly opened it has a faint mauve bar down the centre. Amongst older and better known kinds the following, amongst others, are in good form:—Aurelian, Fair Rosamond, the Queen, the Countess of Lovelace, Lady Caroline Nevill (probably the most striking plant in the collection), Lucie Lemoine, Yesta, and Sensation. The exhibition will be open for another week or two, and will be in better condition next week as a consequence of the improvement in the weather.

— The annual dinner of the INSTITUTION OF SURVEYORS will take place after the annual general meeting, on Monday, May 28, at the Freemason's Tavern. Members and Associates who propose to be present are requested to intimate their intention to the Secretary.

— A local paper reports that a CONCERT was recently given at the MELCHET PARISH SCHOOL-ROOMS, under the leadership of Mr. W. CROSS, of Melchet Court Gardens. In addition to being a first-class gardener Mr. CROSS is also an excellent musician, and finds time during the winter evenings, not only to cultivate a taste of music for his own pleasure, but also to conduct a class composed of school-garden young men and servants and *employés* on the estate. In this direction, in an out-of-the-way and somewhat secluded locality, it is found possible to provide for both the head-gardener and his young men a source of recreation and enjoyment of the most elevating kind, from which, by reason of the distance large gardens are generally removed from populous centres, gardeners are too often debarred. All head-gardeners are not musicians, and unfortunately too few cultivate any kind of literary accomplishment; they are, therefore, thrown upon very meagre resources for finding suitable pastime and recreation. It is well to enforce study upon young gardeners to a certain extent, but this is of little use unless their immediate superior is capable of giving them some practical instruction and assistance; but combined exertion to acquire theoretical knowledge on the part of head and assistants would result in a considerable amount of good. One or two evenings per week devoted to literary labours of a studious kind, and an equal portion of time devoted to the requirement of some useful accomplishment, such as music, drawing, reading aloud, &c., would tend to make the often solitary life of gardeners much more pleasant and endurable than it is the case now.

— According to a statement made to the French Senate, and reported in the *Journal Officiel de la République Française*, the area of VINEYARDS AFFECTED BY PHYLLOXERA now amounts to 200,000 hectares, the total area under Vine culture being less than 2,300,000 hectares (3 hectares = rather less than 2½ acres). The average value of each hectare of Vines is 6560 francs, though in some cases it is as high as 15,000 francs. The average annual value of the crop throughout France is 1,508,000,000 francs. From these and other statistics which we cannot find room for, it is estimated that if the Vines were totally destroyed there would be a loss of 12 milliards of francs in capital, and of an average of 1 milliard 300 millions of francs. In

many cases the Vines are grown by small proprietors, cultivating with their own hands one or two hectares; and the loss of their Vines will, of course, prove to them extremely disastrous. From another source we learn that the produce, which in 1865 amounted to 68,943,000 hectolitres (one hectolitre = about twenty-two gallons), and in 1869 to more than 71,375,000 hectolitres, fell to 35,759,000 hectolitres in 1873. These facts are still more clearly shown, if we estimate the amount of produce in certain departments only. Thus in the departments of the south and south-west the produce in 1869 was 36,162,418 hectolitres, whereas in 1876 it was 14,122,101 hectolitres. One consoling fact is that the Phylloxera seems to lose its vitality in proportion as it extends northwards to the centre of France. It seems to propagate itself more rapidly in those vineyards exposed to the south than in those with a north or north-east aspect. Some parts of Burgundy and the Champagne district are at present quite uninfested. The methods of cure proposed may be grouped under four heads:—1st, the destruction of the infested Vines; 2d, submersion; 3d, the application of insecticides; 4th, the introduction of American Vines. As to the first proposal, it may be remarked that it is only in the second year of their presence on the roots of the Vine that their effects become visible, and hence it is necessary to uproot all the Vines, and not merely those which present visible signs of the attack of the insect. This stamping-out process may be accompanied by a disinfection of the soil of the vineyard and of the adjacent district by means of petroleum, the use of sulpho-carbonate of potash, and other means. Submersion of the Vines for a period of from fifty to sixty days has been very effectual, but unfortunately it is a proceeding which, in most cases, owing to the situation of the ground or the nature of the soil, is quite impracticable. So far as concerns insecticides, sulphide of carbon, sulpho-carbonates, and the removal of the bark, are the only plans worthy of serious consideration. Sulphide of carbon appears to be the most valuable insecticide both as regards its efficiency and convenience of employment. Sulphide of carbon is used in the following manner:—A mixture is made of three-fourths of sulphide of carbon and one-eighth of oil of gas-tar. The dose to be employed per metre is ten grammes, and the liquid must penetrate the soil to the depth of from 30 to 40 centimetres, holes being made of that depth about 30 to 40 centimetres from the base of each Vine. The operation requires to be effected in April or May, again in June, and again in September or October. The price of the sulphide of carbon is much less than that of the sulpho-carbonates. Of the use of American Vines as Stocks we may speak on another occasion.

LEYDEN.

So many associations cluster round Leyden that it requires a strong sense of the value of space in the *Gardener's Chronicle* to avoid dilating on some of the botanical writers, who by their deeds have made the renown of Leyden, especially that great and worthy master Boerhaave. His catalogue contains a history of the garden and a list of 6000 species. The garden it appears was founded so far back at 1577, and its first greenhouse dates from 1599. A very few words must suffice to indicate some of the more important contents of the Botanic Garden. Like most Continental establishments of a like nature, it is ill kept, and visitors from England will miss the neatness and good keeping they are accustomed to at home. This, however, is an affair primarily of money, then of climate and soil. After all, in a botanic garden one looks more at the contents of the garden, and of its suitability for teaching purposes, than at the neatness of its walks, or even the cultivation of the plants.

First, then, in speaking of the plants in the garden, let us pay homage to a tree planted by LINNÆUS. Only the trunk, or the stump of a trunk, now remains, but to see this having been nearly buried in the ground level by the fall of an artificial or heretical Gymnocladus, typifying perhaps the "natural system" which has superseded the artificial classification of Linnæus. Enough, however, remains of the original trunk to enable fresh shoots to be put forth yearly, and in the middle of April a growth of new shoots with fresh green leaves and newly-developed flowers testified to the life which exists in a tree even when it is cut down, and may serve to typify

the undying renown of the great Swede. The tree is *Lonicera alpigena*, and a spray of it was by the thoughtful kindness of the Professor reverently deposited within the pages of our *Foreign Broadshov* for safe transmission to England. Next to this the most noteworthy tree is a noble Weeping Beech, the branches of which sweep gracefully downwards to the ground and resting on it for a short space curve again upwards. The area covered by the branches cannot be less than 135 feet in circumference, the trunk itself at 5 feet from the ground being of such a thickness that a man with outstretched arms can barely span it.

experience. Rather we suspect the form and dimensions given to the houses are the outcome of convention and routine, and will not be changed till the taste for horticulture becomes more general among the upper and middle classes than it now is. The walls of the stove-houses are studded with small oblong pieces of stone projecting from the wall, which serve to retain moisture and to afford foothold to the Aroids and other climbing plants. The collection of Aroids, by the way, is worthy of notice, though far from equal to that at Kew. The aerial root of one species (*Monstera Selloi*) is trained round and round the stove

summer to make room for the *Victoria*. Around the inner circumference of the building runs a tank divided into numerous compartments, and well adapted for the growth of a great variety of Nymphæas and other aquatic.

In the cool houses and conservatories the plants at this season are so crowded that it is difficult to see them, and it is clear that they have to undergo a pretty severe struggle for existence; whereas the care of the gardener under more propitious circumstances is so to place his plants as to prevent this injurious internecine conflict, but under the circumstances of

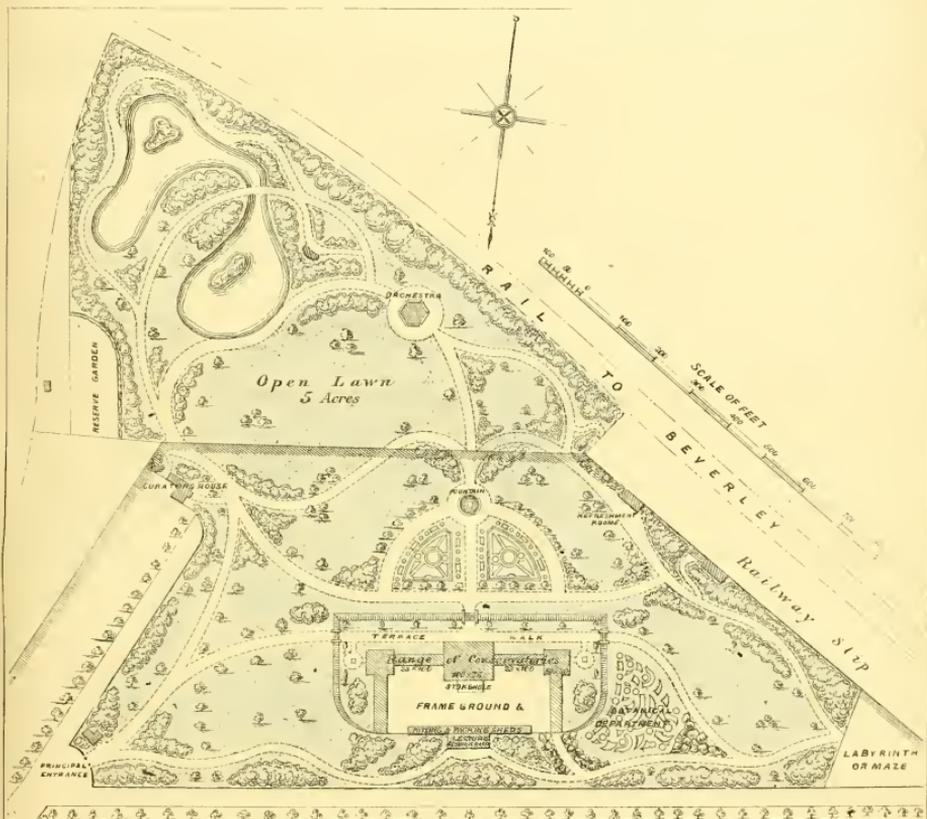


FIG. 95.—PLAN OF THE PROPOSED NEW BOTANIC GARDEN AT HULL.

Other noteworthy trees are fine specimens of *Ginkgo biloba*, *Glyptostrobus pendulus*, and *Diospyros virginica*. Beneath the shade of one of these trees the culture of a fungus, *Peziza tuberosa*, is effected. The fungus is introduced on the rhizomes of *Anemone nemorosa*; both thrive for a time, but after a year or so the *Anemone* dies, leaving the *Peziza* master of the situation—a barren victor, however, for, having destroyed its host, the guest speedily perishes also.

The glass-houses are numerous, lofty, narrow, and ill adapted for plant growing according to our notions, but suited it may be to a severer winter climate than ours, and to a greater fall of snow than we usually

under the roof rafters for a length of at least 45 metres. The other houses contain the usual assortment of botanic garden plants—Palms, Cycads, Tree Ferns, Pandanads, and the like, including many fine specimens, but none that we saw in our rapid inspection of any special importance in point of description or rarity. Ferns and Lycopodiums are well represented, and among the latter are good illustrations of *Lycopodium nummularifolium* and *L. Phlegmaria*.

The *Victoria*-house is a circular structure of glass and iron, with a depressed and vaulted roof. The central tank is circular, and in the winter season is occupied by Pandanads and various tropical aquatic or semi-aquatic plants, which are dispossessed in

faulty construction and insufficient house-room the struggle must necessarily go on with severity.

The mode of labelling adopted here is worth notice: the name is written on a piece of paper, and this is inserted into a glass tube the thickness of one's thumb, sealed at one end and drawn out into a point at the other. The pointed end is thrust into the ground or pot. What the average duration of these labels is we could not ascertain, but the first impression is not favourable. It was very interesting to the writer to compare the state of the garden now with its condition as described in these columns in 1850 by the late Mr. Masters, of Canterbury, but as his visit was paid in autumn and mine in early spring when the

leaves were not out, and the house plants too tightly packed in their winter quarters to be well seen, the comparison was not very satisfactory. The Orchids, however, do not appear any better than they were described a quarter of a century ago. *The Rambler.*

Home Correspondence.

The Frosts.—The disastrous frosts of the past week appear nearly to a national calamity, but they will be the effect of stimulating growth to the introduction of schemes for the better protection of fruit. Glasshouses are, of course, the most efficient protectors that can be devised, but they are not within the reach of all. I have, I think, found a method that is within the reach of most persons at a small expense. Having observed that tender plants in pots may be preserved during severe frosts by laying them on the ground and covering them with mats or canvas, I potted several Pear trees into No. 2 pots last autumn; they have stood through the winter without protection, and were covered with stout and well-conditioned blossom. When the dour east wind gave notice that a heavy visitation of frost might be expected, the trees were placed in a position to occupy a small compass when laid down, and were covered with a mat of a dozen trees of the finer sorts of Pears, each capable of bearing three or four dozen fruit, were simply laid down and covered with mats. I am happy to say that the trees have successfully passed through the heavy order of the night of Wednesday, Thursday, and Friday, the mats being removed during the day, the trees remaining recumbent. After the necessity for protection is passed, which we may fairly hope will arrive before Midsummer, the pots should be ranged in a regular order on the ground, and the surface of the soil covered with loose manure. Little water will be required, and if the sides of the pots are perforated to allow the emission of roots into the surrounding soil, the trees will be entirely self-supporting, and may remain in the same position until the next inclement spring returns. The plants when required will submit to the excision of the roots outside the pot without injury. A few dozen Pear trees will give a good supply of fine fruit, and with good cultivation will give a reward that will rival that of *Francis Rivers, Strawberrytown, in the "Times," May 9.*

The Fruit Prospects.—Since writing my notes of last week a week of severe frosts has fallen on the fruit crops withering, especially Peaches, Nectarines, Apricots, where badly protected, are swept off. The frost ranged from 7° in high localities to 12° in lower. The air has been extremely harsh and dry by day as well as severely cold at night. Many of the cherries are also quite black—and the plum and Plums look suspicious. Gooseberries in low-lying gardens are destroyed, and the upper fruits on the bushes almost everywhere. Pears, unless the very earliest, seem yet safe, as do Apples probably, though many of the late sorts are in danger. The Onions had been sown with hot iron on the upper edges. To-day, the 8th, the wind has veered round almost midway between east and south, and the air is much warmer. It has, however, been a trying day for the crippled fruit, and a day of sun and sunless and without a cloud. Showers and genial growing weather are now much needed, alike for fruit crops, vegetables, and flowers. Peas have made little ground; Cauliflowers planted out some weeks since have almost disappeared. The Onions hug the ground, and look yellow rather than green; and Parsnips and Carrots seem unable to break ground at all—Potatoes are cut off without their roots, which looked splendid until the last few days, have since their heads and stems withered with a yellowish drooping tinge; in fact, several mornings the young shoots drooped and were hard as ice. The Myosotis disitiflora is much later than usual here this season, having just got into full beauty. Every flower in the zone or high up at a fire had passed over it. *Dieltras* are cut right down, or bent double. Most of the *Peonies* are blackened, and a choice selection of Dean's Improved *Primulas* and *Polyanthus* have had most of their colour frozen out of them. Anemones, Tulips, and those flowers endowed with the power of closing at night, have fared best; and the *Daisies* are looking now about the brightest and most beautiful and least scathed of all the flowers of the garden. *D. T. Fish.*

The Weather in East Anglia.—The month of May has come in amid exceedingly cold weather, in this locality at least, and the thermometer this morning (May 4) indicated 9° of frost, and it is to be feared that the fruit crop has seriously suffered. The plants as large as the hand, and many of them destroyed, the very few fruits which appear to have escaped are those which happened to be placed between a branch and the surface of the wall. The

bloom of Pears, Plums, Gooseberries, &c., is very abundant, but is at present in that stage of advancement when most likely to suffer from a low temperature. Should, however, a tith of the bloom come early, there will be more than a chance. Apples are not sufficiently forward to have sustained injury. Notwithstanding the mild winter we have had, crops in general are backward. Asparagus in the open air was just beginning to come in—and this is not the case here, but the usual fact, which had ventured to peep through the soil was last night killed. Potatoes were yesterday 4 or 5 inches high, but are now blackened and killed to the surface of the ground. Some fine beds of *Dieltras* specialities were just coming into bloom, but are now a mass of decaying vegetable matter. Such are a few of the casualties of the night of May 3, as experienced here, and it is much to be feared that our case will not be found to be an exceptional one. *P. Grievs, Culford, Bury St. Edmunds.*

Fruit Prospects.—The severe frosts that occurred on the nights of the 4th, 5th, and 6th, have sadly marred the unusually bright prospects this part of the country presented of a most abundant fruit crop. Generally, from the cold wind and the frost, and more or less strongly up to the time, the surface of the ground had become so thoroughly dry as to modify the effects of such a depression of temperature, and the consequences would have been much more serious. Had it not been for the backwardness of the blossom through absence of sun, there is yet hope that they may have escaped, but at present it is impossible to form a correct estimate as to the damage, for even these may fall off in a week or so after the frost. The heavy fruit and a radiation of heat. Gooseberries are already doing so, as you may see from the enclosed specimens; and Cherries and Plums must follow, as they already show irregularities of shape resulting from frost-bite. The sharpest night was on the 4th, between the 3rd and 4th, when the glass registered 15° of frost, and showed 10° at 6 o'clock in the morning, which is 1° or 2° colder than at any time during the winter. *J. Sheppard, Woolverston.*

Severe Frost.—It may interest you to know that we had last night the severest frost of the year in this locality. The thermometer registered 12°, standing at 20° Fahr. This is 2° lower than any of the past winter frosts registered here. *James Salter, Baringfield, Basingstoke, Hants, May 5.*

—Some of your readers may like to compare notes as to the effects of the late severe frosts to Lilies growing out-of-doors. The meteorological authority of our district has given me the exact temperatures as follows:—On the 31st, the thermometer at 4 feet from the ground, rose gradually, descended to 25°, and the radiation thermometer on the grass to 21.75° on the 4th. The corresponding readings were 23.5° and 19°.75°. In the open border, unprotected, *L. californicum* Humboldtii, Martagon, dalmaticum, Szovitsianum, Browni, praevarium, chalcidicum, tinnium, and autumnum appear to be unharmed; out of very many *L. auratum* a few seem a little touched, but though I longed for the white parsons with which my friend and neighbour, Mr. McIntosh, shelters his favourites, the great yellow seem to be all right. Some of them are from 2 to 3 feet high. I measured one stem 2½ inches in circumference at the base. The outside leaves of *L. giganteum* are cut badly, but one measuring 1 foot to inches in height, and 6½ inches in circumference, has a stem 1½ inches in diameter, and the stem and inner leaves appear to be untouched. Among border plants in bloom I noticed *Primula cortusoides* amena a good deal cut, *Anemone palmata* and *A. Pulsatifida* untouched. The more forward buds of *Prunella*, *Dielytras*, *Delphinium*, *Colchicum*, and *Trillium* in the shade unharmed, *Asiella japonica* cut hard. A large clump of *Cypripedium spectabile* had some shoots browned; *Adonis vernalis*, with its glorious yellow, seem to be all right. Here in Northamptonshire the 1st of May is still a great day with the village children, who instead of making themselves smart with shabby finery, dress up their dolls and arrange them on a framework, cone-shaped, which they carry on their heads; and when the dolls have the appearance of a tall cone, 7 feet high, composed of dolls large and small, and flowers, surmounted by a fine Crown Imperial, always supplied by a kind friend, who has a wonderful garden, out of which always comes a great number of flowers on my visits to this garland about fifty little girls, all neatly dressed in their Sunday best, patrol the village, singing songs, from early morning till 4 P.M., when they assemble

for tea in the school-room, now numbering nearly a hundred. The tea is paid for out of the money they collect, and the balance is divided amongst the children. When retired, and after they play a game of hill dack, so in some villages it is called. May Day is still a bright spot in child-life. *B. T.*

Odontoglossum crispum roseum.—The highest coloured variety of this plant (O. Biontii) we have seen has recently flowered with us. It is not merely "rosy" in tint, but real rose colour, the petals only showing the faintest tinge of green. The flowers are large, petals and sepals broader than average, and finely blotched with heavy dashes of a rich, warm cinnamon-brown. The margins of the petals are more torn, so as to form quite a fringe. *James Backhouse, Cox-Son, York Nurseries, May 8.*

Adiantum gracillimum.—No doubt the case of A. Minor's plant losing its fronds in the manner described, is though its not having any rest during the winter. I obtained a half-giant plant in November, 1875, and stood it at one end of the stove with other plants of the same kind. In the month of March, I potted it in the following March in a 9-inch pot and again in June in a 12-inch pot, but soon after it began to go in the same way as A. Minor's, but it was still a good size by August, and in November I had it put in a lower temperature and kept it through the winter. At the beginning of March I had it put in the stove, and it is now a grand specimen of healthy fronds over 3 feet in diameter. I would advise A. Minor to turn out his plants in the month of March, six months, and if not rooted to take away carefully any loose soil and re-pot again with good fibrous loam and about one-fourth coarse sand. I grow *Adiantum farleyense* in all loam and sand, and find it does well in it. *C. Raffill, Tredgar Park.*

Carnation Souvenir de la Malmaison.—If Mr. Johnson would, please to give me a specimen of his *malmaison* of Carnation, as I should be glad to have this Carnation, he would confer a great boon on very many of us who have to supply flowers at all seasons in unlimited quantities, and who would gladly learn how to produce such a profusion of it above during the dull seasons of the year. *W. C. B.*

The New Cucumber Disease.—It seems needful to restore the adjective when such an accomplished fungologist as Mr. Smith writes to say not fungus but worms. This disease, as I pointed out several times last year—see *Gardener's Chronicle*, Sept. 2, p. 303—was a kind of galling or gummy gum on the roots, or swelling at the roots, referred to by Mr. Smith. Samples were forwarded to the Editors of the *Gardener's Chronicle* last August, and from thence I presume to Mr. Berkeley, who gave a description of it in the *Gardener's Chronicle*, August 25, p. 269, wherein he says that he had never seen the disease in such a virulent form as in the specimens which had just been forwarded. He refers the disease to the fungoid genus *Gloeosporium*, and says it attacks Grapes, Peaches, Melons, Cucumbers, and is probably capable of being transferred from the one fruit to the other, and that it might be of great consequence were it to spread widely. I have forwarded specimens of foliage and an analysis of the same to the Editor of the *Chronicle*, and enough to favour the readers of the *Gardener's Chronicle* with his views concerning it. I shall also try Salus at the roots, and sulphurous acid on the leaves, as recommended by my most courteous correspondent, and I shall be glad to hear of the result. I heartily thank for their kind attention to my inquiries. I specially thank "R." for his caution about the acid, and would venture to give another to intending purchasers. Most of us are in the habit of testing the potatoes of the plants, and last year I was obliged to reject the latter plan with the sulphurous acid, it proved so volatile and so potent as almost to turn me over on the spot. I shall try it at once, and report its effects on the *Gloeosporium* spores. I fancy a weak mixture of Salus, with sulphuric acid, would have arrested the pest. The young shoots, as in the case of the plants last year, seem to put forth special efforts to outgrow it, and continue healthy. Merit notes reveal as well as prove one's friends. I permit me to thank you very much for the seeds of the seeds from fresh localities as a likely means of getting rid of the disease, and especially to Mr. Coombe, of Tabley House Gardens, Knutsford, for Cucumbers and Melons that have long been grown so successfully in East Anglia, and especially in West Cheshire, far from the trying climate of East Anglia. *D. T. Fish.*

—Since writing my last note I have had an opportunity of examining the leaves, stems and fruit of *Delphinium* and *Asiella japonica*, &c. *D. T. Fish.* After making a most searching examination I have been unable to detect anything further than I have seen before. The diseased parts

show a few threads and spores of *Acremonium*, *Phoma*, *Diplodia*, *Gloeosporium* and a few imperfect fungi. Whether the *Gloeosporium* is capable of producing disease in the first instance is more than I can say, for I have seen little of it, and I have never seen it in sufficient quantity upon Cucumbers to warrant the belief that it is the cause of serious disease. In certain cases it may, however, be considered as a parasite, but the experience, for no cases with abundant fungi have ever fallen under my observation. A drop of distilled water applied to the decayed fragments of the leaves from Hardwicke soon set swarms of bacteria and moulds free. *W. G. S.*

Bac throa thum Newell.—This is a very decided improvement on *Bac throa thum elegans*. Being at Repton Hall a day or two ago, Mr. Newell, the raiser, pointed it out to me growing on the back wall of a lean-to plant-house, along with another plant raised at the same time. The two plants in question were the best of a batch of seedlings raised from seed of H. elegans, believed to have been crossed with *H. fascicularis*, and although considerably resembling both in habit and general appearance *H. Newellii*, is in every way superior. It is very early in flower, and most abundant bloomer, and all who saw it exhibited at the Royal Botanic and Royal Horticultural Societies shows last spring know how much it exceeds its parents in brilliancy of colour and in the size of its flowers, which are nearly half larger. It is a very fine plant, besides it is good in its way, having flowers almost as large, but lacking its beautiful bright crimson colour. *W. G. S.*

The National Rose Society.—A meeting of the committee of this Society was held at the Horticultural Club, Adelphi Terrace, on Wednesday last, when further arrangements were entered on, and a goodly number of members enrolled. The whole of the details connected with the show are to be entrusted to Mr. W. G. S. as secretary, and Mr. G. as the practical manager of the Crystal Palace flower show, and afterwards connected with the Alexandra Palace, and I am confident that exhibitors will find their wants carefully attended to. I want of space in this main article, however, is becoming more and more limited, and I have no other alternative in carrying out their plans of bringing a Rose show into the very centre of the fashionable part of business London. We would, therefore, strongly urge lovers of roses to send their names to the committee for the purpose of obtaining two admission tickets, giving them the *entrée* for an hour before the public are admitted. *H. H. D'Ombrain.*

Peach Setting.—Many thanks to Mr. Dodd for his valuable information on the setting of Peaches and Apricots. As a grant set of Peaches can be secured without the aid of the syringe, &c., may I ask its advocates what are its special advantages, for without exact information as to its real effects upon the reproductive organs is it not likely to prove a dangerous instrument in the hands of amateurs and inexperienced gardeners, like myself, who being anxious to secure a good crop of Peaches, might be tempted to use the syringe in order to make "assurance doubly sure." In reply to Mr. Simpson respecting Mr. Miller's theory and practice in Peach setting, I believe I am quite correct in saying that Mr. Miller did not allow the syringe to be used in the early Peach-houses from the time of the first flowers opening until all the trees were out of flower; whether Mr. Miller has discontinued the use of the syringe prior to this time, I am not in a position to say. I am not able to place my hands on the articles Mr. Simpson mentions, but if my memory serves me aright the pith of Mr. Miller's remarks was to the effect, not that he had used the syringe for twenty years, but that he had used it for twenty years prior to the time when Mr. Simpson sought to enlighten the horticultural world on the subject, and had not noticed any baneful effects on his crops of Peaches. *Vitis.*

The Royal Horticultural Society.—When you write such excellent leading articles as that of last Saturday you may well dispense with more letters from me. At the same time the fear of many of us is that this success in London Kensington means a new rivet in the fetters of the Society. Sir Charles Sturt has failed to get the justice or good sense of my finding fault with the Royal Horticultural Society, so long as not one in ten of the horticultural public belong to or help the Society. How differently my different minds speak for fact, I have enough to say in the very fact that I find a great part of my justification. Sir Charles states that something of that which I desire to see was tried at Kew, and failed. I admit that I was but partially aware of this, and can now only express my regret for the result. Sir Charles has promised me some day find time to investigate this matter; at present I can only say that young gardeners, as a rule, certainly seem to me to desire knowledge not in a less, but in a larger degree than most young men of the same position; and in large gardens I continually hear

men, both young and old, regret that nothing wider and more permanent than the rule-of-thumb knowledge is to be had in the rest. Meanwhile, let me earnestly beg such influential and able supporters of the Royal Horticultural Society as Sir Charles Strickland not to plead this supposed failure at Kew until a patient inquiry shall prove to the full what the failure was, and the scope and plan of the reform that to its inherent fertility. As to Chiswick, let me repeat that I know fairly well what work is done there, and of how great technical value it is; but I need not go again over the reasons which impel me to ask for something else as well. *T. Clifford-Albutt, Leeds, &c.*—P.S. In my last letter, for "aches," I read "makes" and for "mens," read "Mens" agitated *molem*.

—Probably neither Dr. Clifford-Albutt nor Sir Charles Strickland are aware that not very long ago the Council of the day did try to bring forward lads of a superior class at Chiswick Gardens. The experiment promised very well, but youths of their age, especially when clever, are rather kittle cattle to manage, so there was a disturbance, and there probably being other pressing matters on hand, the trial was not continued. I for one much regret this. Two young men whom I remember at Chiswick produced the best at South Kensington for the good positions which the knowledge of plants and useful introductions gained in the Chiswick Gardens have helped them to get into, and to fill most gracefully and creditably. *Geo. F. Wilson, Ipswich.*—I have a "disturbance" alluded to by Mr. Wilson, as "the other pressing matters on hand," which prevented the Council of the day from doing little more for the scheme than the issuing of the programme, which was in the execution, and only wanted carrying out in its entirety to have brought about a great success. *Eds.]*

—Having read with great interest the correspondence respecting the Royal Horticultural Society, I beg to ask if the new feature of introducing Covent Garden produce to the exhibitions has had such effect on the Council and the public, that the former can afford to distribute the medals to the market dealers on the following meeting day, while the gardeners who have so long and so ably supported the Society have to wait for months, and in some cases years, before they receive their awards. *An Exhibitor.*

Tulips.—The only Tulip I brought before the Scientific Committee on May 2 was a large and fine form of *T. Orphanides*, received from the Continent under the name of *T. wickiana*. *T. T. Wilson*, of Clusiana fragnans, and a smaller form of *Orphanides*, were exhibited by Mr. Elwes. *H. Harpur-Creese, Drayton-Buchamp Rectory, Tring, May 7.*

Dale Testimonial.—I shall esteem it a great favour if you will permit me to apply, through your Hon. Correspondence, in behalf of the movement lately started for the presentation of a testimonial to Mr. J. Dale, long and honourably known as gardener to the Honourable Society of the Middle Temple. You recall that in the month of May, 1861, one of the great growers of specimen Chrysanthemums, and that he employed the Pompons as bedding plants with such success that when the late Mr. Salter prepared his book on the Chrysanthemum he wrote of the plants for massing, and reproduced Mr. Dale's arrangements and colours. But it is less known, and I wish now to make it more known, that my old friend has laboured with zeal in the promotion of floriculture in the metropolis. He was one of the first to do so, but giving of his time and talent freely in aid of the many societies of amateur florists that have of late years risen in all the suburbs of London. Of the value of these societies none can entertain a doubt, but in consequence to the best of my knowledge I am afraid the depressions that prevail in this great city, and are not only antipathetic to smoke and darkness and contaminated air, but to the demoralising influences that are typified in the gin-shop and the pawnbroker's sign. Many have laboured to inaugurate a new school of London florists, but none with more steadfastness, more cheerful self-sacrifices, or more practical effect than Mr. Dale. But as the patriot is immortal only in the memory of mankind, so our friend is immortal in the republic of the garden. By the "march of improvement," and of his youth by the touch of Time, should now begin to live in the hearts of such as appreciate his labours, and of their attachment proof may now be given by their subscribing to the testimonial I hope that it will be possible to make him an elegant present, and in such a way as shall constitute the event a little landmark in the history of London floriculture. Mr. J. S. Hodson, of the Printers' Pension Society, 20, High Holborn, is the secretary, and the writer is the proposed appointed treasurer. I am anxious the members of societies that have benefited by Mr. Dale's devotion to their interests should be well aware of this movement, for we shall not keep it long away, and only those who are prompt in subscribing will be sure of

the opportunity of doing the graceful thing. *Shirley Hibbard, Bridge House, Stoke Newington, N.*

Orchids in April (Devonshire).—I venture to send you a list of Orchids which I have had in flower during April. Though it does not equal Mr. Sergeant Cox's in number (p. 68), it presents a few species which he has not included. My collection is but a small one. *P. H. Goss, Sandwulf, Torquay.*

- | | |
|-------------------------------------|-----------------------------|
| Burlingtonia fragrans | Dendrobium Dalhousianum |
| Cattleya quadricolor | Epiphanium |
| "Cinnamomea | "fulvum |
| "Loddigesii | "pudicum |
| "Siamense | Epiphanium |
| Caloglyphis ochracea | "var. flavum |
| "corymbosa | "eburneum |
| Cypripedium pubescens | "ochroleucum, two vars. |
| "venustum | "maculatum castum |
| "insigne | "maculatum majus |
| "hirsutissimum | "(encyclium) majus |
| Dendrobium nobilissimum, two plants | "crispifolium |
| "cruciatum, two vars. | Epidendrum |
| "Pierardii, two vars. | "Lefebvrii |
| "crossinoides | Leucocorymbus |
| "cristatum | Lycaste Skinneri |
| "Frychianum, two plants | Ma-Javalii orchoides |
| "fimbriatum, two plants | Megastolium latratum |
| "japonicum | Miltonia canesta |
| "heterocarpum | Oncidium Alexandrinum |
| "eburneum | "Centropium |
| "litifolium | Oncidium altissimum |
| "marianum, two plants | "ampullatum majus |
| "segregatum | "cebolata |
| "Fosteri | "caucasicum |
| "Guthriei | "Kramerianum |
| "Gussonei | "var. Rogersii (næ) |
| "var. distansum | "Mansfieldianum (næ) |
| "var. distansum | Phalaenopsis Schilleriana |
| "rhodocnemum | Rodriguezia secunda |
| "Drewnianum | "Saccobolus pseudocastaneum |
| "var. majus | Sarcopodium Lobbiani |
| "albogangneum | Sibaria macrantha |
| "chlorum | "Siamense, three vars. |
| "crystalinum, two vars. | "cocciata |
| "Dayanum | |

Orchids in Flower in March, at Forest Farm, Windsor Forest, the residence of — Bowring, Esq.—As your columns are now and then affording us some interesting notices of the beautiful flowers in various parts of the kingdom, I may here mention some of the most attractive I saw in bloom in the extensive collection of the above gentleman, during a recent visit to his respected gardener, Mr. Stredson, who with his own hands has conducted this class as well as an able cultivator. The collection consists of some 2000 plants, numbering 500 species. The plants are in various stages of growth, including some fine specimens. The following were in flower:—

- Ada aurantiaca.*
Coloniae Stedii.—Its long flowering period makes it very attractive.
Coloniae pandurata.—This plant had flowered for the second time in seven months.
Cypripedium.—Of these there were twelve varieties in flower, the most noticeable were C. Pearcei and C. Stonei, with nine fine flowers.
Cymbidium chrysomum.—This species was remarkably good; the almost pure white flowers, with its unique habit, made it very interesting.
Dendrobium.—Of these there were ten varieties in flower, conspicuous among them was a fine plant of *D. aggregatum majus*, producing ten spikes clothed with its showy yellow blossoms.
Lycaste Skinneri.—With its rich coloured blooms, proves one of the most desirable of our winter-flowering Orchids.
Mesaspidium sanguineum.—This had produced about ten spikes, well furnished with its beautiful wax-looking flowers.
Oncidium latifolium.—Mr. Bowring possesses numerous varieties of this grand class, of which *O. Pearcei* is the most notable. A plant not so well easily managed, it had about 100 perfect blooms.
Oncidium.—Of these there were six species in flower. *O. serotinum* was the largest. A plant not so well easily managed, it had about 100 perfect blooms.
Phalaenopsis.—Of these two species were in flower. *P. amabilis* was very good.
Zygopetalum cristatum, with variegated flower.
Has time permitted, I could have noticed other objects of interest in the above collection. *J. F. McElroy.*

Trichopilia suavis.—In reply to "T. C. H.'s" inquiry in your last number, I think it is not unusual for *Trichopilia suavis* to have four flowers on a spike. The small plant which I sent to the Royal Horticultural Society's meeting, on April 4, and which was noticed in the *Gardeners' Chronicle*, had six spikes and twenty-three flowers, and I have had another plant this year with the same number of flowers on seven spikes. *J. F. Hepburn, Sidcup Place, Kent.*

Does Ivy Make Walls Damp?—Speaking generally, I should say, No; but indirectly think it may, under certain circumstances, have a tendency, not to create but to encourage dampness in a building covered with it, even when well kept. When houses are built in wet, ill-drained situations the damp ascends upwards from the subsoil through the foundations, and when the damp is driven up into the walls to a considerable height; and the covering of Ivy

prevents the walls from drying so rapidly as they otherwise would have done—at least, such have been the conclusions I have drawn from several instances of that class, under my own observation. Of course, builders say there are ways and means of preventing damp ascending through the foundations; and no doubt there are, but they are often neglected or the work improperly done. *E. Hobday.*

Abnormal Inflorescence of *Dendrobium nobile*, &c.—Having noticed your remarks about the abnormal growths of *Dendrobiums* in a recent issue, and in reply to your inquiry if it is a common occurrence, I herewith send two pieces; and if these are similar to the ones you refer to, they frequently occur, and possibly where the plants tend to grow more than to flower they occur most frequently. What might be considered more singular is the flowering of the *Calanthe vestita* from the apex of the bulb instead of in the normal way, which is from the base. Several such instances *Calanthes* have come before me. *Obtuser.*

Roots in Interior of Turnip.—The enclosed are fragments of roots growing inside a weevil gall in a white Turnip. I have opened many similar galls for years without meeting with any growth of the kind. The gall was unusually large, about an inch over, otherwise just as these *Ceutorhynchus pleurostigma* galls usually appear, and inside it was almost full of roots. The two main points of growth were about at the two opposite ends of the hollow chamber, three-sixteenths of an inch beneath, outer end of the root, and the fall-grown weevil burr lying amongst them. *E. A. O.*

Hardy Hybrid Rhododendrons.—The meeting of the Manchester Botanical and Horticultural Society held on April 27 contained one feature of more than ordinary interest, and that was the sweet-scented hybrid *Rhododendrons* raised by Mr. Isaac Davies, Brook Lane Nursery, Ormskirk, and exhibited as part of a large and interesting group of plants by Samuel Barlow, Esq., J.P., Stakehill House, Chadderton, Manchester. The plants, though small, were laden with blossoms, large, finely formed, pure, and generally deliciously fragrant; they represent the patient, skillful work of years—the result, a new race, forming a most welcome contribution to the class of *Rhododendrons* in this country. The culture, good enough to exalt the reputation of the raiser for years to come, valuable for spring work and for making bright and cheerful the interior of greenhouse and conservatory. It is only a few days ago Mr. Davies raised an interesting hybrid *Rhododendron*, which he named *multiflorum*, bearing white flowers, and remarkably free of bloom as well as early to flower. This hybrid was crossed with *R. Edgeworthii*, and the results of the cross were seen in the fine new varieties recently exhibited at Manchester. To the newest variety, one named *foribundum*, the Manchester Council awarded a First-class Certificate of Merit. It is about equal in hardiness to *R. multiflorum*, flowers large, erect, open, pure white in colour, and with emarginated margins; habit compact, flowering freely on small plants, very early, as it blooms in the middle of April without forcing. Other fine varieties were *Countess of Derby*, having a habit of growth intermediate between the best variety of *R. multiflorum* and *R. Edgeworthii*; the flowers are large, pure white in colour, the perfume of a remarkable sweetness. Quite tiny plants were laden with the huge blossoms. This is a grand contrast with the *foribundum*. The seedlings of the same parentage, the flowers pure white, and fringed on the margins, and there is a band of pale rose purple on each side of the corolla. *Lady Skelmersdale* has pure white flowers, but more trumpet-shaped than the preceding, and the petals giving an appearance of fine form to the blossoms. It is a most attractive variety. Mrs. James Shawe is another white-flowered variety, also remarkably free. *Duchess of Sutherland* is very fine indeed, a robust growth, with large, somewhat-formed pure white flowers, beautifully fringed on the margins. It may be remarked that though the flowers of several of the foregoing are white, they are yet quite distinct in character, and differ considerably in form. *R. grahamii* hybrid is also a fine variety; a seedling from this species crossed with a hardy large-flowered variety, the habit intermediate between the two parents, the blossoms pale flesh-colour, and very free-blooming and attractive. This is supposed to be quite new in character. With *R. Gibsonii* hybrid, a seedling from *R. Gibsonii* crossed with *R. glaucum*, of a bushy habit and very free-blooming, the flowers bell-shaped, mottled on the upper segments of the corolla with light ground, and this is new during the winter in sheltered situations. The seedlings of *R. multiflorum* are no doubt hardier in character than is generally supposed. There are possibly many places in which they could be safely trusted out-of-doors all the winter. But apart from

their value as outdoor decorative plants, they are of such a nice bushy growth, so free blooming, the flowers so bold in appearance and handsome in form, so fragrant and so easily cultivated, as to constitute them an invaluable class of plants for greenhouse decoration, and especially for working out striking effects in conservatories. *R. D.*

Roses under Glass.—I am very much obliged to you and to "D." for his explanation of the Rose house at Gunnersbury. I see the house stands in the corner of the garden, and is not a small one, as I thought. My house is a lean-to, which is not the best for Rose growing. I have about 150 flowering plants, and so easily cultivated, as to constitute them a little over a year old, and I cut between fifty and sixty a-week off them. In cutting the flowers I always cut the shoots back to about two eyes, which break again very freely and flower. By so doing I can keep the plants always in nice trim. The ones that have flowered best with me are *Souvenir de la Malmaison*, one of the best; *Mrs. Bosanquet*, very free and pretty; *Adam, Souvenir d'un Ami*, *Goubault*, *Catherine Mermet*—the best of these four, which resemble each other; *Gloire de Dijon*, *Aracmelles*, *Bellefleur d'Anjou*, *Cheshant Hybrid*, *Devoniensis*, *Elise Sauvage*, *Henry Bennett*, small; *Madame Camille*, one of the very best; *Madame Denis*, *Marchionni*, *Niphetos*, *Perle de Lyon*, *Perle de Portugal*, *Rubens*, *Safano*, *A Fleurs Rouges*, nice in bud; *Souvenir de David*, *Souvenir de Paul Neron*, *Vicomtesse de Cazes*, very fine; *Lamarque*, *Madame Caroline Kuster*, *Rève d'Or*, *Triomphe de Rennes*, and *Victoire de Nemours*, very fine growers, but are not inclined to flower all the way up, I think they would do better as climbers. Among the H.P.'s which have done best are *Alfred Colomb*, *Alphonse Damazin*, *Bounty* of *Waltham*, *Boule de Neige*, *Dame Bernadette*, *Estacade* de *Snozal*, *Charles Lefevre*, *Charles Roulillard*, *Comtesse de Chablant*, *Comtesse d'Oxford*, *Duke of Edinburgh*, *Fisher Holmes*, *François Lacharme*, *General Jacquemont*, *Madame Victor Verdier*, *Sir Garnet Wolesey*, *Comtesse de Saxe*, *Perle de Malmaison*, and others, and *Duchess and Archduke Charles*, which are quite worthy of a place, though they are but Chinas. To fact, people thinking of growing Roses in pots should make a diligent search among the Chinas, and especially the *Perle de Malmaison*, which is a quantity of good Roses. The Roses in question I allude to are at *Carolina Park*, *Granton*, near *Edinburgh*, and can be seen at any time. *W. Paul, Edinburgh.*

Pumpkin Preserve.—The dull sunless weather, accompanied with cold cutting winds, has been anything but favourable for the fruit crops, and bright though the prospects appeared but a short time back, it is greatly to be feared we may again have a season of the kind, and the hard frosts which we are now so certainly shall of Peaches, Nectarines, and Apricots, the latter of which will be greatly missed, on account of the delicious preserve they make. Although by no means equal to this estimable fruit, an excellent one is made from the hardier and more numerous, we certainly shall of Peaches, Nectarines, and Apricots, the latter of which will be greatly missed, on account of the delicious preserve they make. Although by no means equal to this estimable fruit, an excellent one is made from the hardier and more numerous, and if it were possible to find anything to impart the Apricot flavour, it might readily pass muster for that purpose, so closely does the colour and consistency resemble the other, soiled with sugar, for the purpose of making. I do not report in this article the success of some of the larger Vegetable Marrows or Pumpkins is already used largely for the purpose of adulteration in making marmalades, but be this as it may, as the principal use intended was to raise a note to be despatched during the winter when other fruits are scarce, and I venture to predict that eventually they will be extensively grown to supply their place at that season. For the past three years Pumpkin preserve has been the principal sweet used in this country, and it we have formed a strong liking, so much so that we should greatly miss it, and would rather be without almost any other kind of jam usually made from common garden fruit. For using with boiled rice or cream, it is superior to any other fruit jam, and is delicious, as it is likewise for tarts, or indeed for any of the many uses to which preserves are put. When grown for this purpose it is essential that the Pumpkin be fully and perfectly mature, a condition they are not likely to be unless planted in a sheltered position, and left on the plants till the end of September or middle of October. The fruit of the *Mammoth Gourd*, which is by far the best, assumes a rich warm reddish yellow hue when perfectly ripe, and is very much improved as a solid fruit, if sown in Turnip, to the colour and texture of which it bears a close resemblance. Any one desirous of giving them a trial should at once obtain seed, and sow the same singly in pots of light rich soil, and then stand them in a hotbed frame, to assist

them to germinate. They should then be nursed on near the glass till the end of May or beginning of June, shifting them on meantime as they require it, so as to get them as strong as possible before planting them out under handlights on any waste bits of ground, or better still, on the rubbish heap, where their gross feeding roots can find plenty of decomposing vegetable matter to help them. Where there are such unsightly objects of this kind, or any other unlovely buildings to cover, it cannot be better or more profitably carried out than by planting one or two *Mammoth Gourds* to ramble over, for if well attended to, they will, in the warm month of June, be able to produce several hundredweight of most excellent jam, or to cook in tarts with Apples and to use for such-like culinary purposes in which way they may be made to eke out the supply and form a useful and agreeable article of diet, if set in the right way. Where the top of the plant is trimmed to look as though the roots have a rich moist medium to feed in, and there are many places where such large handsome looking leaves and noble fruit would be quite as ornamental as some of the sub-tropical plants now so extensively used in most gardens. Some I had last season had fruit as large as a man could fairly lift, the heaviest of which weighed 16 lb., and measured over 7 feet round, and when seen growing as these were elevated positions, and the plants were so effectually trained, they should be cut and stored in a shed or any cool airy place out of reach of frost, where, if kept dry, they may be preserved sound and good till February or March, provided they are not cut or damaged in any way, and if intended for use as the fruit for preserving, it should be divided into thin slices for convenience of being peeled, and after that is done and any soft spongy part in which the seed is found embedded cut away, the solid part should be sliced into thin pieces, and weighed, and if intended for jam, it should be weighed. If wanted to keep long, to every pound of fruit add three-quarters of a pound of lump sugar, and for flavouring divide either an Orange or a Lemon to every 10 lb. of Pumpkin, and boil briskly for an hour keeping well stirred, to prevent it sticking to the bottom of the pan and becoming burnt. When done, the Oranges or Lemons should be taken out, which may the more readily be done if put into small muslin bags before boiling. Essence of Ginger or any other flavouring may be used according to fancy. *S. W.*

Pippin Apples.—Those who are acquainted with Apples know that many of them are called Pippins, but yet many are ignorant of the origin of the popular name. However, it is not difficult to trace either the dots or the spots, or to the fact of the original trees being raised from pips or seed. The latter alternative is not, however, tenable, because all varieties of Apples have the same origin, yet some of them are not called Pippins—*Rumex*, *Ranunculus*, and *Nonparis*; and many, especially of the large kinds, have local names, while others are named after those who have raised them from pips or cobbles. We never hear of seedlings or ungrafted trees being called cobbles, an odd name indeed, and may be the name means also a stone or small pebble; and it has occurred to me that perhaps this may be the origin of the term "stone fruit," owing to the cobbles or stones in the heart. Pippin, however, as applied to Apples, is of ancient use, even as early as the time of King Henry VIII. Maschale "brought Pippin from over the sea . . . and planted them in Plumstead in Sussex" while Shakespeare says, "We will eat year's Pippin of your own grafting." This may be your Pippin, yet it is pretty conclusive, that Pippin is derived from the spots on Apples, and not from their being produced from ungrafted or seedling trees raised from pips. *J. Wighton, Cussy Park.*

Salpiglossis.—Although many annuals produce extremely showy flowers, the *Salpiglossis* is, in most of them, so short that they are not of much value for general decorative purposes. There are a few, however, that are almost indispensable for the embellishment of beds and borders, and that possess the double merit of being so easily cultivated, and of being the warmest in this category must be placed the different varieties of *Salpiglossis*, all of which are remarkable for the beauty of their many-coloured large Lily-like blooms. Most of these are richly veined and marked with various shades of red, yellow, orange, buff, or pale yellow grounds, and when seen in large masses the effect is most striking. Chilli has yielded us many floral treasures, not the least of which are the above, and as they are so easily raised, and are very sportive in their manner of flowering, they should be looked for by a little careful hybridising and selection. If planted in deep rich soil they branch freely and flower with the greatest profusion, but, like all annuals, they are susceptible of excessive drought, and do not bear over-watering. The best way to raise them is to prepare a bed by trenching it to a good depth, and as the operation proceeds to work in and mix well with the soil some thoroughly decomposed manure, keeping the same sufficiently low down as not to be nearer

the surface than 6 inches or so. After raking the surface fine (seed) may be sown thinly in rows at about 15 inches apart any time after the middle of April, or the plants may be raised under glass in the usual way, with other half-penny annuals, and planted out when the weather is favorable. Although I have not yet tried them for pots for early spring blooming under glass, I intend to do so; and if they are as accommodating in this way as Stocks, Schizanthus, and Rhodanthes, they would be most useful for greenhouses at that season, and impart quite a fresh feature in the decoration of such structures, as their flowers are quite of a different type and character to any others then in use. For this purpose it will be necessary to sow toward the end of August, and to winter the plants on shelves near the glass. 7. S.

Notices of Books.

Notes for Observations of Injurious Insects. Published by T. P. Newman, 32, Botolph Lane, E. C.

During the last ten years attention has in some degree been directed by the Government Collection of Economic Entomology at Bethnal Green and in other ways to the great annual loss throughout the country from attacks of insects on the common food crops, and where attempts have been made to counteract the injuries that have been done. But attention needs to be directed more generally to the subject and in many cases more knowledge is needed before remedies other than experimental can be applied.

With a view to this the pamphlet, which is published by those well qualified to undertake the subject, gives a list of about sixteen insects (chiefly selected as injurious to the crops, but occasionally as coincident with particularly warm seasons), accompanied by short descriptions of the insects, and their method of injury, and by clearly drawn figures, mostly taken from articles in the *Gardener's Chronicle*, so that the most untraced observer can rarely be lost either where to look for the subject or in uncertainty whether he has got the insect intended. A short introductory note gives details of the exact points as to number and dates of appearance, any peculiarities in soil, season, or surroundings, such as manure and drainage, which may be supposed to tell on the recurrence of what both to the country and to individual growers may too truly be known as "pests," and requests notes from those who are interested in the subject. For this purpose the pamphlet is accompanied by a columned sheet, for entry of the monthly observations, which are solicited, and all necessary reference is given as to where to apply for further information, and to forward the returns, which, if procurable, would be eminently useful.

It is impossible, without some co-operation of this kind, to meet the subject. Entomologists are not usually acquainted with the practical economic workings. Agriculturists have rarely the opportunity of knowing the life histories of the insects, and if this desirable cooperation could be had, it would be the digest of the monthly returns which it is intended to form into a report for presentation to the observers would contain a mass of practical information of great practical value.

It is much to be wished the matter may be taken up by those who have opportunities of observation. The pamphlet and sheets for monthly returns may be procured gratuitously on application to the publisher, Mr. Newman, 32, Botolph Lane, London, E. C.

—The second part of Mr. Elwes' superb monograph of the genus *Lilium* has appeared, with coloured plates of the following species:—*L. giganteum*, *L. philadelphicum*, *L. davuricum*, *L. giganteum*, *L. carolinicum*, *L. candidum*, *L. tenuifolium*, and *L. chalcidonicum*. Of the climate in which *L. giganteum* is raised, the author thus speaks from personal experience:—

"In 1870, during my journey in the almost unknown mountains of Sikkim to the frontiers of Tibet, I saw this noble plant growing abundantly in the Lachen Valley, at about 8000 to 9000 feet elevation. There it flourishes in a climate which may be best described by saying that for many weeks it was impossible to dry thoroughly our tents, clothes, L. bedding; the rainfall, though by no means equal to that of the Khasia hills, or even the lower valleys of Sikkim, is almost continuous from April to October; and though the mornings are often bright and sunny, a dry afternoon or night is rare. In this moist though not ungenial climate the vegetation is of the

richest and most varied description. Nearly all the most beautiful genera of the north temperate zone throughout the world are here represented by one or more species; and in addition to these, many plants belonging to the tropical Malayan flora are abundant. The gigantic Lily towers in all its glory above most of the other herbaceous plants, sending the air for yards around with its sweet perfume in the month of July, and lying buried under the snow from December to March, when it again begins to push forth leaves."

—Dr. J. C. Brown, whose efforts in promoting the cause of rational forestry and of economic botany have often been noted in these columns, has published in a pamphlet addressed to the Right Hon. Lord Provost of Edinburgh, the office-bearers of the Scottish Arboricultural Society, and "all others whom it may concern," *A Plea for the Creation of a School of Forestry in Connection with the Arboretum at Edinburgh*, noticed in our descriptive Supplement of the Edinburgh Botanic Garden. The plan of study recommended by Dr. Brown ranges over three years, and comprises the study of the natural history of trees, the management of forests according to their varying circumstances and varying requirements, engineering, mechanical philosophy, mathematics, drawing, chemistry, meteorology, geology, conveyancing, minor surgery, &c. In the autumn months tours of observation are recommended in the forests of Britain, France, Germany, &c. Details are given of the existing forest schools in the various countries of Europe, and of the requirements for the Forestry Department of India. Every one at all conversant with the subject is alive to the desirability of establishing such a school, but there is necessarily considerable difference of opinion as to the best method of establishing it. It appears to us that a national school of gardening is required quite as much as one of forestry, and the question arises whether the two could not be combined in a sort of agricultural university, wherein the general principles of the sciences and arts common to all these pursuits could be taught to all the students, while at a subsequent period of their pupillage they might pass into special departments, according to their requirements. Edinburgh would be an excellent site for such a university. In any case we wish Dr. Brown's advocacy every success.

—The first number of the *Journal of Forestry*, to which we lately alluded, has been published by Messrs. Rider, of Bartholomew Close. It is in large 8vo size, well printed, and as to matter gives excellent promise of success. According to the programme, forestry is to be treated under the following heads:—Description, History, Science, Law, Hygiene, Economy, Practice, and, lastly, in its picturesque aspects. There is plenty of scope here for well-considered judgment. We are glad to see that the new-comer commences by strenuously advocating—as we have done from time to time—the establishment of a proper school of forestry in Great Britain, in order that we may keep pace with other countries, and be enabled to supply a thoroughly well trained body of officers for service in the higher departments of forests at home, and more especially in India and the colonies. Among other contributions to this number, Mr. R. Hutchison appropriately deals with the subject of what should be done in woods during the summer months, while the Editor contributes a very useful statistical paper on the prices realised for forest produce in different districts of Great Britain during the last winter. No doubt this will be extended in the future, and will constitute a most valuable feature of the publication. Forest work for the month is a good summary of woodcraft for the month, but requires modification in details, so as to adapt it to varying localities. Our experience of first numbers is that, as a rule, the publisher is to those that come after, and if that rule be followed in the present case it may be safely said that the readers of the *Journal of Forestry* will have ample cause for satisfaction that such a journal has been established.

PUBLICATIONS RECEIVED.—The Schools of Forestry in Europe, by John Croumbie Brown, LL.D., A Plea for the Creation of a School of Forestry in connection with the Arboretum at Edinburgh.—Address of the Hon. Marshall P. Wilder, at the Annual Meeting of the New England Historic-Geneticological Society.—Gartenflora.—Bullettino Ampelografico.—Bullettino della R. Società Toscana di Orticultura.—Prospecto delle Felci raccolte dal Signor O. Beccari nella Polinitia, &c., fasciole 1, 2.—Monograph of

the Genus *Lilium*, by H. J. Elwes, part 2.—Mrs. Somerville's Physical Geography, seventh edition (Murray).—Mrs. Somerville's Connection of the Physical Sciences, tenth edition (Murray).—Animal Products, by P. L. Simon-Denis (Gagnan & Hild).—Familiar Wild Flowers, part 2, by F. E. Hulme (Cassell).—The Gardener.—The Villa Garden.—Le Moniteur Horticole Belge.—Hamburger Garten Zeitung.—Revue Horticole.—Descriptive Notes on Papuan Plants, by H. B. G. S. G. von Mueller.—Annales Agronomiques.—The Natural History Journal.—Botanische Zeitung.—Dictionnaire de Botanique Baillon (Hachette).—The Schools of Forestry in Europe, by J. C. Brown, LL.D. (Olivier & Boyd).—Annales des Principales Publications de Physiologie Végétale en 1876, par Marc Miceli.—Journal de la Société Centrale d'Horticulture de France.—A Lecture on Personal Experiences of English Departmental Government, by Richard Herring (Longmans).—Journal of Botany.—Monatsschrift des Vereines zur Beförderung des Gartenbaues in den K. Preuss. Staaten, &c.—Journal of Forestry.—Notes for Observations on Injurious Insects (T. P. Newman, 32, Botolph Lane, E. C.).—Bulletin d'Arboriculture.—Florist and Pomologist.—Revue de l'Horticulture Belge.—Transactions of the Massachusetts Horticultural Society.—Les Mœurs du Phylloxera de la Vigne, par M. J. P. Planard.—Revue des Progrès de la Société de Viticulture et d'Horticulture de Taras.

The Villa Garden.

ANNUALS IN THE FLOWER GARDEN.—There are hundreds of persons who can be counted among the lovers of flowers, as fired with some ambition to cultivate a few plants, who every spring and summer fall back upon some of the many annuals found in the seed lists, and make a very pretty display indeed. It is surprising when any one can do with a few annuals when they make a proper selection, prepare the ground for their reception, and tend them while they are growing and coming into bloom.

That there has been a marked decline in the cultivation of annuals cannot be doubted. They are not now nearly so much grown as they used to be, and that, not because they are thought to be less useful and effective than formerly, but because gardening fashions change; the things that are grown in one generation are neglected in another; and if the most casual observer cannot fail to notice that in regard to gardening, as in many other pursuits and observances, people are very much swayed by fashion, and he is thought to be in danger of falling behind the age who does not participate somewhat in what the society of the age deems to be the correct thing.

That it has come about that many a small garden that used to be made bright and pleasant with a few annual flowers have become tenanted by other occupants, and *Lobelia*, *Alternanthera*, *Coleus*, *Pyrethrum*, *Mesembryanthemum*, &c., have taken the place of the things that, up to the time of the advent of the new fashion, were deemed suitable and satisfactory. When the soil and situation are suitable, no one will be disposed to quarrel with the employment of some of the newer foliage and flowering plants; but where it is not so—as where a clayey earth abounds, or the garden is on the north side of the house—where it is cold and sunless, and where *Coleus* and *Alternanthera*, *Lobelia* and *Mesembryanthemum* drag out but a sorry existence, the results are by no means satisfactory, even if during the day the sun occasionally shines on the spot.

A simple and effectual mode of making a little garden look gay during the summer season is by the employment of a few annuals. But the first thing to do is to make a proper selection. There are several pretty dwarf-growing varieties that are indispensable, such as Sweet Alyssum, white; *Calandrinia speciosa*, rose; *Campanula Loric*, white, and also the white variety; the crimson, white, and blue *Campanula*; *Clarkia integrifolia*, Tom. the rose; *Convolvulus*, minor, blue, and the white also; the dwarf *Burkwood's Indian Pink*; the white and orange *Eryschtolida*; *Eucharidium grandiflorum*, rosy crimson; *Gilia tricolor*; the double *Jacobines*, blush-purple and white; *Lupinus nanus*; *Mignonette*; the blue, white, and spotted *Nemophila*; dwarf *French Poppy*; *Silene pendula compacta*, rose; the red and white *Virginia Stock*; and the red *Saponaria calabrica*. From these a selection might be made suitable for small or large gardens. The foregoing, however, are all of dwarf growth, and are best adapted for small gardens, but there are many fine showy

of taller growth that would have to be used in a large garden.

Supposing a garden has a long border on one side which is open to the sun, say 4 feet or so in width—here is scope for making a pretty display with annuals. Along the back might be planted Sweet Peas, *Convolvulus major*, *Tropeolum aduncum* (Canary-flower), and tall Lupines. A few bunches of pea-sticks should be employed for the climbing annuals to attach themselves to. If these could alternate with Dahlias, Chrysanthemums, Foxgloves, Delphiniums, and the taller growing Michaelmas Daisies, the display would be varied and continuous. Then in front of these might come such good things as *Malva grandiflora*, crimson, and the new rose-coloured variety, which is very pretty; the double white and double yellow Chrysanthemums, the admirable and useful hardy annuals—*Ceropsis Drummondii*, yellow; *C. grandiflora*, yellow and dark; and *C. nigra speciosa*, dark crimson; *Erysimum Perofskianum*, orange; *Godezia*, The Bride, white and carmine; and *G. Whiteley*, white and crimson; double *Larkspur*, *Oxyria chrysanthemoides*, *Linum grandiflorum rubrum*, *Chrysanthemum pinatum*, and *Whitavia glonoides*. Then a few tender varieties already named would come into the front, with such other plants as would be likely to do well among the annuals. What an interesting garden this would make, and it would also be very instructive.

A very small quantity of seeds of some of these annuals suffices for several sowings, and by means of a little expenditure of attention and labour successful sowings might be made during the summer, thus continuing and prolonging the display. Directly any one batch begins to decay, out with it, and make another sowing; growth soon takes place, and annuals are speedily blooming.

And this leads up to the matter of preparing the soil for sowing. Annuals are very often disappointing, simply because they are sown under conditions deadly hostile to their well-being. A sower goes forth to sow on some hard piece of ground, caked by drying winds, and burnt by the sun. He simply contents himself with stirring the surface soil over so slightly, soos the seeds, covering it very thinly with a coating of earth, and calls it sowing. What is the result? The seeds lie till a shower of rain falls, then they spring up weakly, grow imperfectly, flower sparsely and disappointingly, and the conclusion reached is—I shall not attempt to grow annuals again. How can annuals be expected to behave themselves well under such circumstances? Simple as they are, they are yet messengers charged with the tenderest messages of love and beauty from the bountiful hand of Nature, and they should be properly received and tended by those to whom they are sent.

The soil for annuals should be as carefully prepared for them as for any other garden crop. It should be deeply dug, crumbled to pieces, and then have mingled with it some rich soil to make it kindly in nature, invigorating and holding; and then the seeds carefully and thinly sown, a little of the fine rich soil laid on the top, and the whole gently pressed down, and sprinkled with water if the weather be dry. The seeds cannot fail to grow if there is any power of vitality in them, and the plants are strong and bushy. And while they are making growth, if the weather continue dry, let it not be thought too much trouble to sprinkle the plants occasionally with water, and protect them as far as possible from the ravages of slugs and such-like. All this nurture is a kind of promising investment; in due time it will be repaid with a welcome harvest of flowers.

Then there is the matter of thinning out the plants. This duty is sadly neglected. Very often a large number of plants in a very small space are left to struggle for existence as best they can, and with a disheartening result; but if they were thinned out to a few of the strongest, there would yet remain enough. A few vigorous plants in preference to a number of attenuated ones; the stronger will bloom more abundantly, with a superior excellence, and a surer gratification to the cultivator.

Obituary.

We deeply regret to announce the sudden death, on April 27, of MR. ALEXANDER CRAMB, gardener to the Earl of Ducie, Tortworth Court, Gloucestershire. Mr. Cramb, whose portrait and autobiography we had the pleasure to publish in our issue for June 5, 1875, had been gardener to the Earl of Ducie for many years, and was held in high esteem by his noble

employer, as well as by a large circle of horticultural acquaintances. It had been arranged, we believe, that he was to retire from the management of the gardens at Tortworth at midsummer next; and his friends were looking forward to his enjoyment of a well-earned pension, when he suddenly died of heart disease in his sixty-eighth year.

On May 1, at Wimbledon, JOHN RUSSELL REEVES, F.R.S., F.L.S., of Woodhays, Wimbledon, and Hutton, Sussex, formerly in the H.E.I.C.S. in China, aged 73, Mr. Reeves when in China was the means of introducing several fine plants to this country, some of which, such as *Reevia thyrsoidea* and *Spiraea Reevii*, bear testimony by their names to the good service he rendered to botany and horticulture. Mr. Reeves was, a few years since, a member of the Council of the Royal Horticultural Society, and was always a zealous patron and promoter of horticulture, while his amiable manners and consistent principles proved him the respect of all with whom he came in contact.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, MAY 9, 1877.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.		Hygrometric indications of Glaisher's Barometer, 1876 Edition.	WIND.	RAINFALL.
	Mean Reading.	State of the Barometer from 10 to 12 P.M.	Range.	Direction.			
May 3	In. 30.39	In. 30.12	56.0	51.0	74	N. N. E.	0.00
4	30.32	30.12	56.0	51.0	74	N. N. E.	0.00
5	30.37	30.12	56.0	51.0	74	N. N. E.	0.00
6	30.37	30.12	56.0	51.0	74	N. N. E.	0.00
7	30.37	30.12	56.0	51.0	74	N. N. E.	0.00
8	30.37	30.12	56.0	51.0	74	N. N. E.	0.00
9	30.34	30.12	56.0	51.0	74	N. N. E.	0.00
Mean	30.64	30.11	59.33	54.44	73.7	E. N. E.	0.00

May 3.—Fine and bright till 11 A.M., overcast and dull evening, then cloudy. Few drops of rain in afternoon. Cold.
 4.—A fine day, very cloudy at times. Raw cold.
 5.—A fine bright day, partly cloudy. Cold.
 6.—A very fine clear day. Cold wind.
 7.—A very pleasant day, warm, but cool.
 8.—A brilliantly fine day. Warm.
 9.—A fine bright day, warmer. Overcast at night. Few drops of rain about 8 P.M.

LONDON: *Barometer*.—During the week ending Saturday, May 5, in the vicinity of London the reading of the barometer at the level of the sea increased from 29.53 inches at the beginning of the week to 30.49 inches by the evening of the 5th, decreased to 29.55 inches by the afternoon of the 5th, and was 29.56 inches at the end of the week. The mean reading for the week at sea level was 30.10 inches, being 0.23 inch lower than that of the preceding week, and 0.14 inch above the average.

Temperatures.—The highest temperatures of the air observed by day varied from 54° on the 5th to 48° on May 1, the mean value for the week being 51½°. The lowest temperatures of the air observed by night ranged from 28½° on May 4 to 40½° on April 30; the mean value for the week was 34½°. The mean daily range of temperature in the week was 17°, the greatest range of the day being 25½° on May 5, and the least 11°, on April 29.

The mean daily temperatures of the air were as follows:—April 29, 44.6°; 30th, 44°; May 1, 40°; 2d, 42°; 3d, 39°; 4th, 37½°; 5th, 39½°; and the departures in degree of their respective averages were:—4.5°, 5.4°, 9.8°, 8.1°, 11.4°, 13.7°, and 11.5°. The mean temperature of the air for the week was 49.2°, being 9.2° below the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 100° on April 30, 103° on May 4, and 125° on the 5th; on April 29 the reading was not rise above 59°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 27° on May 3 and 4, and 23° on the 5th; the mean of the seven low readings was 31½°.

Wind.—The direction of the wind was N.E., and

its strength gentle. The weather during the week was generally dull, dry, and cloudy for the season, the sky was mostly cloudy.

Rain fell on Sunday, April 29; the amount measured was 0.22 inch.

ENGLAND: *Temperature*.—The highest temperature of the air was 64° at Portsmouth, at Bradford 50½° was the highest temperature in the week; the mean value from all stations was 54°. The lowest temperatures of the air were 21° at Cambridge, and 25° at Eccles; at Plymouth 35½° was the lowest temperature; the mean from all stations was 29½°. The range of temperature was the least at Liverpool, 18½°, and the greatest at Cambridge, 33½°; the mean range of temperature from all stations was 24½°.

The mean of the seven high day temperatures was the highest at Portsmouth, 56½°, and the lowest at Sheffield, 46½°; the general mean from all stations was 50½°. The mean of the seven low night temperatures was the lowest at Eccles, 20½°, and the highest at Plymouth, 38½°; the mean value from all stations was 35°. The mean daily range of temperatures was the greatest at Eccles, 20½°, and the least at Norwich, 11°; the mean daily range of temperature from all stations was 15½°.

The mean temperature of the air for the week from all stations was 41°, being 3½° lower than the value for the corresponding week in 1876. The highest occurred at Portsmouth, 43½°, and the lowest at Wolverhampton, 30½°. The mean range was 38½°.

Rain.—Scarcely any rain fell during the week. At Blackheath a quarter of an inch fell, but at most other places little or no rain was measured. The average fall from all stations was three-hundredths of an inch only.

The weather during the week was dull, cold, and dry, and the sky cloudy. Snow fell at Bradford, Hull, and Sunderland on May 3, 4, and 5.

SCOTLAND: *Temperature*.—The highest temperatures of the air varied from 55½° at Edinburgh to 50½° at Aberdeen; the mean value from all stations was 54°. The lowest temperatures of the air ranged from 27° Perth to 33° at Leith; the general mean from all stations was 39½°. The mean range of temperature from all stations was 23½°.

The mean temperature of the air for the week from all stations was 40½°, being 5½° lower than the value for the corresponding week in 1876. The highest was 42½° at Greenock, and the lowest 39½° at Aberdeen.

Rain.—The amounts of rain measured at Edinburgh, Aberdeen, and Leith were 0.04 inch, 0.03 inch, and 0.06 inch respectively; at Dundee, Greenock, Paisley, and Perth no rain fell; the average fall from all stations was 0.03 inch.

DUBLIN.—The highest temperature of the air was 56½, the lowest 28½, the range 28½, the mean 44½, and the fall of rain 0.08 inch.

JAMES GLAISHER.

Law Notes.

A SALESMAN'S DISPUTE.—*Thomas v. Carroy*.—This was an action brought by one salesman in Covent Garden against another salesman to recover the sum of £6, under the following circumstances. The plaintiff—or whom Mr. R. Bartlett, solicitor, of Bedford Street, appeared—stated that on the 12th of January last he sold the defendant ten crates of Broccoli, at 9s. 6d. a crate, and that they were delivered according to order, but only two crates were accepted and the rest returned to the plaintiff, who refused to receive them, and on application being made for payment the defendant refused to pay; hence the present action. In cross-examination by Mr. Lawrence, the defendant's solicitor, admitted having received £47, £52, £28, and other sums subsequently, and not allowing to the present claim.

The solicitor for the defence argued that his client was in no way liable, as the goods were not what he bought. Those he saw were quite fresh, but those received were not fit for human food, being completely rotten. E. Carroy, the defendant, said the plaintiff introduced some Broccoli to him which were very good. Two crates were sent at once, but when the night arrived, he could not sell them. The price agreed upon was 9s. 6d. per crate, and the next day he sold two crates to a costermonger for 2s. 9d. each, as they even were not fit for sale in the market at 12s. 6d., which was the market price on the day.

In cross-examination by Mr. Bartlett, the defendant said it was not an unusual thing to buy goods in the market upon the representation of a fellow-salesman, but in the present instance he considered he had been imposed upon, and thought he was justified in

resisting payment. He never had an account, nor was 2s. 6d. each for the two crates he had, ever charged him. He ordered the goods early in the morning, and they were delivered in the evening during his absence; he had been present he would not have taken them in. H. Stevens, the defendant's carman, said that in the absence of his employer, and seeing the condition of the goods, he refused to accept them, and put them close to the plaintiff's stall in the market.

Thomas Thornycroft was examined, and said he had been for twenty years a salesman in the market; he examined eight of the crates of Broccoli, which he said were only fit for cows, and he should have refused to take them in. This being the case for the defendant—

The learned Judge considered that the defendant had bought the goods in question (as was the custom of the market) upon the faith of the plaintiff's representation, and as the defendant was not present at their delivery, and as they must have become deteriorated in value on the following day, gave judgment in favour of the plaintiff for the amount claimed, with costs.

Answers to Correspondents.

AMATEUR CLASSES AT EXHIBITIONS. A. B. C. asks if any one who grows fruit on a large scale should be allowed for medals for exhibition. We have seen at a local exhibition in the gardeners' or amateurs' classes. He states that at nearly all the exhibitions in his vicinity the classes are under the headings: "Amateurs," "Amateurs and Gardeners," and "Amateurs who do not keep a garden." [We have no hesitation in replying that such a person as is above described could not be admitted.]

BLACK FLY: A Very Old Subscriber. 4 oz. of quassa chips in a gallon of soft water ten minutes, and dissolve in it as much of soft soap. Stir it up, and strain the water twice or three times. The next day wash them with clean water.

BOOKS: Amateur, Practical Hints on Planting Ornamental Trees, by Standish and Noble; Bradbury, Agnew & Co. CEDAR OF LEBANON: W. Irvine. The production of perfect seeds by the Cedar of Lebanon is not at all uncommon.

CINERARIAS: G. Rogers. The flowers received are wanting in form and substance, as well as in depth of colour. They are a slight improvement on the ordinary run of Cinerarias, but not so well compared with Mr. James' strain, which exhibits the highest excellence yet obtained in this flower.

CUCUMBER: H. W. C. The above seed we have sent you specimen to Mr. Smith for examination.

DEFECTIVE PINE-APPLE: Enquirer. If a large number of plants thrown up fruit together in a defective state, the cause of it is undoubtedly what we have ascribed to the lack of application of extreme temperatures, or to the heat of heat about the plants or at the roots, or at both, at the time the plants are on the point of starting into fruit. At this critical period also the repetition of such plants, particularly during the winter months, will likewise sometimes lead to it, unless very great care is exercised in keeping the heat about them uniform. Young vigorous plants are more susceptible of injury in this way than others. G. T. M.

DISCLAIMER.—Messrs. Edwards & Cowell, seed merchants, 58, Haverstock Hill, and Mr. R. J. Wood, the Bedford and Haverstock Nurseries, Haverstock Hill, write to state that they have no connection whatever with the enterprising seedsmen whose questionable doings were commented upon at p. 579 of our last issue.

DOUBLE VIOLETS.—Your correspondent should furnish you with the name of the variety of the double variety of a patent being taken out for the production of double Violets far surpassing those of Parma, Nice, and the Mediterranean, and attaining the size of a water lily, but I am afraid it is not so important as heard of the other day, so by parity of reasoning we may expect to see Violets as big as Caniflowers some day in our columns.

ELWES' MONOGRAPH OF LILIES: A. B. This splendid work is published by subscription. You should apply to H. J. Elwes, Esq., 6, Tenterden Street, Hanover Square, London, W.

EULALIA JAPONICA: We have received from Messrs. John Laing & Co., Forest Hill, London, some finely figured in our columns.

EVENING PRIMROSE: J. R. (Eranthis biennis. GREEN TULIP: H. W. C. We are sorry we cannot give you with certainty why your Tulips have not behaved themselves, probably because growth has been in some way more favoured than development; but we cannot quite agree with you that they are not so healthy, but we are glad to hear of your interest for the philosophers, as showing how flowers are made.

FRUIT: J. B. The house may run up to 82° in the middle with sun-heat, but should stand at about 70° at night, with a little air on.

FLORAL CLOCK.—Professor Balfour, in his (125) Book of Flowers, gives the following list of plants which are attracted to the attention of Linnaeus, and he conjectures that he calls a floral clock, in which the hours of the

day were indicated by the opening of certain flowers, and which were hence called "horological." The following is a specimen of such an arrangement of flowers, in which the hours indicate the periods of waking from sleep, it is given by De Candolle* from observations made at Paris:—

Table with 2 columns: Flower name and Hours of Waking. Includes Ipomoea purpurea, Ipomoea Nil (Flor de Noite), Tropaeolum, Papaver nudicaule, Nicotiana glauca, Hypochaeris maculata, Species of Senecio and Hieracium, Solanum, Camellia, Mesembryanthemum barlotium, Anagallis aeneas, Calendula arvensis, Arenaria rubra, Geranium, Scilla pomeridiana, Silene noctiflora, Eranthis biennis, Lychinis vespertina, and others.

Names of Plants: V. T. The fruit of Medicago Euphratica (fig. 97), a native of the Levant. The plant has been introduced in the popular mind by the Passion of Our Lord. On the leaves may be seen the signs of the wounds, while the curved and spiny thorn symbolises the crown of thorns.—H. F. A. Enquirer. We wish to identify the plant by the single leaf.—J. Clark. The seedling Fern appears to be Cyrtomium falcatum.—G. H. F. 1 and 3 insufficient; 2, Polystichum capense; 4, Selaginella cuspidata; 5, a fern with a pinnatifid saccus; the Alexandrian aroidium.—T. W. Ruscus racemosus; the Alexandrian Laurel. We could not identify the Amyraldis.—S. T. Saxifraga triactyloides; the three fingered Saxifrage; 2, next week; 3, Sedum Sieboldi variegatum.—T. H. The plants next week. The weevil

FIG. 97.—FRUIT OF MEDICAGO EUPHRATICA.

in the Bean is Bruchus rufimanus.—Saxifraga. Erophila vera.—W. D. 1, Allium substriatum apparently; 2, Polygala myrtilloides.—J. M. Acaia armata var.—J. F. A. 1, Frutillaria dasyphylla; 2, F. green. —S. T. 1, An Epiphylum, which we cannot name from flower alone; 2, Mesembryanthemum spectabile.—J. V. V. Eria ornatum and Cyrtandium pendulum. —E. R. 1, Fuchsia splendens, probably; but why not send good specimen? 2, Apocynon ditachyoides.—B. G. H. Rhamnus alaternus.—J. B. Andrews. Bromus maximus.

NITRATE OF SODA: Enquirer. Nitrate of soda 80 to 100 lb. per acre sown in spring. The object of the Chiswick trials was only indirectly practical, the experiments were intended to test the effect of various manures on different plants grown separately, and not in association with others as in ordinary pasture land. Bearing this in mind, and remembering the caution given, the Chiswick trials, especially the annual series, may be relied on.

PHORMIUM COLORENSIS VAR.: James Clelland. We have not seen this variety in flower, but have no doubt it is very different in character to the normal type, P. tenax, which is green and white, and somewhat inconspicuous. Neither can we say what time will intervene between the spike and flowering and the flowers opening. We have no doubt that it may be raised from seed, but most likely the majority of the seedlings will be green.

PLANTS FOR EXHIBITION: A. Adams. Six good and fine plants for exhibition.—Black Douglas, Marchal McMahon, Reine Victoria, Chieftain, Mrs. Harrison Weir, Rev. C. P. Peach. Six silver-edged Pelargoniums.—Albion Cliffs, Little Top, Miss Kingsbury, Flower Queen, May Queen, Princess Alexandra, Six Zonal Pelargoniums.—Corsair, Ivanhoe, Lady Sheffield, Wellington, Jealousy, White Clipper. Four choice plants from Edmonds, Model, Lord Charles Symmetry. Four light Fuchsias.—Arabella Impey, Margarina, Lucre, Venus de Medici.

SCENTED GRASS HILL: G. E. B. The grass you allude to is Polypogon fragrans. Hierosepe borealis; see Eng. Bot. Suppl. t. 204; is also called Hierosepe fragrans and H. odoratus. SINGLE-HANDED GARDENERS: C. Dyke. A single-handed gardener is one who has no regular assistance, or has no occasional assistant only.

TEA PLANTATION: M. D. Write to Mr. Smith, Curator of the Royal Botanic Gardens, Kew.

* De Candolle, Physiologie Végétale, iv. 484. See also Eng. Bot. Suppl. t. 204, p. 275, and Végét. Illustration, Phlox. Oct. p. 271.

UNFRUITFUL VINES: John Nicoll. The over-heavy crop of that year may be the cause of this year's unfruitfulness. Vines will not stand over-cropping. VINES: L. J. It is impossible for us to tell with any certainty what may be the cause of your Vines dying. We think you should think, first, in a bad condition. Examine them, and, if necessary, apply fresh soil. The paraffin oil with which you have dressed the stems will kill the young shoots. In this instance.—W. K. Wigram. Your Vines are not suffering from any disease; the affection is owing to excessive chills—i.e., very close, warm, atmosphere at one time succeeded by extreme cold and damp.

VINERY: Frank Carpenter, Christchurch. It gives us much pleasure to reply to your queries. We have no doubt that if the root of your vine were at a lower angle than the one you suggest, it would be subject to rotting; the best form of house for your part of the world would be a flat span-roof with the ead facing the wind and sun. The fruit of your neighbours' Vines was not produced by the sun burning the leaves, but rather through their being kept too close and damp and dark afterwards.

* Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. Letters relating to Advertisements, or to the supply of Paper should be addressed to the Publisher, and not to the Editors.

CATALOGUES RECEIVED.—Messrs. Dick Radclyffe & Co., 120, High Holborn, London, W.C., Catalogue of Vegetable and Flower Seeds.—J. Linden (Ghent, Belgium), Illustrated Catalogue of New Plants, &c.—Messrs. Ireland & Thompson (Craiglough Nursery, Comely Bank, Edinburgh), Catalogue of Stove and Greenhouse Plants, Ferns, Palms, Orchids, and List of Bedding Plants.—Messrs. Nunn, Neuner, & Co. (Louisville, Kentucky, U.S.A.), Illustrated descriptive Catalogue.—Messrs. Carter & Co. (High Holborn, London, W.C.), Catalogue of New and Choice Plants.—Messrs. W. & A. G. Nicholson (London, W.C.), Illustrated Catalogue of Horticultural and General Nurseries.

COMMUNICATIONS RECEIVED.—J. U. (many thanks).—G. D. V.—J. W. L. Hastley.—C. L. S.—T. D. M.—Sir W. S. I.—W. H. D.—J. R.—H. W. C.—Burley.—C. E. W. S.—P. S.

Markets.

COVENT GARDEN, May 10.

A good supply, with trade somewhat slack, has caused a decline in most kinds of hothouse fruits, the hat few sunny days having had a marked effect upon the quantity arriving in the market. As for common outdoor vegetables have advanced considerably, though Asparagus, owing to the large quantities arriving from abroad, is making less than its value. James Webber, Wholesale Apple Market.

VEGETABLES.

Table with 2 columns: Vegetable name and Price. Includes Artichokes, Asparagus, Beans, Beet, Cabbages, Carrots, Cauliflowers, Celery, Cucumbers, Endive, Garlic, Herbs, Potatoes, Radishes, Spinach, and Turnips.

FRUIT.

Table with 2 columns: Fruit name and Price. Includes Apples, Colts, Grapes, Lemons, and Oranges.

CUT FLOWERS.

Table with 2 columns: Flower name and Price. Includes Anemones, Bellis, Bouvardias, Camellias, Carnations, Chrysanthemums, Cyclamen, Daffodils, Eranthis, Eucharis, Fuchsias, Geraniums, Helianthus, and Tulips.

PLANTS IN POTS.

Table listing various plants in pots such as Azalea, Begonia, Bouvardia, Calceola, etc., with prices per dozen.

SEEDS.

LONDON: May 9.—As is usual at this period very little business is just now passing in agricultural seeds. The sowing season is, of course, drawing to a close, and as yet there has sprung up scarcely any speculative buying for holding-over purposes.

CORN.

At Mark Lane on Monday, rates for Wheat were quoted as on Monday's slight, but trade was very slow, and offers of less money were not altogether rejected.

CATTLE.

At the Metropolitan Market on Monday buyers of beasts were very indifferent as to making purchases, seeing that all sold here must be slaughtered within the market area. Prices were consequently lower.

HAY.

The Whitechapel report of Tuesday states that there was a good trade for fodder, and the market is firm. Prime Clover, 100s. to 120s.; inferior, 85s. to 95s.;

POTATOS.

The Borough and Spitalfields reports of Tuesday state that good Potatoes, of which there are moderate supplies, continue in moderate request at previous quotations.

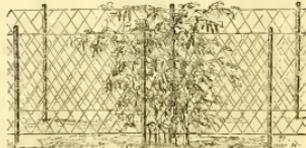
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R. HOLLIDAY, Iron and Wire Works, 2A, Portobello Terrace, Notting Hill Gate, London, W.

GALVANISED WIRE PEA TRELLISES.

Used season after season, and neat-looking as useful.



6 feet wide and 3 feet high 3s. each.
6 feet wide and 4 feet high 4s. each.
6 feet wide and 5 feet high 5s. each.

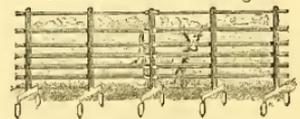
J. B. BROWN & CO., 99, CANNON STREET, LONDON, E.C.

Established over a Quarter of a Century.



Is in use over many thousand miles, and has been awarded the Medals and highest Commendation of all the leading Agricultural Societies.

Continuous Bar Iron Fencing.



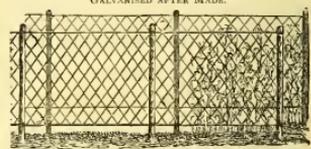
With bars secured by F. M. & Co.'s Patent Self-locking Joints, which effectually prevent the uprights being pushed aside, and are independent of loose pins, wedges, or staples.
IRON ENTRANCE and FIELD GATES, IN WROUGHT AND CAST IRON.

E. T. ARCHER'S "FRIGI DOMO."

Patronised by Her Majesty the Queen, for Windsor Castle and Frogmore Gardens, the late Sir J. Paston, and the late Professor Lindley, &c.
MADE OF PREPARED HAIR AND WOOL.
A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. A good covering for Pits and Forcing Frames.

THOMAS'S IMPROVED PEA TRELLISES.

FOR TRAINING PEAS, INSTEAD OF STICKS. GALVANISED AFTER MADE.



Prices, in Panels of the undermentioned sizes only, without stakes:—
6 feet wide, 3 feet high 2s. 6d. each panel.
6 feet wide, 4 feet high 3s. 6d.
6 feet wide, 5 feet high 4s. 6d.

Thomas's Pea and Seed Grapes.

NEW PATTERN, GALVANISED. Five per cent. discount allowed for prompt cash on Orders amounting to 20s. and upwards.

J. J. THOMAS & CO., PADDINGTON WIREWORKS, 281 and 365, EDGWARE ROAD, LONDON, W.

Gather Honey from Your Flowers.

NEIGHBOUR'S Celebrated BEEHIVES. PHILADELPHIA EXHIBITION, 1876. PARIS EXHIBITION, 1875.



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

SILVER MEDAL AWARDED AT Birmingham Meeting, Royal Agricultural Society, 1876.

HIGHEST HONOR AT THE Centennial Exhibition, Philadelphia.

Specialty adapted for Pumping in Gentlemen's Homes and Grounds. No Labor Required.
HAYWARD TYLER & Co., 84, WHITECHURCH STREET, LONDON.



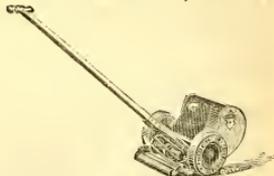
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New Patent "Roller" Lawn Mower.



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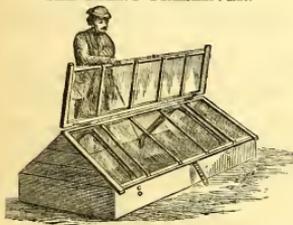
Upwards of 37,000 of these celebrated Machines have sold during the past few years. Patrons by Her Most Gracious Majesty the Queen; His Royal Highness the Prince of Wales; His Imperial Majesty the Emperor of Germany; His Imperial Majesty the Emperor of Austria The Imperial Russian Government (for the Agricultural Museum at St. Petersburg); and numbers of the Nobility and Gentry of Great Britain.

Awarded Medal for Merit, Vienna, 1873 (the only Medal given for Lawn Mowers), Large Silver Medal (the First Prize) at the Meeting of the Royal Horticultural Society, Birmingham, 1872, and in addition, every First Prize wherever these Machines have been brought into competition to actual trial with any other machine. FOLLOWS AND BATE have obtained from enumerating in detail the various good points "claimed" for other Machines, and content themselves with saying that their Lawn Mowers possess them all, and more also; they therefore solicit the favour of an application for one of their CATALOGUES, with Testimonials, before purchasing.

To be had from all respectable Ironmongers and Stationers in the United Kingdom, or from the Patentees and Manufacturers, FOLLOWS & BATE, Manchester. F. & B. are the sole makers of the well-known Patent "CLIMAX" LAWN MOWER, with Back Delivery, from 25s. each; NEW PATENT LAWN-EDGE CUTTER, which entirely supersedes the Shears; PATENT GARDEN FLOUGH, &c. Machines of any make Repaired or allowed for in Exchange.

BOULTON & PAUL, NORWICH, HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MAKERS.

No. 60.—PATENT PORTABLE UNIVERSAL PLANT PRESERVER.



These excellent span-roof frames are made with wood sides, to which are bolted iron girders to carry the lights. These lights will turn completely over and lie on the other side while attending to the plants inside. They are very portable; a man can easily remove the small size, two men can carry any size up to 25 feet by a feet. The use to which they may be applied is unlimited, as almost any class of plants can be grown in them.

CASH PRICES—CARRIAGE PAID on Orders of 40s. and upwards.

Length	Width	Height of sides	Height of ridge	£	s.	d.	Eeds per pair
6 feet	2 feet	9 inches	1 ft. 3 in.	11	5	0	extra
10 "	3 "	11 "	1 ft. 6 in.	12	0	5	—
12 "	3 "	11 "	1 ft. 9 in.	12	5	0	—
12 "	4 "	11 "	2 ft. 0 in.	13	0	0	—
12 "	5 feet	11 inches	2 ft. 6 in.	15	0	0	—
12 "	6 "	11 "	3 ft. 0 in.	17	0	0	—

No. 64.—PATENT PLANT PRESERVERS, ARRANGED TO BUILD ON BRICK WALLS.



This is the Practical Gardener's and Nurseryman's favorite frame, now largely used for storing the great quantities of bedding plants in winter, and in summer for growing Melons, &c. This is made for building on brickwork, as shown by section of No. 64.

Section No. 64 shows the frame built on brickwork, with a pit sunk low enough for making a bed for growing Cucumbers, Melons, &c. This form can be made up to any length required.

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

CASH PRICES—CARRIAGE PAID. Including 4 glass ends to each length, painted 4 times, glazed with 28-oz. glass. Carriage paid.

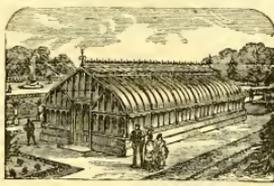
Length	Width	£	s.	d.	Length	Width	£	s.	d.
12 feet	3 feet	5	0	—	12 feet	6 feet	6	0	—
18 "	3 "	7	5	0	18 "	6 "	9	0	0
24 "	3 "	9	0	0	24 "	6 "	11	0	0
30 "	3 "	11	0	0	30 "	6 "	14	0	0
36 "	3 "	13	0	0	36 "	6 "	17	0	0
42 "	3 "	15	0	0	42 "	6 "	20	0	0

See our Exhibits at the Bath and West of England Show, to be held at Bath on June 4, 5, 6, 7 and 8, 1877.

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

Packing Cases are charged, and half of the cost allowed if they are returned in good order, carriage paid, to our Works, within a month of delivery of the frame. New Illustrated CATALOGUE of Conservatories, Greenhouses, Peach Houses, Forcing Houses, &c., post-free, on receipt of 2s. penny stamps, the cost of which will be deducted from the amount of first order.

No. 75.—MELON FRAMES AND FORCING FRAMES.



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

These Frames are made of the best red deal, thoroughly seasoned, and fitted by first-class workmen, 24 inches high at the back, 12 inches high in front; painted three coats of good oil-colour, glazed with best 28-oz. glass, every pane of which is nailed in and bedded in putty, the best method of glazing known, and adopted by the most eminent builders and leading nurserymen (see The Garden for January 13, 1877, page 30) iron handles to each light, and an iron strengthening-bar across. Each light is 6 feet by a feet, and 2 inches thick.



CASH PRICES—CARRIAGE PAID.

1-light frame	4 feet by 6 feet	£	s.	d.
2 "	8 "	6	0	—
3 "	10 "	8	0	—
4 "	12 "	10	0	—
5 "	14 "	12	0	—
6 "	16 "	14	0	—
7 "	18 "	16	0	—
8 "	20 "	18	0	—

Breakages seldom occur. Should any glass be broken, we will send sufficient to replace it, carriage free.

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



Our illustration shows a New Frame for growing Cucumbers, Melons, &c., and for storing plants. It is made to give greater height and more convenience than the Melon frame, No. 75. The front is 24 inches high without the lights, 22 inches at the ridge, and 22 inches high at the back. The front lights are turned back on the lights behind, and back lights turned on to the front lights, giving access to all the plants inside. They are made of the best red deal, sides and ends 2 1/2 inches, 3 inches high, all are painted 4 times, and glazed with 28-oz. glass. Each glass, nailed and putted in, same as the Melon frame, No. 75. The illustration shows the lights to open with gearing; any of the lights can be lifted up when required without altering the other lights. Back and front gearing separately.

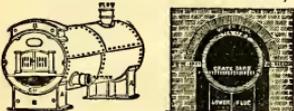
CASH PRICES—CARRIAGE PAID.

No. 1 size	4 feet long	6 feet from front to back	£	s.	d.
No. 2 "	8 "	6 "	3	0	—
No. 3 "	10 "	6 "	4	0	—
No. 4 "	12 "	6 "	5	0	—
No. 5 "	14 "	6 "	6	0	—
No. 6 "	16 "	6 "	7	0	—
No. 7 "	18 "	6 "	8	0	—
No. 8 "	20 "	6 "	9	0	—

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

HENRY ROBINSON, IRONFOUNDER
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Stambridge, Bucks. — 2-in. 3-in. 4-in.
HOT-WATER PIPES, 22. 2d. 32. 4d. 3d. per 6-ft. length
Ditto " " 45. 7d. 55. 10d. p. 9-ft. length
ELEGANT, No. 12. " 12. 6d. 25. each.
TEES, No. 33. " 12. 4d. 25. 4d. 35. 3d. each.
SPYHONS, No. 27. " 12. 4d. 25. " each. Price
List free on application. Portable Pipes, Gold Medal Boilers, &c.

STEVENS' GOLF TRENTHAM GREENHOUSE BOILER,



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

P. & J. SILVESTER,
HOT-WATER ENGINEERS, &c., & c.,
Castle Hill Works, Newcastle, Staffordshire.
Our Boilers are the ONLY ones made with the patent and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

COWAN'S PATENT COMPENSATING SYSTEM OF HEATING,

FOR HORTICULTURAL, PUBLIC, AND OTHER BUILDINGS.

The most important discovery for saving the cost of fuel, for steadiness in heating power, and dispensing with night stopping. One Apparatus will do the work of several Boilers, and in some cases produce a profit.

Heating by the Ordinary Systems.

Hothouses, Mansions, Churches, and other Buildings efficiently heated by other approved methods, where the Patent Apparatus cannot be adopted.

A large Stock of the most improved forms of Boilers to select from.

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COWAN'S PATENT COMBINED GAS-MAKING and HEATING APPARATUS,

By which Country Mansions and Public Institutions may be heated and lighted, in most cases free of cost.

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All structures specially adapted to the purposes for which they are required, built of the best materials and workmanship, at moderate prices.

Plans and Estimates free. An Illustrated Pamphlet free.

All work done by the Company is guaranteed.

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and The Vineyard, Garston, near Liverpool.

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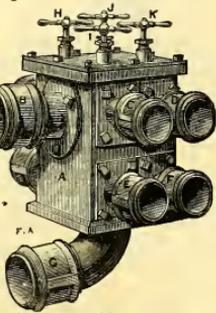
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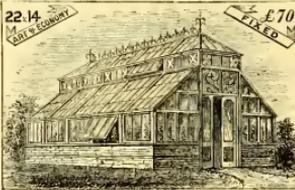
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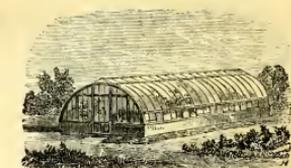
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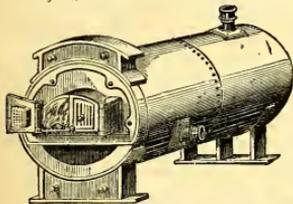
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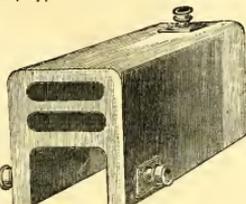
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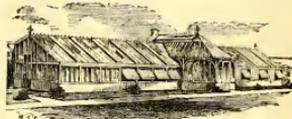
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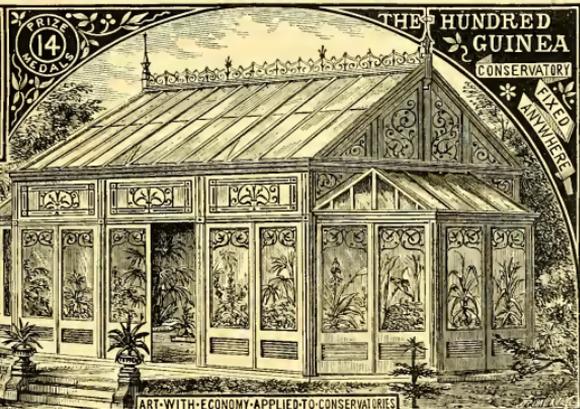


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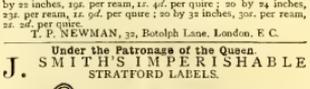
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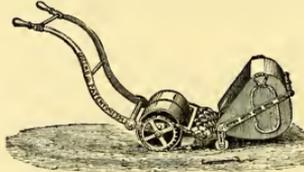
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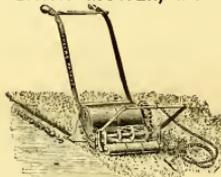
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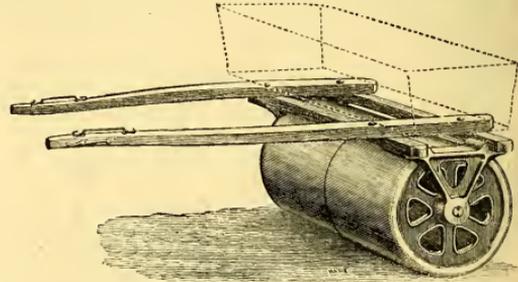
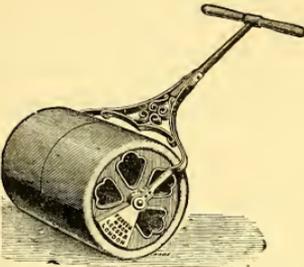


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Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher;" at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by WILLIAM RICHARDS, at the Office of Messrs. BROADBENT, AGNEW, & CO., Lombard Street, Printers of Wholesale Papers, City of London, in the County of MIDDLESEX, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, May 12, 1877. Agents for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & CO., Edinburgh and Glasgow.

SUPPLEMENT TO THE GARDENERS' CHRONICLE.

FLOWER GARDENING.

ANY of the most palpable errors and serious mistakes in flower-gardening have arisen from supposing that these two—cultivators and artists—who between them make and furnish the flower garden, must necessarily be combined in the same person. No



doubt many cultivators are also men of refined taste, and also of considerable capacity in the designing, laying-out and furnishing of flower gardens—artists may also be found who are accomplished cultivators—but there is no necessary nor natural relation between skill in cultivating plants, and taste in designing, laying-out, or even furnishing gardens; and the sooner the fact is recognised and acted upon the better.

Now if this be true—and it is—neither is taste transmissible by laws of primogeniture or entail, nor is it purchasable by wealth. Money can do almost anything—purchase houses, lands, a seat in Parliament, social status, &c.—but it is powerless to buy a cultured intellect or polished taste; and some of the most absurd and vulgar vagaries ever attempted in the world furnished by the creation of those whose wealth furnished them with the opportunity of revealing their inherent poverty and vulgarity of mind in the mansion or the garden. It cannot be too often repeated, that there is no royal road to good, true, and beautiful flower-gardening, any more than there is to painting, eloquence, or genius of any sort.

Perhaps the greatest weakness of modern flower-gardening, as of art of all kinds among us, is the want of originality, its chief bane the opposite, that is, servile imitation. Whatever is or has been, is held to be right, and is repeated evermore. Our literature is partly to blame for this. Practice, or that is, is extolled; theory, or what may or should be, is contemned; while originality is strangled with a sneer, and imagination is politely bowed out of the domain of horticulture. And yet the quickening of the latter faculty is one of the most pressing needs of the day to lead horticulture on to higher victories in discovery, in literature, general practice, and especially in improving the designs and furnishing of our flower-gardens. If there is a place for the imagination in scientific inquiry—and there is—there is assuredly a much higher and more important place for the exercise of the same brilliant and creative faculty in the embellishing of our flower-gardens. Unfortunately, too, exactly in the ratio of the decadence of the imagination is the persistency and invariableness of our imitation. We are, in fact, a nation of imitators. It saturates our habits, clips the wings of our art, and runs riot in our gardens. Imitation robs thought of its freshness, gives tricks of style to our literature, degrades painting into copying, with few exceptions—making all the men and women, the seas, rivers, landscapes, of our island alike, and designing and planting thousands of gardens up and down the country on the same pattern.

Imitation has ever been the bane of British flower gardens. Men run after styles and pursue art in masses, as dogs hunt in packs or sheep feed in flocks. Now and then some strong mind arises and bursts the bonds of uniformity by the force of his brilliant imagination, and for a time his fashion or style prevails. It was so with such great men as Capability Brown, Cuthbert Repton, Elegant Price, Flowery Nasmyth, Antique Nesfield, Encyclopædic Loudon, and others. Each has broken through to some extent existing

styles, and been followed by hosts of imitators. No harm would have come to the art of flower-gardening had the imitators taken the best of each master for the time being, and by the force of their genius and imagination made each master's work contribute to the general improvement of flower-gardening. Imagination, pluming its wings, as it were, on the best works of others, would thus make smooth the coils of vantage from which to rise higher, and do yet better and more beautiful things with flowers and flower gardens. Instead of this, almost each style, however commonplace, has been extolled as perfect in its turn.

At one time curved lines of beauty were so much in vogue that even the straight lines of square houses were considered highly offensive to the rules of taste. Straight walks, roads, fences, plantations were considered a sin against the laws of culture and of taste. Another revolution of the wheel of capricious fashion turned all the lines of beauty into Dutch canals, and the straightest, shortest line between any two parts was held to be the line at once of mathematical precision and of artistic propriety. Now almost equal great changes have taken place in the furnishing of flower gardens as in the outlines of the walks, beds, or borders.

MIXED BORDERS.

The mixed style, which included everything from stately trees or shrubs in the centre of large clumps to dwarfs, annuals, alpinas, or succulents, hugging the turf at the extreme edges, was the proper thing for many years. The chief art of furnishing resolved itself into a matter of heights, breadths, and consequently distances—by no means such a simple affair as modern flower-gardeners may suppose. For only think of the special knowledge required to master such details concerning the hundreds of species and varieties of plants grown in many of the old flower gardens. This plan also has many merits, and is consequently being revived. It suffered severely from the straining of a few general rules. So inexcusably at one time was the rule of the uniformity of stature in each form of bed or border enforced, that the head of a plant or its natural habit, or both, were sacrificed rather than it should prove too high for its place. The most ridiculous efforts were often made to keep others low enough. Stakes were excessive in number, and often enormous in bulk. The isolation of the plants was carried to extremes, as was the intermixture of species and varieties. The garden often became a confused medley, in which there was more timber and bare earth than beautiful plants. All individuality and most of the beauty of many of the plants were utterly destroyed by what may be termed the uniform birch-broom style of training and tying. The result was often monotonous and tiresome in the extreme, and it was often quite refreshing to rush away from the stiff and tame sameness of the flower garden into the more pleasing because more free art of the tangled woods. But there was a grand richness of material in the old style. Were the plants but thrown into groups or families, and early allowed to display their beauty in a natural state and in sufficient breadths to produce a distinct impression—on which the eye and nose could rest with pleasure before passing on to the next group of plants—more pleasure could be got out of the old plants than many of the modern ones.

The eccentricity and irregularity of the form of the old beds and borders also gave an air of quaintness and of freshness to them. The outlines were often so erratic that one might have thought they were formed by a shower of ballast from a balloon scudding before the blast or caught in a whirlwind. This irregularity of boundary lines running apparently

where it listed, in defiance of all rules of art and principles of congruity, was often the only touch of Nature that redeemed old flower gardens from the dominance of the most dismal art—the only spark of genius that flashed up from the dying embers of the most dead and lifeless uniformity of furnishing.

BEDDING OUT.

It is a libel, however, on Nature to call the old mixed or dotting system, in which each herbaceous plant of similar height, whether Golden Rod, Phlox, or what-not, was made as like as possible in size, height, and general outline to its neighbour, the natural style of flower-gardening. As Nature is ever the inspirer and teacher of Art, and Art is ever catholic, she hates narrowness and isolation. There was more of Nature and also of art in the massing and bedding out than in the mixing or dotting style. Nature masses always—dots, isolates, seldom or never; or if she dots at all it is mostly on an already furnished base, as Buttercups and Daisies on the verdant sward—the first example, and still the richest illustration of pinchusion flower-gardening. Does any one question that Nature masses her beauties on a large and magnificent scale, let him away to the brown heaths and shaggy woods, and see what grand breadths of light and shade, of grave and gay, she forms of brilliant flowered heaths, golden Brooms and Furze, contrasted with dark Fines, Weeping Willow, or silver Birches. These are but samples drawn at a venture from Nature's full lesson-book of the science and practice of grouping in masses, or bedding-out flowers and verdure.

It was, however, quite natural that the introducers of the new style should fall into some mistake. The state of art among nations and men, the civilisation of peoples, may be more correctly gauged by their decorations than by almost any other test. The rage for colour is a sure test of want of taste or of a low state of civilisation. Hence the glaring colours of savages, the dubs in the homes of the poor; and it was the glare that destroyed all repose, and consumed, as it were, by its brilliancy the higher-classed beauty in so many flower gardens. The primary colours were used in such excess that each garden became a sort of tricolor, contending over every bed and border. The contrasts were too startling, the harmonies mostly in major keys or high colours; and there was a glaring want of neutral tints and greens to insure rest and suggest repose. All this, however, has been corrected by criticism. The cry that the flower-gardener had caught the blues, the jaundice, or the scarlet fever, had its desired effect. The colours became more subdued, better balanced, more beautifully mixed, blended and toned down into softer, sweeter harmonies, resembling more the melting strains of the lute than a trumpet summons to battle.

In fact there was and still is far too much of the battle spirit in the combats and contests of modern flower gardening. It is a strife for mere numbers rather than for excellence, as if thousands posted in the wrong place in an unskillful manner could cover or hide up the want of either by their mere mass. And then everybody imitated his neighbour's garden, and monotonous run to seed in the gay days of the bedding-out or grouping system of furnishing flower gardens. Each garden everywhere was but a counterpart of every other garden everywhere else. Hosts of observers scoured the country, note-book in hand, to duly chronicle results, and bedding-out systems were taken bodily from your pages, and displayed on hundreds of other gardens, just as a bale of cloth might be purchased from a draper's, and rolled out and served to scores of customers. Or, better illustra-

tion still, garden arrangements were transferred from places for which they were adapted to others for which they were more suitable. From the pages of this journal to the beds of thousands of flower gardens, with as little thought of adaptation as a block of type is conveyed from the composing-room to the machine-room. This endless repetition and servile imitation, making each garden but a double of another, satiated the public taste and caused a rebound from gay to grave in flower gardening.

SUBTROPICAL GARDENING.

In other words it prepared the way for the next step in advance—leaf or subtropical gardening. This system has the promise of introducing new and different materials to our flower gardens. It added a new dignity and stature to the plants hitherto used for greens, and provided the elements of a far richer variety of filling and furnishing. The place for subtropical gardens, however, should be in combination with flowering plants, and not separated from them, as has generally been done. New furniture also often requires new rooms. Ladies who are *au fait* at adapting papers, carpets, furniture, ornaments, to the size and character of houses and plants will understand our meaning. No doubt one of the greatest drawbacks to the effective display of subtropical plants has been and is the planting them in the old beds or borders. Beds or borders of suitable forms and sizes for such plants as *Verbenas*, *Calceolarias*, *Pelargoniums*, &c., are probably altogether unsuitable for *Cannas*, *Solanums*, *Viguidas*, *Castor-oils*, *Tobaccos*, &c. The effect and grandeur of many of these fine plants are planted down into insignificance by the small circular, elliptical, diamond, square or other shaped beds in which they are planted. These "little goods" with large subjects so common in our parks and in private gardens, have done a good deal to bring subtropical gardening into ridicule.

It, however, like the bedding-out system, has sufficient vitality to survive all opposition and to be improved by it. Few things add more to the richness of a flower garden than fine-foliage plants in sufficient masses to throw out with better effect the brilliance of the coloured leaves and flowers—distant points losing themselves by distance or change in the form or level of the ground marked with fine-foliage plants like *Sisley*, *Cannas*, *Masses*, *Palms*, *Ferns*, skirting the sides of pools, lakes, streams, reflecting back their noble foliage from their crystal depths; the sides of valleys, gentle mounds and elevations, shady nooks and corners, warts, snug recesses—these add somewhat similar spots from the most effective places for planting with subtropical plants. The mere height of the plants and massive spread of their fine foliage suggests the propriety of planting them in considerable masses. Neither is it by any means necessary that the masses should be all green. Even among some of the largest subtropical plants, such as *Cannas*, there is a rich diversity of coloured leaves, which in the various forms of *Beet*, *Colens*, *Amarantus*, *Collifoot*, *Perilla*, *Iresine*, *Cineraria*, *Centaurea*, *Alternanthera*, &c., furnish an assortment of colours almost as rich and gay as the usual run of flowering plants. As a curious instance of those contractions in art which are far from numerous, it may be noticed in passing that those who have been the least in stern condemnation of an excess of coloured flowers in gardens, have been most prodigal in the introduction of high-coloured foliage. In avoiding *Sisley*, how many fall into *Cherry-bill*!

Subtropical gardening, however, is sure to hold its own, and to improve with practice. It is based on sound principles, and its place and practice are every year becoming better understood. It is not a substitute for flowers, but a rich support and addition to them. Foliage plants should be to flowers what the painter's sky, clouds and background are to the lovely landscape. But a garden of leaves only is something like a picture without a central subject, a novel without a plot—a magazine wholly padding, without a substantial article.

RIBBON GARDENING.

In striking contrast to subtropical is that of ribbon gardening. As its name implies, it consists of bands of colour of varying or uniform width, arranged in straight or in waving or curved lines. The colours may be arranged on the principles of harmony or contrast, and the different bands may also be separated from each other by neutral colour or bands of black, white, or green. One ground-colour may also be

used for the groundwork of the ribbon, with one or more striking bands of colour run through it. It is about this method of furnishing flower-gardens affords unusual facilities for the display of coloured leaves and flowers with striking and pleasing effects. The variation alike in the arrangement and the relative truth or mass of the different colours, may be endless. Some prefer only a few simple colours several rows deep, or, in other words, a bold ribbon, with only two or three bands; others, again, elect to have a ribbon with ten or a dozen bands of colour all of one width; others repeat the same colours severally times in succession. There is also much scope and variety in the matter of edging. These may be either contrast or harmonise with the chief colour of the ribbon, and generally add greatly to the interest and beauty of the ribbon.

PATTERN BEDS.

Closely associated with, or rather a branch of ribbon bordering, is the picking-out style. Beds or borders are thus arranged in solid blocks of colours, separated by straight or waving ground-lines of varying width between the blocks. The blocks or masses of the kind may also be varied in form, size, and coloring. A common plan of picking-out ribbon borders is to pick out circles, ellipses, diamonds, or other patterns, and carry a band of one or other colour, from a foot to a yard wide, of low stature, round the picked-out masses. Then, again, on wide borders, straight lines may follow these waving lines in the back and front of border. This disposition forms yet other blocks to fill up the space between the waving and the straight lines, so that this arrangement provides three series of high or massive masses, or waving, or solid lines, and also a series of straight lines back and front of the ribbon borders.

Single specimens or groups of quite a distinct character of plants form another good variety of the picking-out style. Specimens or groups of *Fuchsias*, *Humesas*, *Yuccas*, *Dracenas*, *Palms*, *Cannas*, &c., among flowering plants, impart much variety and freshness to ribbon borders or large beds arranged on the picking-out style.

A change of lines in parts of beds and borders sometimes affords as much variety as a change of plants; it also enables dwarf plants to be used with excellent effect at times in new positions. The entire beds or borders are also often worked out with scrolls or pieces of embroidery, in which elegance of design, and softness and beauty of colour, vie with each other for the mastery. Few modes of furnishing are more beautiful than those which are carried out with taste and judgment, and wherein the amount of each colour, as well as its place, is arranged with care and judgment.

Pinus beds and borders are also very effective. These consist generally of one ground colour, furnishing the surface thirly with one shade or hue. *Verbenas venosa* and *Purple King*, *Golden Feather*, *Pyrethrum*, *Lobelia speciosa*, and other dwarf varieties, *Iresine*, *Amaranthus melancholicus*, the variegated *Mesembryanthemum*, &c., are favorite plants for groundwork. Over and among these, exactly as pins are stuck into a cushion, other plants, such as *Mangles*, *Lady Plymouth*, *Flower of Spring*, *Lady Cullum*, or other silver variegated or golden tricolor *Pelargoniums*, *Sisley*, *Perilla*, scabret *Pelargoniums*, &c., are set into the groundwork. The flowers, planted on blue or purple grounds, are, upon the whole, the most striking and pleasing arrangements in pincushion gardening.

MOSAIC BEDS.

Almost the latest fashion in flower gardening is the carpet, tapestry, or inland style. Various patterns are chosen and filled in with blocks or masses of colour, separated by dividing masses, lines, or broad bands of other colours. Carpet bedding differs chiefly from the pattern-bedding style in the plants being as nearly as may be of one height, so as to represent a textile or woven fabric of uniform texture, or slightly varying in thickness; the more perfectly to imitate the raised parts of Brussels and other carpets. The resemblance is carried further by the use of made or sunk walks, furnished with *House-leeks* and other succulents laid on edge, to exhibit the thickness of the carpet. Pretty, very pretty, it may be, but carpet bedding can by no title claim to art. It belongs rather to the work of the flycatcher than the higher flights of the falcon. It is also like some novels—wonderfully poor in plot,

clever delineations of character, or useful lessons of any sort, but groaning beneath piles of upholstery and tinkered groundwork, and rich feasts of wines and viands.

Carpet bedding is rich in colouring, privileged in its waste of plants, whilst smashing bricks, coloured pebbles, sand, or gravel, or even paints, would cover a carpet on the ground as well or better, and relieve the plants from a most unnatural position and suffocating proximity to each other. Plant life and beauty are far too sacred and valuable to be merely worked up into gaudy patterns, like so many hands of coloured wools. The piling up of succulents in this style of gardening is a reckless waste of plant beauty and little or no regard to a prosecution of art, reminding one of the elaborate embellishments of the pastry cook and confectioner rather than of the simplicity and chasteness of the painter. The true place for succulents is the rockery, to contrast and heighten the grace of Ferns by their quaint stiffness of form and dwarfiness of stature. It is surprising that, with the enormous influx of succulents into our gardens, so few of them have found a rockery for themselves, or have been mixed with Ferns, with alpine flowering plants, and such grand subjects as *Foxgloves* and *Snurpagnons*, and many other of the noblest and best, and added to the verdure of Ferns by their glow of coloring. Succulents would be in their proper places in such situations, and would form a link between the more femine style of flower garden, and the more flowing style and higher art of the so-called wild garden—a contradiction in terms, but a convenient expression, indicating the want of formal training and arrangement, in which the plants and grouping often reach a grade beyond the reach of more formal art.

NECESSITY FOR VARIETY.

The chief charm in flower-gardening is to have a little of all good styles, and as great a variety of plants as practicable. Where there are several gardens or groups of flower-beds, each should be as different from the other in design as possible. Repetition of the same notes is not more tiresome in music than in flower-gardening. The different styles, the variety of plants employed, and their distinctness and freshness of arrangement, should give analogous pleasure to the different rays and notes in music. The transitions need not be too sudden, but the succession should be so arranged, a series of gradations, one may proceed from the trimmest, stiffest art of hard-and-fast geometrical designs and furnishing to land at last in groups of *Pampas-grass* shooting up against dense masses of *Fir trees*, *Ferns* drooping over a waterfall, or *Weeping Willows* reflecting their exquisite grace from a brook fringed with aquatics.

Next to monotony, the chief weakness of modern flower-gardening is excess of material. Artistic arrangement, floral or leaf beauty, is nothing worth in the estimation of many men, both can be reckoned by thousands and tens of thousands; in fact, it is no exaggeration to assert that many gardens are so covered with flowers that it is impossible to see their beauty. They are just as if an artist were to value his picture chiefly for the amount of valuable colour he could contrive to dab on to it. It is just so with many gardens. You cannot see the beauty for glare. Gravel and grass are cut down to the narrowest, that more and yet more plants may be crowded into a limited space.

Just as a much better landscape may be cut out from a few gardens than can be seen by step, and so the greatest improvement that could be effected in hundreds of flower gardens would arise from turning down one-half or three-quarters of the flower-beds and borders. Sufficient beauty to satisfy all the requirements of refined taste is quite a different thing to a prodigal display that speedily satiates or suggests vulgarity. Excessive display is always unsatisfactory. Many flower gardens remain one of a lady always arrayed in her richest apparel, and the whole of her jewels and finery, grace and modesty are apt to be lost sight of beneath her excessive ornaments. It is so in degree with overplanted, over-coloured gardens. Moderation and simplicity are essential principles of landscape art, that should be carefully applied in the decoration of flower gardens. In avoiding overcrowding the opposite end of this planting should not be indulged in. Some gardens through the very evils of an excessive number of beds and borders never are, but always to be, beautiful. The plants are placed so wide apart that they seldom meet the eye, and the sense of this poverty of plants is by no means what it might be if the plants were of flowers. Reduce the beds and borders as much as

good taste may require, and do it with a bold and firm hand, but let those that remain be well and fully furnished. To have them otherwise is like hanging an unfinished picture on the most prominent place on the wall. Works of art should be fully finished or furnished, or put out of sight. Exactly the same rule applies to gardens. Better a bed a yard across, well filled and prettily arranged, than a score of beds that never grow into full beauty until the frost has taken in his grasp. No doubt gardens must grow into beauty, but careful planting and skilful preparation hasten the process and bring out the artist's ideal as speedily as may be. It may also be useful to remind some that though plants are among the highest and most beautiful works of art, they need vulgar food to make them grow into beauty and sweetness, and that, however tasteful the arrangement and good the material, the result will be a partial or complete failure unless the plants are duly prepared for their places, and the place duly cultivated and enriched for the plants. To avoid blots and blanks in the flower garden culture and manure are both needed.

Modern flower-gardening, too, has also become a thing of permanent beauty. It is not a mere flash of spring, summer, or autumn beauty, as of yore, but rather a succession of panoramas passing through the seasons with stately grace, dignity, and beauty. Early spring plants and bulbs garland the young year with freshness and fragrance the most charming and sweet. Summer has its garniture of later flowering plants and its brilliant glow of annuals. These again are succeeded by the more elaborate and desirable, though less brightly beautiful arrangements for autumn. And winter, stern and cold, has its garden of shrubs and Christmas Roses, Golden Aconites, &c. All this succession of flower-gardening involves an amount of taste, care, and labour altogether unknown and unthought of a few years ago. The garden artist and furnisher has to paint four pictures a-year instead of one. His imagination, genius, taste, are ever on the rack, and he is fortunate indeed if he can please himself and gratify others by enwreathing the flower-garden with verdure, enriching it with beauty, and filling it with fragrance from January to December. P.

CARPET BEDDING.

ALTHOUGH a system of recent introduction, carpet bedding has nevertheless taken a firm hold upon those who have to furnish our flower gardens, and certainly when the plants composing these carpet beds are well chosen for their decided colouring and lasting properties, there is no kind of bedding more pleasing and effective. It also educates the gardener's eye in providing true geometric figures where-with to display his colours, for although carpet bedding is most attractive and fascinating when faultlessly carried out, nothing is more open to objection when the figures are inaccurate.

Geometry is truth, and all figures in carpet bedding must be truthfully delineated, or the result will be a miserable failure. Hence the desirability that even one, before introducing this style of decorative gardening, should thoroughly master his designs on paper before he attempts to reproduce them with coloured plants upon his beds. They must be laid out and planted to correct lines, and we kept them afterwards, to be effective; and we would here suggest that in commencing this practice simple forms should be preferred to the more elaborate ones. They are much easier to produce, and quite as effective, and these latter kinds may be introduced hereafter when the system is better understood by the operator if it is deemed desirable to do so. There are many people, no doubt, who will remember the surprise and admiration caused by the novel and effective bed in Battersea Park produced by planting the centre with *Coleus Verschaffeltii*, and the margin with *Centaurea candidissima*. This bed, seen in the after-part of the day, with the sun lighting up the brilliant colouring of the *Coleus*, and its quiet silver edging, has left an impression on our memory never to be forgotten. This may, we think, be considered one of our earliest and most successful attempts at carpet bedding; and although we now prefer more intricate plans and much shorter pile to our carpets, still we do not forget our first surprise, and beds now filled with similar plants will not fail to arrest the attention of all spectators of good taste, although they may be immediately surrounded by

their more elaborate successors. The patterns that may be worked out upon this system are almost endless, and not only geometric designs, but even the imitation of forms and colours of insects has been attempted, with tolerable success and very questionable taste. The coloured spots on the wings of a butterfly are much too intricate and beautiful ever to get them properly delineated with plants: a few colours worked into a pretty simple pattern will always be preferable.

PLANTS MADE USE OF.

At the earlier period to which we referred the materials for this kind of ornamentation were very scanty, for although they were all around us they had never been utilised, as the demand for them had not yet come. One scarcely dreamt of using such plants as *Sempervivum*, *Echeveria*, *Sedum*, *Cerastium*, and a long list of other hardy or half-hardy plants which figure so largely in our present compositions, and which were seldom found previously except on cottage roofs, stone walls, or in our neglected herbaceous borders. The most important hardy plant in carpet-bedding is doubtless the *Pyrethrum Golden Feather*. It is easy to produce, effective in composition, and lasting in its properties; it may be kept to the most rigid forms, is decided in colour, and well covers the ground. These we consider to be indispensable qualities in first-class carpet-bedding plants. It will come true from seed, and if this is sown early in March in a cold frame, or even in the open ground, it will produce good plants by the time it is required to plant out. Its normal form, the *Pyrethrum Parthenium*, is a British plant, and is almost as common in gardens of all grades as the Dandelion, and is as difficult to eradicate. Its excellent offspring also possesses this tenacious quality, and by letting a few old plants seed in the herbaceous border a good stock of young plants will appear the following spring.

The numerous varieties of *Alternanthera*, although, of course, tender plants, possess all the good qualities requisite for us being more constant and of a more decided colouring than any other hardy annuals, and their cuttings taken in spring from the old plants, and struck in dung heat under a cap-glass, or in the cucumber frames. The plants want heat in winter, or they will damp off. *Alternanthera* are found in China, India, Central America, and the adjacent islands. When introduced, ten or twelve years ago, they were carefully cultivated in stoves, and were considered far too tender for open-air cultivation in England; after-experience has, however, proved them to be amongst the most useful plants for our carpet-beds, and it will be seen by referring to the lists accompanying the designs given with this Supplement how largely these plants figure in their composition and how well adapted they are for producing the most perfect effects. In forming carpet beds the ground should be thoroughly covered, and the plants chosen should be of uniform growth or such as will bear reducing to this state without impairing their beauty; they should also be of decided colours, and we should prefer them confined to foliage plants only, as being more constant and of a more decided colouring than flowers. If ever Nature should be so sportive as to give a blue leaf equal to our yellows and reds, there would scarcely be a necessity for using flowers at all; at present, however, we must have blue, and the dwarf *Lobelia* seems to be the most fitting for the purpose—although we know to our sorrow that they often fail us just at the time we want them most, and their places have to be filled with the best material at hand, which not infrequently mars the beauty of the design for a considerable period, if not for the remaining part of the season. Succulent plants of such kinds as *Pachyphyllum bracteatum*, *Echeveria metallica*, and some of the smaller kinds of *Aloes*, may be introduced into the beds, and with excellent effect. The ground, however, under them should be quite covered with a neat growing plant, such as *Sedum glaucum*, *S. acre*, or *Antennaria tomentosa*. Any reliable plant, however fast its growth (so that its foliage is dense and its colour suitable), will answer the purpose—hardy plants being in all cases preferable, as they are generally good under the shaly times that render ours. We have, however, seen the toothed moss, *Scagina denticulata*, used for such purposes with excellent effect, but this has been where the beds have been well drained with some rough material, such as stones or bricks, and raised from 9 inches to 1 foot above the surrounding surface. Many tender plants will grow and thrive under such circumstances that will scarcely exist if planted in the

ordinary way. The drainage being perfect, no stagnant water can possibly find a lodgment, and consequently the soil is rendered warm and healthy.

In the beds so most admired at Cleveland House, Clapham Park, last season, the central portion of the circular bed was carpeted with *Sedum glaucum*, and dotted over with *Nertera depressa*, and this was spoken of in the highest terms of praise by all who saw it. A woodcut of this bed was given in the *Gardener's Chronicle* of December 1, 1876, p. 717, to which we would refer our readers if they wish to see the whole of the arrangement.

POSITION OF THE BEDS.

In placing carpet beds upon the lawn great care should be taken in choosing the proper place for them, so that the surroundings enhance rather than detract from their beauty. They should be placed in warm nooks well backed up with some of the leafy kinds of subtropical plants or with shrubby borders if the shrubs be rich in colour and well kept in foliage, always bearing in mind that they should be open to the south, with a point to east and west, so as to secure as long a period of sunshine as possible. This is indispensable to bringing out the bright colours of the plants. The contrary effect will be produced if a damp shady spot be chosen. We have often seen them placed on a gentle slope, the lower part of the bed being raised so as to bring the surface level with a surrounding of subtropical plants, and the effect has been excellent. In such positions bright colours will show up well. When planted on a level surface and quite out in the open, the grey and white colours will contrast favourably with the green grass, and the colours of the plants in juxtaposition will be heightened by the presence of the white. These beds may also be introduced with advantage into geometrical flower gardens, care being taken to plant the beds only in the design which bears a strict comparison to each other, so that when viewed from an elevation, as from the upper windows of the house, they shall not incongruously in the arrangement. We do not mean to imply that a series of circular or other beds of equal form, and these we would advise should be used for the purpose. If the garden takes the form of a square, circular beds are often placed at the corners, and sometimes a second series of beds is introduced, partaking more or less of the form of an oval in their arrangements, and these also may be used for carpet-bedding plants.

The general plan of an oval shape on a square piece of ground, then the square bed at the four corners may be used for carpet-bedding plants, and a central bed may be planted with foliage plants, which will serve to improve the general effect. If more beds are desired, a series of long narrow borders on all sides to form a kind of framework to the garden may be introduced, and the centre bed may in this case be planted with foliage plants, always bearing in mind that in this style of arrangement we are working out a pattern which must be properly and regularly balanced, or the result will be disappointing. The latter management also must be well kept up all who are interested in this subject, and enable them to judge for themselves what will be best for them to imitate and what to avoid in regard to fixing upon unsuitable positions, &c. They will also be able to study, with a view to imitate, those combinations of colours which are most suited to their taste, and will learn better how to arrange them from actual sight than from description.

PREPARATION OF THE BEDS.

In preparing the beds for the plants a good rich light friable loam, with an admixture of peat soil and a small quantity of manure, will be found the most suitable, but any light and tolerably rich soil will do for them. The bottom should be well broken up or trenched about 18 inches deep, and about 6 inches of good soil kept upon the surface. Where the ground is low, or naturally damp and stiff, the bottom

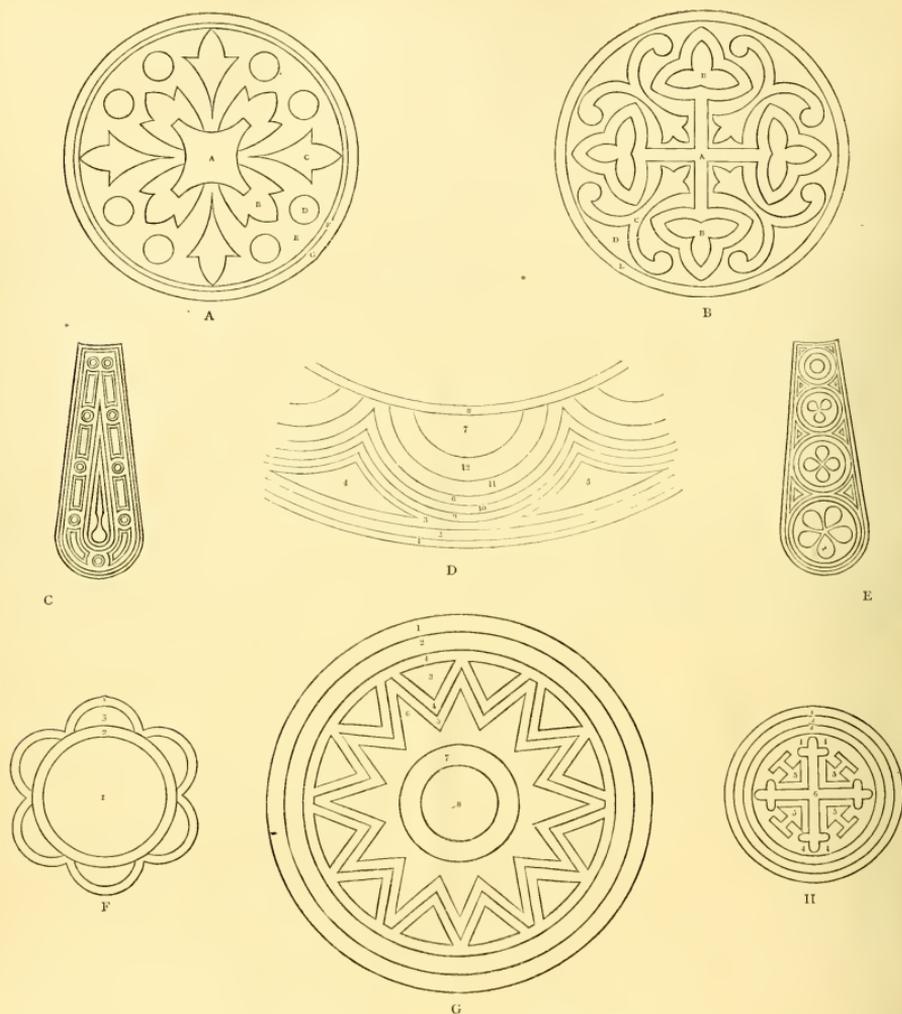


FIG. 1.—DESIGNS FOR CARPET BEDS.

should be taken out, and filled up to a depth of 9 inches, with broken bricks or rough stones, a drain-pipe being also carried through to take away all superfluous moisture. Upon this a layer of turf should be placed, turned sward downwards, or any other rough material that may be at hand, may be used to prevent the soil from working down amongst the stones, and thereby choking up the drainage. This being done, the soil may be put on, which in this case should be fully a foot deep. The bed should then receive a good watering, which should be repeated three or four times in order to get the whole thoroughly settled. As soon as this is accomplished, and the bed is sufficiently dry and firm, and the surface carefully levelled, it will be ready to receive the design, which we will suppose has been already prepared upon paper. If the bed is too wide to reach across conveniently, a broad

plank or planks should be put over it with the ends supported on boxes, or other convenient rests, just sufficient to clear the surface, and from which the gardener will mark out the design and put in his plants. By this means he will avoid treading on the soil, or otherwise interfering with his plan. For making up the sides of the beds a little clayey loam mixed with cow-manure is often used, and this will generally hold together during the season, and prevent the edgings of the bed giving way in watering or during a long continuance of rainy weather. Moreover, it is quite a common practice of late to plant the edging with *Sempervivum* or *Echeveria*, or such-like plants, and this soil appears to suit them very well. Certainly they very much improve the appearance of the beds, but where used for this purpose on level grass they should be kept back a sufficient distance

not to come in contact with the mowing-machine, for this would at once destroy their neat rosette-like appearance, and also show a painful want of care on the part of the workman.

ILLUSTRATIVE DESIGNS.

Having said so much generally about the system, the position of the beds, and the mode of preparation, we will now make a few remarks upon the several designs given in our coloured plate, and accompanying this article.

A (fig. 1) is selected from many beds which appeared in the Crystal Palace grounds during the summer of 1875, and we feel sure these designs must have sorely tried the brains and the patience too of the producer, Mr. Thomson, for they were numerous and very intricate, and not only geometric but, as we have



GARDEN PLANS—CARPET BEDDING

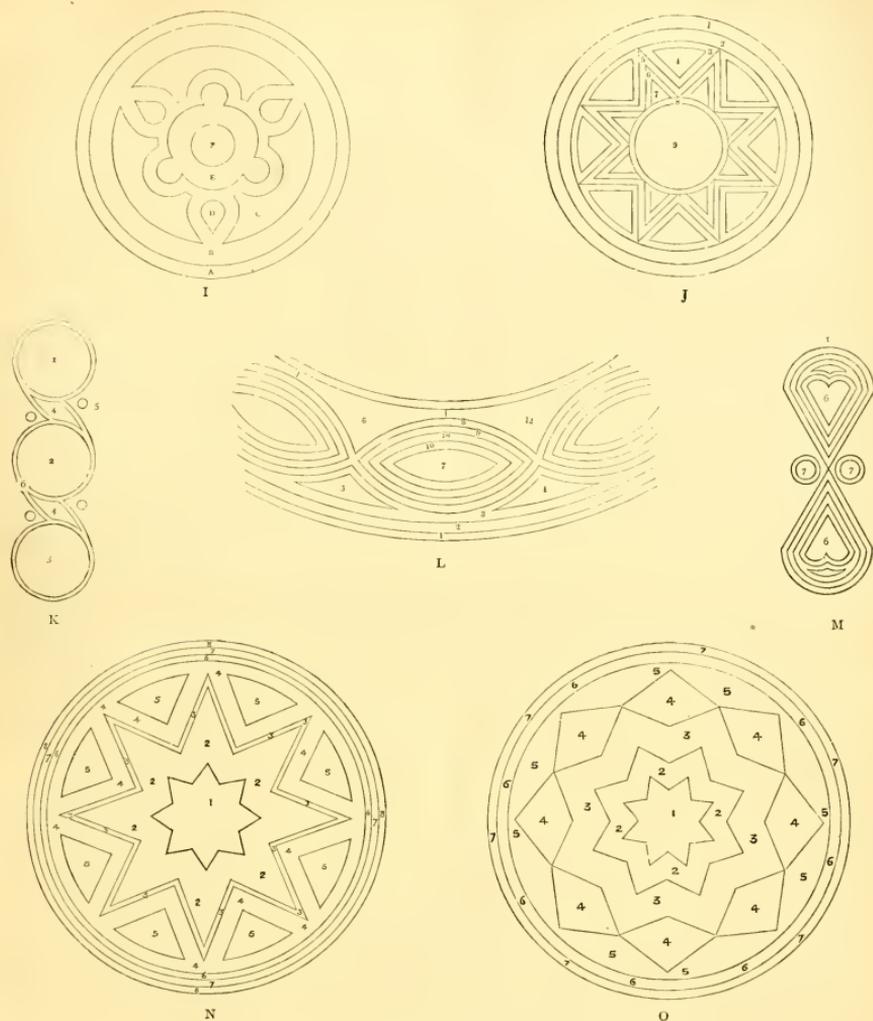


FIG. 2.—DESIGNS FOR CARPET BEDS.

said, insect forms were brought into requisition to gratify the various tastes of the many visitors who flock to that favourite resort. The design is a pleasing one, but we think its effect would have been enhanced if the central part of the *B* beds had been lengthened, and the small circles left out. Their form does not harmonise with the other parts, and they strike one as being an afterthought, and put in to supply the deficiency of the middle figure. This bed was one of a large number arranged on the sloping grass which surrounds the roseray, and could be seen to eminent advantage from the roseray walk, which was raised about 2 feet above it. The *Mesembryanthemum cordifolium variegatum* formed a very pretty groundwork to the various colours, and the whole had a very pleasing effect.

The plants were arranged in the following order:—*A* and *C*, *Lobelia blue King*; *B*, *Coleus*; *D*, *Alternanthera versicolor*; *E*, *Mesembryanthemum cordifolium variegatum*; *F*, one row of *Alternanthera magnifica*; and *G*, *Echeveria secunda glauca*.

B (fig. 1) is another example of these beds. The pattern is very intricate, and requires good keeping to preserve all its outlines. It was composed wholly of foliage plants, which perhaps rendered it less difficult than if there had been a mixture of flowering plants. The apple-green colour of the *Tagetes signata pumila* foliage harmonised well with the Golden Feather *Pyrethrum*, and there was a charm also in the novel use to which it was applied and the singular fitness of its prettily divided foliage for such a purpose. It is one of the few annuals that grow

and keep healthy until destroyed by frost, and we think it is worthy of being more extensively used in carpet bedding. The arrangement in this bed was—*A*, groundwork of *Pyrethrum Golden Feather*, and *D*, *Alternanthera amabilis latifolia*; *B*, *Tagetes signata pumila*; *C*, Ivy-leaved *Pelargonium Duke of Edinburgh*; and *E*, *Echeveria secunda glauca*.

The bed *C* (fig. 1) is one which was carried out at Cleveland House, Clapham Park, in 1874, and consists of a central dagger-shaped mass of *Alternanthera versicolor*, in a setting of *Pyrethrum*, outside which is a single row of *Alternanthera amabilis*. Then follow a series of oblong panels, alternating with circular beds; the oblong panels are planted with a centre of *Echeveria secunda glauca* bordered by *Alternanthera paronychioides*. The circles consist of a centre of

Pyrethrum encircled by Alternanthera amena. The setting round these beds consists of Mesembryanthemum cordifolium variegatum, and the whole is surrounded by two bands—the inner of Alternanthera amena, the outer of A. paronychioides.

D (fig. 1) is one of many examples carried out by Mr. McIntyre in Victoria Park, and it is also represented in the lower half of the central circle in our coloured plate in the shape of a broad margin to a bank of shrubs. We rather question the policy of putting in so many lines of colour, and think a bolder effect would have been produced by increasing their breadth and lessening their number. We also think that if the half circles had been pink instead of white they would have been more effective, i.e., by moving the Pelargonium Christine (D 10) to the top, and the Centaurea (D 7) lower down. Still we much doubt if the mixing of foliage and flowers is desirable, as the latter are almost certain to fall before the former, and then the effect as a whole is marred and spoiled; but no doubt the difficulty of procuring sufficient colours in the leaf plants has led to this practice, to which also has contributed the anxiety felt in making every combination distinct. The plants in this bed were arranged in the following order:—1, Stellaria graminea aurea; 2, Lobelia pumila grandiflora; 3, Echeveria secunda glauca; 4, Alternanthera amena spectabilis; 5, A. magnifica; 6, Coleus Verschaffeltii; 7, Pelargonium Flower of Spring; 8, Agrostis magnifica; 9, Pelargonium Flower of Spring; 10, P. Christine; 11, P. Crystal Palace Gem; 12, P. Waltham Seedling. Scale: 8 feet to 1 inch.

E (fig. 1) is another of the Cleveland House designs, and consists of four circular masses with triangular patches in between, and each enclosing from one to five radiating egg-shaped masses which are thus planted:—The central spots consist of—1, Pyrethrum in a setting of Alternanthera magnifica, encircled by Mesembryanthemum cordifolium variegatum, and then again by Alternanthera paronychioides major. The triangles consist of a centre of Semperivivum calcareum bordered by Echeveria secunda glauca. The whole is bordered by two bands—the inner of Alternanthera paronychioides major, and the outer of Pyrethrum. These designs (C and E) will serve to show what an infinite number of forms may be used even in a single bed. We prefer C to E, as the arrangement is better adapted to a long bed, and tends to make the bed longer in appearance, while E has the opposite effect; but as they appeared in the summer of 1874, they were much admired, and very deservedly so.

F (fig. 1) is another bed from Victoria Park, and the central portion being filled with Coleus Verschaffeltii, we no doubt very effective, but we think the general effect would have been better had the white margin been broader and the Cerastium Biebersteinii being used instead of C. tomentosum (F 2), and an outside circle substituted for the segments. We have no doubt, however, that in this age, when we are always seeking after something new, the inventive faculties are sorely taxed. The following is the arrangement of plants employed:—1, Coleus Verschaffeltii; 2, Cerastium tomentosum; 3, Lobelia pumila grandiflora; 4, Mesembryanthemum cordifolium variegatum.

G (fig. 1) is also one of the forms taken from Victoria Park in the summer of 1874. The plants used in this composition are all good, and the arrangement of the colours excellent. We should, however, have left out No. 5, and increased the breadth of No. 4, and we think this would have improved the general appearance of the design. It was filled with the following plants:—1, Echeveria secunda glauca; 2, Alternanthera magnifica; 3, A. amena; 4, Golden Feather; 5, Echeveria secunda glauca; 6, Alternanthera amena spectabilis; 7, Golden Feather; 8, Coleus Verschaffeltii.

H (fig. 1) is also from a design produced in Victoria Park, and occupies the centre of our coloured plate. It is quaint in shape, but the figures fit in well, and altogether make an attractive bed. We think, however, that a darker colour for the central cross would have been preferable, and we should have liked the system of Alternanthera spectabilis, and the Cerastium in No. 4. This, of course, would have necessitated a slight alteration of colour in the margin, by reversing the positions of Nos. 2 and 3. The red colour would thus show through the central portion, and made it appear more to advantage by being surrounded with the white of the Cerastium. The plants used in this bed were the following:—1, Echeveria secunda glauca;

2, Alternanthera paronychioides major; 3, Mesembryanthemum cordifolium variegatum; 4, Alternanthera amena spectabilis; 5, Golden Feather; 6, Cerastium tomentosum.

I (fig. 2) is also given in the coloured plate, is a design taken from Battersea Park, and was planted by Mr. Roger in the following manner:—1, A. amena; 2, Echeveria secunda glauca; 3, tomentosum carpeted with Sedum anglicum; 4, Alternanthera paronychioides major; 5, A. versicolor; 6, A. amena; 7, Leucophaea Brownii; 8, Semperivivum montanum. This was one of the most chaste and satisfactory beds we saw during the whole season. The several breadths and the arrangement of the colours were excellent; it was not too large, and the forms composing the design were simple and effective.

J (fig. 2) is from Victoria Park, and is also shown in our coloured plate. We confess our preference for the wavy lines, which we think better adapted in every way for the display of colour than the angular ones, but no doubt each plan has its admirers. We consider the central part of this rather too large, and we think that two lines of colour would have produced a better display in the angles than the larger number; the marginal ring around the centre would also have been better a little wider. The plants used were, proceeding from without inwards:—1, Echeveria secunda glauca; 2, Stellaria graminea aurea; 3, Alternanthera amena major; 4, Pyrethrum Golden Feather; 5, Lobelia pumila grandiflora; 6, Mesembryanthemum cordifolium variegatum; 7, Alternanthera paronychioides major; 8, Echeveria secunda glauca; 9, Coleus Verschaffeltii.

K (fig. 2) is another form taken from Battersea Park, and which looked very effective. It was placed near the margin of the walk, and its bright colours and novel arrangement were very pleasing. We think, however, if the margin had been a little broader it would have been in better proportion. The small bands of blue uniting the circles, and the round tufts of colour on either side of the bands were novel, and looked well. This is also represented in our coloured plate. It was planted with the following plants:—1, 2, and 3, Tricolor Pelargoniums carpeted with Viola cornuta, and Bronze Pelargoniums carpeted with V. cornuta alba; 4, Lobelia Blue King; 5, pairs of succulent plants, and 6, Thymus aureus variegatus. The last-named plant does not retain its bright variegation long enough, so that it would be better to substitute Mesembryanthemum cordifolium variegatum.

L (fig. 2) is a portion of our large coloured drawing. It is taken from a design produced in Victoria Park, and, like fig. 1, forms part of a margin to a large bank of shrubs. This, we think, is much more suitable for the purpose than D, as all the figures may be considered perfect, and it would look equally well if carried out in a straight line. We are, however, inclined to think that in this pattern a bolder effect would have been produced if the number of the colours had been less and the bands increased in breadth; and by doing this perhaps the flowering plants might have been dispensed with. It was planted with the following:—1, Echeveria secunda glauca; 2, Mesembryanthemum cordifolium; 3, Pyrethrum Golden Feather; 4, Lobelia pumila grandiflora; 5, L. pumila aurea; 6, Pelargonium Vesuvius; 7, Coleus Verschaffeltii; 8, Pelargonium Flower of Spring; 9, P. Christine; 10, P. Vesuvius; 11, P. Crystal Palace Gem; 12, P. Madame Radersdorf; 13, P. Christine. Scale: 8 feet to 1 inch.

M (fig. 2) is also taken from Victoria Park, will be easily recognised by all who saw it there. It may be called, for want of a better name, the Hour-Glass bed. This bed was very well arranged. The plants employed were the following, and they were placed in the order given, commencing at the outside margin:—1, Echeveria secunda glauca, followed inwards by lines of Alternanthera amena, A. paronychioides major, Cerastium tomentosum, Golden Feather, and 6, Alternanthera amena spectabilis; 7, Mesembryanthemum cordifolium variegatum, edged with Echeveria secunda glauca.

N (fig. 2) was produced in Battersea Park in the summer of 1870, and before the system had become so common as it is now; it was filled entirely with leaf plants, and may be called in every sense of the word a carpet bed. The patches of colour were broad and effective, and the arrangement was in every way satisfactory. This is a simple pattern, and one we would commend to young beginners, as it is as easy to produce as it is pleasing when finished. It is,

we think, as an angular pattern a very desirable one, although we must again state our preference for the circular form of design. It was filled as follows:—1, Golden Feather; 2, Alternanthera amena; 3, Santolonia incana; 4, Alternanthera paronychioides; 5, A. amena; 6, Golden Feather; 7, Alternanthera amena; 8, Echeveria secunda glauca.

O (fig. 2) is another design taken from Battersea Park, and is one of the most curious and tortuous of the whole. To view this pattern properly it should be placed considerably below the eye, as in looking across the bed the lines are very conflicting. It was furnished, however, with good plants, and no doubt looked well, as both plants and colours were lasting. At that time the beds were smaller, and the use of flowers was not so prevalent in carpet bedding as it is now. The following list will indicate the manner of planting:—1, Santolonia lavandulifolia; 2, Alternanthera magnifica; 3, Golden Feather; 4, Alternanthera amena; 5, Santolonia incana; 6, Alternanthera amena; 7, Echeveria secunda glauca.

LIST OF PLANTS USED IN CARPET BEDDING.

- | | |
|---|-------------------------------|
| Artemisia argentea | Amaranthus melanochrois ruber |
| Centaurea coccinellidiosa | Coleus Verschaffeltii |
| Cerastium tomentosum | Irisine Herbstii |
| " Biebersteinii | " Carmine and Rose. |
| Chrysanthemum | Alternanthera amena |
| Guaiacum lanatum | " spectabilis |
| Leucophaea Brownii | " magnifica |
| Lobelia bluish of Edinburgh | Lobelia Oenan |
| Portulaca stracheyana elegans | |
| Salvia argentea | |
| Santolonia Chamæcarypis | |
| Senecio argenteus | |
| Stachys latifolia | |
| | |
| Yellow. | |
| Balm, golden variegated | |
| Coprosma Baueriana variegata | |
| Eucalyptus | |
| Lysimachia aurea | |
| Mesembryanthemum cordifolium variegatum | |
| Pyrethrum Golden Feather | |
| Sedum album | |
| " Falaria variegatum | |
| Stellaria graminea aurea | |
| Thymus aureus | |
| " Golden Fleck | |
| | |
| Orange-Red. | |
| Alternanthera amabilis | |
| " paronychioides major | |
| Nettaria edwardsii (herries) | |
| | |
| Blue. | |
| Lobelia Blue Gem | |
| " pumila aurea | |
| " grandiflora | |
| " nigricans | |
| George's Eyes. | |

AN APPEAL FOR SYMPATHY.

I'm a gentleman-help! to the rescue, kind friends,
I have nothing in Nature to do;
I never was able to make both the ends
Of my income to meet, it is true.
My character's good, tho' I'm bound to confess,
In the stocks I have oft "put my foot";
I've lost "in the pound," like an ignorant ass,
And come out with nothing to boot.
Now, gladly a gardener's place I would take,
I'm rapidly running to seed;
I flatter myself I'm a pretty good rake,
And a pretty good judge of a weed;
In moistening my clay I'm well known,
Indeed I have done it with tears;
My "diggins" still voted the neatest in town,
And I've [howed] for my living for years!
For a keeper well fitted, so give it a name,
All fish comes in well to my net!
I can shoot like a bird, know each move of the game,
And rather enjoy heavy wet.
I've a very nice cottage, and my great distress,
My knowledge of cattle's a drower's,
And if my game-books sometimes get in a mess,
I can make it all up at the covers.
As a coachman or groom I would offer to live,
I know what should be done to a colt;
A capital bargain I always can drive,
Or wait (for my dinner) at table.
I'll run you a horse; or if I wanted within—
So I've versatile mind I have got.
If your chief cannot properly make up his "tin,"
I can cook sams, or "put on the pot."
So ere you condemn this my movement, I beg
To give me a chance to be called;
Don't think though in need that I look a "brake leg"
Or light-fingered, 'cause of my fist!
I want to do something, and quickly, in hopes
To get a little more to pick out of the pot.
Go out for a sailor—"know all the ropes"—
My cry now is, gentlemen—Help!

The Tatler.

HOW TO RESTORE FADED BUNCHES OF LILAC OR FADED ROSES.—Plunge the cut ends of the flower-stalks into boiling water, or char the cut end of the stalk in the flame of a candle.

GARDENING FOR AMATEURS.

It must be expected that in all matters there should be occasional difficulties, sometimes great, sometimes mere mistis vanishing before a gleam of sunshine, and of the latter sort are many of those besetting ladies' gardening and that of amateurs generally.

What is needed is usually a slight knowledge of the principles of vegetable growth, rather than a study in detail of the operations in that "good book of gardening" perpetually asked for, but which is by no means so helpful as might be supposed, for, when with infinite labour and difficulty, all specified necessities have been collected together, the success of the plant supplied with them is apt to be as great as it would be if the lady amateur inserted one of her own children in the soup instead of setting him to drink it, and for a similar reason—it is starved.

Plants as well as animals must be fed, and the disappointments met with arise usually from a want of knowledge of how the food is to be taken in and assimilated.

If what, to speak familiarly, we may call the mouths in the roots, the lungs in the leaves, and the veins in the twigs are choked or destroyed, the sufferer must succumb. The "gardening book" without the principles of growth being understood is of little comparative value, the botanical treatise without a practical application is often wearisome, but by taking some of the chief points in amateurs' gardening, with the reasons of their success and

growth, which have the power of drinking in the moisture laden with what is to be assimilated into food.

By way of illustrating these matters we may refer to fig. 3, which shows a mass of root-fibres from a well-rooted cutting. A plant with such a mass of feeders will move well. Compare this with fig. 4, showing an old stump with a few woody twisted roots, all wood, and with little or no fibres. A plant pulled up or dug up with such roots is not likely to thrive when replanted. Fig. 5 shows the tip of a young root-thread very highly magnified. It will be

through a bladder, and whether it unites the plant or not it goes through the cell-coats just the same. If the plant has a large quantity of salt, or anything poisonous to it, put where it can melt and be drawn in, it will be poisoned; and if it has what agrees with it, and helps to build up the cells of which it is composed, it thrives; and the reason for choosing particular soils or manure is because they contain the things of which the plant is in great part composed.

Potash, soda, lime, phosphorus, and other kinds of mineral food are dissolved out of the earth. The bad smells of the manure heap show the presence of gases, which in the earth are taken up by water, and so drunk in by the plant; and because if the plant keeps taking food from the ground it needs to have its supplies replaced as much as a tethered animal, therefore we give manure or fresh soil, or move it to an unexhausted spot. For this reason it is good to dig in vegetable refuse, and so restore to the soil what the plant took out, and to have a small supply of two or three different kinds of food (so to call the different kinds of soil most frequently needed) at hand. Most plants of common garden growth find in common garden soil all that they need, but some like (that is to say, are partly composed of) lime, silica, or other matters, and will as little thrive without their proper food as a lion on vegetable diet, or a sheep on a piece of meat.

The plant must have a sufficiency of proper food, but also it should not have too much, especially of manure, or a rank and bloated growth will follow, probably with little blossom in proportion to the leaves.

If the soil is too dry the plant is starved, because the food must be absorbed in moist form. Again, a

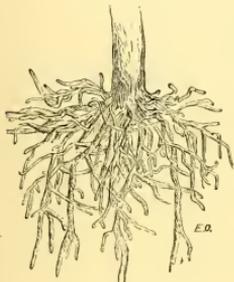


FIG. 3.—FEEDING ROOTS.



FIG. 4.—HOLD-FAST ROOTS.

seen that there is a central mass of fibres (b), surrounded by a thick layer of cells or hindlers, all more or less permeable to fluids. The extreme tip is covered with a little cap of dry cells (a), which do not absorb fluids, and which act as a protecting covering to the tip of the root beneath them, preserving the growing point from injury as it thrusts itself into the soil. In many cases the young root-fibres have an additional means of imbuing liquid food in the shape of very minute hairs (fig. 6), which by their extreme fineness can penetrate between the particles of the soil, if only there be a

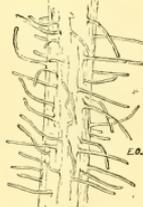


FIG. 6.—ROOT-FIBRE, WITH ROOT-HAIRS MAGNIFIED.

failure, some aid may be given. The lady's cultivated taste is invaluable in the flower garden, and anything which may make the task more tempting to her in the lighter parts, such as removing favourite plants, pruning and budding, sowing seeds, or storing roots and bulbs, is a benefit to all.

THE NUTRITION OF PLANTS.

In the first case—that is, in the special points to be thought of in moving plants—we may begin at the very beginning of applied botany, for we have to do with the root, that is, with what is the chief food supplier. Plants, being living and growing bodies, must have the material which they are made of—the food, that is, by which they are nourished from somewhere outside themselves. Great part of this food is sucked in as moisture by the roots, some part is supplied as air or gas by the leaves, and in the leaves also the change is wrought of the moisture or sap into what is requisite to feed the plant, but this process we can refer to presently. The first step of absorption is necessary before we go on to assimilation.

WHAT THE ROOT DOES.

The root is usually distinguishable from the stem by growing downwards, avoiding the light, and not having buds, and its double office is to hold the plant firmly in its place and to gather up food. Sometimes, as in Turnips and Beet, the food is stored for future use, but commonly the root is made up of a great mass of fibres getting smaller and smaller at each forking down to the tips. The thick part of the root, with its bark-like outside, has nothing to do with collecting food, it is only the youngest parts, the finest fibrils or hairs at the extremity of the newest

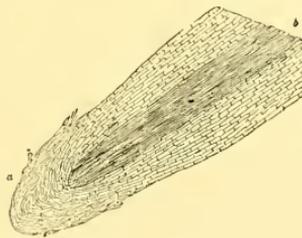


FIG. 5.—SLICE OF ROOT-FIBRE, HIGHLY MAGNIFIED.

little moisture to tempt them. A perfect fringe of these fine hairs may often be seen when the roots have got into something they like, as the gardeners say.

For these reasons a plant should be moved with a good ball of earth, so that the fibres may be kept safe from injury, for if the small fibrils are broken off the plant suffers, if a large proportion of the root is broken off it dies, and in the simple principle that the mouths must be preserved which feed the plant lies the safeguard against one large class of difficulties.

NATURE OF THE FOOD.

Another consideration is the food imbibed. The plant has but little power of choice. What is given is drawn through the thin coats of the minute cells of which the fibrils are formed, much as moisture goes

plant in a pot is often starved, because the earth is exhausted, and the water can soak no food out; and yet, again, manure must be decayed to be of use as food, or (though a little may be washed off the long straw) the crop it is intended to feed will be grown and dead before it has softened into a soluble condition.

HOW THE ROOT GROWS.

When the plant is in a natural state, the method of growth of the roots provide it with all necessary supplies. The rootlets, as has been said, lengthen at the extremities, and creep through all the little crevices and passages they can find, constantly taking new mouths to new food. In the soil of the garden subject to artificial difficulties, this is the reason why we keep the roots from being trampled on, and fork the borders to keep the soil open and free. Therefore also it is not good, except in particular cases, to use sifted earth, for it clogs hardly together, and therefore we often put brick rubbish and rough lumpy vegetable mould, or morsels of turf, that there may be sufficient passages for the roots; and here also is the reason of one of the most frequent disappointments to the amateur in moving plants. Some special plant is admired in a neighbour's garden, and a specimen is kindly bestowed; but who would offer a plant all loose earth? So, accordingly, before it is paped up, the remnants of a ball are smoothed, and kneaded, and patted, till it is as tough as a ball of dough, and the root-fibres are tightly fixed in the mass.

When a plant is to be moved it should be raised with as much earth as will come with it, so as to preserve all the fibres as much as possible, and if it has to go through any treatment that hardens the

outside of the ball, this should be carefully loosened, so that the fibres may be freed and laid round it when set in its new position, so as to have a fair course before them. With moderate care ordinary flowering plants with fibrous roots may be usually moved successfully at any time, excepting in the depth of winter, when the roots are nearly dormant, and might probably decay at the broken tips instead of making good the injury, or in great heat when the young growths require more moisture than the suddenly diminished fibrils could afford. Also they should not be moved when on the point of flowering, for all the forces of the plant are directed to this as the main object of its life, and, if the supply of food is then cut off, so will be the proper development of the flowers.

The great principle to be learnt here is that the root-fibres are the mouths of the plant; if these are destroyed or food is withheld, or they are prevented from reaching food, the plant dies of starvation; if instead of proper nourishment fluid that is unsuitable is imbibed, the plant is stunted or poisoned, and if too much is given it will be correspondingly unhealthily in its growth.

It is those who are inclined to pursue the subject in its details, there is every opportunity in the botanical books now-a-days to be procured with all necessary information condensed into short form, and given in clear language. Here it is only proposed to give a few of the simplest principles involving the common causes of success and failure. On another occasion we shall hope to have something to say as to the uses of leaves. O.

MY GARDENING EXPERIENCES.

By MR. MULBERRY GILLYFLOWER.

HOW I came to love flowers and gardening is a question I sometimes put to myself, and thousands of persons are constantly putting the same question to themselves, and finding considerable difficulty in answering it. The liking for flowers and the desire to cultivate them very often come suddenly to men and women both, just as a cold does, or a rise in the price of stocks, or the announcement of a dissolution of Parliament, or the first notes of the cuckoo in April. A regard that, for what is known to the contrary, may have lain slumbering for years in the human heart, awakens up in a twinkling; and a strong desire being born, its gratification must be ministered to. It is by a species of sudden conversion that numbers of men and women become gardeners—without a previous thought that any part of their nature could find an answering sympathy in that direction. Men are no more born gardeners than they are born with a possession of other required talents; such as a love of display, the desire to contribute to a gardening party, to become a town councillor or mayor, &c. Some get into the charmed circle early in life, others in middle age, some not till the leaves of their tree of life are turning sere and yellow by reason of advancing age. To all such, young and old, gardening becomes a real, satisfying, delightful pleasure.

My desire to be a gardener sprang up in me when I assumed the duties and responsibilities of a householder, and took possession of a residence with a walled garden to back and front. The outgoing tenant left me some shrubs, a few trees, some fruit trees also, and the flower and kitchen garden as bare of vegetable life as the asphalted roadway in Cheshire. I don't know what my predecessor had grown in the flower garden, but it looked, when I took possession, as if it had been made the recreation ground of some fowls. So hard and stoney in appearance was it that it might have been employed as a threshing-floor, or the trial ground of a traction-engine. Ornamental gardening was clearly at a discount at Cheshire Villa.

I thought I would make this howling wilderness to smile (figuratively, of course), and purchasing a spade, set about the task of digging it. After such a winter—which abundantly realised the remark of the poet—"the rain it raineth every day"—and the effects of drying east winds, coupled with the fact that the soil was of a clayey character, its state may be imagined. But *Luzula omnia vincit* was my motto.

I took my spade in hand, and commenced operations on the dust of the earth. I shall never forget the hours during which I endeavoured to instigate a downward motion to the spade, and so make it a clearing influence. The stubborn earth would not yield, and I soon found myself entertaining the con-

dition of the unjust steward, "I cannot dig." As Artemus Ward remarked, "It was not my forte."

A stont labourer armed with a pickaxe soon accomplished the task, and I had the satisfaction of seeing before me a surface of baked clay, like the fragments of a rock. By dint of much hammering and beating, these were at last reduced to something like powder, and made workable. But ere anything could be planted it was necessary something should be added to the soil to make it fit for the growth of plants and seeds. Acting on the advice of my labourer, I obtained some mortar rubbish from a house in course of demolition, some sand or gritty matter and dung, and the whole added together and well mixed ultimately gave me a mould of a satisfactory character.

Knowing but little of shrubs, I consulted a nurseryman, and he has supplied a few Laurels, Aucuba japonica, variegated Hollies, Lilac, Berberis Darwinii, Syringa, Guelder Rose, and some standard and dwarf Roses. These were carefully planted by my labourer, and against the walls of the house have been planted the Gloire de Dijon Rose, Clematis Jackmanni, Pyrus japonica, and the red-berried Pyracantha. Some of my friends strongly recommended rockwork, with a little fountain set off with shells; others were for laying the flower-garden wholly with turf, leaving no space for plants and flowers; but I am now glad I took their advice, and look out upon what has been done with considerable satisfaction. All that is required is warm weather and mild rains to assist in establishing the plants in the soil, and encouraging them to put forth growth.

I declare to you from what has been done, that it is not to trust to the wishes or plans of persons inexperienced in gardening, as to the best way to lay out a plot, or the proper things to plant. Had I done this, disappointment and failure would have followed. I left myself in the hands of a nurseryman accustomed to the work, first ascertaining his ideas, and then, when they commended themselves to my common-sense notions, commissioned him to carry them into effect. As I personally superintended the progress of the planting, I got some useful suggestions as to how to do the right thing in the proper way. If there is no nurseryman one can consult, there is generally some capable gardener to be met with, whose knowledge and experience can scarcely fail to benefit the enquirer. There is nothing like beginning well; the subsequent work, if rightly executed, is all the more satisfactory in consequence.

VILLA GARDENERS' BOOKS.

Hardy Plants for Little Front Gardens. By S. Stackhouse. London: Frederick Warne & Co. Price 1s. 12p.

This is a very useful little volume, intended for the possessors of tiny front gardens, of which gardens (as the author rightly observes) there exist "hundreds and miles" in the neighbourhood of the metropolis. The book contains useful hints, in plain and simple language, for the culture of numerous common but favourite plants, advice as to the economising of space, for covering unsightly walls and fences, and for raising rockwork, &c. For those who wish to pursue the study of plants still farther the names of many books are mentioned, and the volume is interspersed with appropriate quotations from the works of various authors. We can recommend this unpretending book to the numerous possessors of tiny gardens, the pleasure derived from the cultivation of such being wholly disproportionate to the size of the "piece of ground."

The New Practical Window Gardener; being Practical Directions for the Cultivation of Flowering Plants in Pots, Balconies, Windows and Glassed Cases, &c. By John R. Mollison. Illustrated. Groombridge & Sons. Pp. 204.

Another volume devoted to window gardening, a branch of horticulture happily greatly on the increase amongst the dwellers in towns, who, until they try, have no idea of the numbers of plants that will live and thrive in rooms and in a town atmosphere. The third case introduced by the late Mr. N. P. Ward will further serve to increase the facility of planting growing where many of the conditions are unfavourable, and for the management of these Mr. Mollison gives us plain and practical directions. A misprint, which might lead to some confusion, occurs on p. 70, where "callus" is twice spoken of as "calice." The botanical details indeed require revision throughout,

while some of the woodcuts would have been better omitted, e.g., that on p. 90, albeit the little book contains a great deal of just the sort of information which window gardeners want.

Artistic Amusements, including Colouring Photographs, Engravings, Chromo Printing, Transparencies, Penmanship, &c. Office of the Wellington Street, Strand, W.C. Price 1s. Pp. 48.

The title of this little brochure aptly describes its contents. Ladies who devote themselves to artistic pursuits, and labour for "hazards," devoted to the promotion of some philanthropic object, will find numerous hints in this small volume. Painting on china, "Queen shell-work," and a variety of what we may perhaps be excused for terming "fancy-work," are herein described, and quick brains and clever fingers will appreciate the directions which are luckily given.

Artistic Decorations for Ball Rooms, Halls, Passages, Dinner and Supper Tables. Illustrated. Price 1s. Pp. 80. Swaner Office, 32, Wellington Street, Strand, W.C.

A little handbook devoted to the arrangement of flowers, full of useful hints for those who fill their houses, rooms, or windows with the most exquisite of ornaments. Bouquets, buttonholes, small vases for brackets, and the like, are not forgotten. Directions are given for wiring Rock-roses, Camellias, and other flowers, and numerous useful hints as to the uses of tints and the selection of appropriate flowers for different occasions are supplied.

The Miniature Fruit Garden. By Thomas Rivers. Price 3s. 6d. Pp. 182. Longmans, Green & Co.

We have to announce the appearance of the eighteenth edition of this little book, a fact which is sufficient to show the very high esteem in which it is held by the class of Villa Gardeners for whom it is intended. But little is added in the present edition, the publication of which is superintended by Mr. T. F. Rivers, the son of the veteran author. It is almost needless to commend this special attention of amateur gardeners and cottagers, while those who grow for market on a large scale may also find some valuable hints.

The Natural History Journal. Conducted by the Societies in Friends' Schools. Price 4s. 11p. 5s. York: William Sessions, 15, Low Ousegate.

This is a monthly periodical, published in the hope of increasing the love of natural history, which is very often inhaled in boys and girls, and which will, it is to be hoped, tend to direct their energies in a less cruel direction than it frequently takes now. This evil propensity arises less from natural cruelty of disposition than from utter thoughtlessness and ignorance. The little publication contains notes respecting birds' eggs, a remarkable case of perception in a dog, hints for botanical collectors, and, for which small prizes are to be given, and other matters. There is one thing, however, we must protest against, and that is, the destruction of unlucky Coleoptera by plunging them into boiling water. Surely immersion for some time in chloroform would be equally efficacious, and more merciful.

Garden Recipes. Edited by Charles W. Quin. London: Macmillan & Co. Pp. 158.

A book devoted chiefly to directions for destroying the many pests which are the scourge of the gardener, such as the Apple maggot, crickets, millipedes, rats and mice, ants, &c. Liquid manures are also treated of, and the preservation of flowers, the making of skeleton leaves, the cure of insect's stings and a variety of other subjects all more or less interesting to horticulturalists. If we are not mistaken these recipes were originally published in *The Gardener*, a fact which should have been noticed in the preface, we think; nevertheless, the book is likely to be a useful one for Villa Gardeners, as it is not only arranged alphabetically but has an index as well.

The Window Observatory, &c. By H. King, Capt. R.N. London: Crosby, Lockwood & Co.

There is a palpable connection between horticulture and the sun, but that with the stars is not so obvious. The author's object in this little book, in advocating the general use of the transit instrument for private gardeners, is not only to present a simple means for obtaining the correct time, but to lead the way to a most interesting pursuit; and it may be predicted that if one more enjoyment be added to those of a country life, neither greenhouse, shrubbery, nor reservoir in course of construction, the author, Mr. H. King has accomplished his task so simply that no one need be alarmed at the formidable ideas connected with transit instruments.

IRELAND AND THOMSON have pleasure in intimating that their CATALOGUE of STOVE and GREENHOUSE PLANTS, FERNS, PALMS, ORCHIDS, &c., is now ready, and will be forwarded post-free on application.

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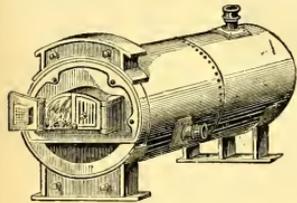
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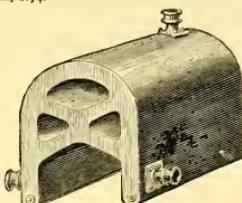
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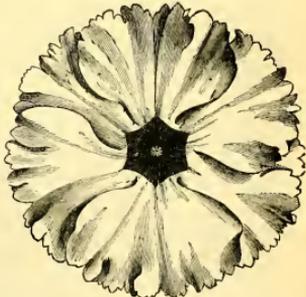
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Mr. J. Laing, Forest Hill, S.E., for Group of Plants. Silver Medal.
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Messrs. J. Standish & Co., Ascot, for Group of Plants. Large Silver Bankian.
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Mr. J. R. Taylor, Baywater, W., for Group of Foliaged Plants. Small Silver Bankian.
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Mr. C. Lee & Son, Hammersmith, W., for Group of Plants. Small Silver Bankian.
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Mr. J. Sweet, Leyton, for Group of Plants. Silver-gilt Flora.
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Messrs. H. K. & G. Wright, Lee, for Group of Plants. Small Silver Bankian.
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Mr. G. Brad, Wincmore Hill, N., for Group of Pelargoniums. Bronze Bankian.
Mr. T. Pearce, Kent, for Group of Plants. Bronze Flora.
Mr. G. Paulkin, Edmonstone, Group of Spornas. Bronze Flora.
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SATURDAY, MAY 19, 1877.

THE ROYAL ACADEMY.

THERE are but few pictures of the first class representing flowers and fruit in the Royal Academy this year, and but few pictures in which these objects occupy a prominent position, indeed the whole exhibition is below the usual average in high-class pictures, though the number of works displayed is somewhat larger than usual, and well-painted landscape is well represented by numerous and well-executed works. Passing by various figure-subjects, cattle pictures and portraits, we first notice, in the left-hand corner, by the Undercliff, 71, "A Spring Morning by the Undercliff," an excellently painted landscape, with Primroses, Dandelions, Hart's-tongue Ferns, Orchis mascula, &c., and a hedge-hog in the left-hand corner: there is a lovely spring air about this picture. 72, "Milking Time, Jersey," E. Douglas, is a well-executed picture, in the style of Landseer and Ansell, of cattle, with a landscape background, and a group of Horse-Mushrooms in the left-hand corner. 74, "Gillyflowers and Cherry Blossoms," H. Fantin, an unsatisfactory group of Wallflowers and double Cherry blossoms. 88, "The Fairy Ring," Valentine W. Bromley, two rustic children within a ring of fungi. We have many times seen rustic children better painted, and the fungi do not belong to the Fairy-ring Champignon but to Agaricus fascicularis, which usually grows in tufts at the foot of a tree. We greatly regret this young artist's very recent death at Harpenden, where fairy-rings have of late attracted so much attention from Dr. Gilbert. 99, "Study of Fruit and Flowers," two little Roses, an Apple, and a few Grapes, a tolerable little picture, with the inevitable jar which has stared us at no so many former pictures. 101, "Cowslips," G. D. Leslie, R.A., a beautifully painted picture of elegant country children with Cowslips (judging from the bag), for Cowslip wine. 106, "Fruit," Eleanor S. Wood, a well painted picture, after the style of Lancelotti, but middle-aged connoisseurs have seen the half-peeled Orange far too often. 117, 118, 119, 120. These are four figure subjects, by L. Alma-Tadema, meant to symbolise the seasons. "Spring" is a fair girl with a Cyclamen in a field of Anemones dotted with Pines, exactly such a field as was engraved in the Gardeners' Chronicle a year or two ago. "Summer" is symbolised by females in a small circular bath-room, with a background of mosaic, one nude figure crowned with flowers reposes in a small circular marble bath with Rose petals floating on the surface of the water, whilst a middle-aged and rather ugly female reposes in an uncouth attitude on a seat. "Autumn" is the interior of a Roman wine-cellar, with an olive-skinned dancing Bacchante, furnished with a torch, pouring out a libation of red wine before a figure of Bacchus. "Winter" is a group of muffled figures at the base of a column, warming themselves before a brazier in the form of a medieval castle: the wintry landscape and the effect of light in this picture are remarkably well done. The four pictures are very excellent, but less important in design and detail than the usual productions of this admirable artist. 148, "Pa-mela Concealing her Correspondence Between the Tiles," C. Landseer, R.A. In this picture

AICALYPHA MUSAIICA.

An erect-growing species, much branched and well furnished with handsomely coloured foliage. The leaves are large, obovate in shape, sharply pointed, and with the edges deeply serrate. The foot-stalks being short, the plant forms a goniolium of the Acalyphas, among which this plant is one of the most distinct for decorative effect. It received a Certificate of Merit from the Royal Botanic Society, April 18.

Price 21s. each.

COLEUM TUCULICOLOR.

A new and distinct species, introduced by us from the Solomon Islands, and presenting much striking novelty both in the form and colour of its leaves. The leaves differ chiefly from the usual type in having the teeth of the edges greatly elongated and rounded at the tip. In colour it is remarkable for the amount of rich shades of crimson red, rose, &c., into which the leaves sport; some of the young leaves having also a bright yellow for its ground color marked with white dots. All the shades of colour is the foliage contrasted fully with the bright green of the stem and foot-stalks. It is a very beautiful plant, and will be found among the most useful of its tribe for decoration. It received a First-Class Certificate from the Royal Horticultural Society, May 2; also a Certificate of Merit from the Royal Botanic Society, April 18.

Price 7s. 6d. each.

DRACENA ROBINSONIANA.

One of the most distinct Dracaenas yet introduced: it is a robust growing variety. The leaves of their foot-stalks have a length of from 15 to 20 inches, with a breadth of from 3 to 3 1/2 inches; the ground colour is a light silvery-green, with a broad striped band of bronzy crimson and greenish white, more broadly in some leaves than in others; the petioles are margined with crimson.

The colouring is unlike that of any other Dracaena, and marks the plant as being distinct, and in no way allied to it will prove one of the finest of the many Dracaenas recently introduced.

It received a First-Class Certificate from the Royal Horticultural Society, May 2, and a Certificate of Merit from the Royal Botanic Society, May 16.

Price 21s. each.

LOMARIA DISCOLOR BIPINNATIFIDA.

Of all the Lomarias yet introduced to British gardens this is certainly one of the most pleasing and attractive, not only on account of its light cheerful color, but also for its elegant habit and its beautifully divided fronds, which have characteristics quite distinct from any other genus.

It is a sub-arboreal Fern: the fronds are numerous, and spring from the crown of a short robust stem, arching, and from 18 to 24 inches in length; the pinnae are very close set, so as to overlap each other, and are cut to the rib, the outer subdivisions being slightly curved; they are sub-concave in texture, and of a soft light green in colour. In some of the latest formed fronds the subdivisions of the pinnae are smaller and more distinct.

This truly fine Fern, and one of the most elegant for decorative purposes, was introduced to us from Malacca through our Peter Veitch. It received the award of a First-Class Certificate from the Royal Horticultural Society on the recent exhibition of the 15th of May. It is one of the most distinct of all the smaller Lomarias, and is well worth culture. -The Garden, May 5.

Price 21s. and 84s. each.

PAVONIA WIOTI.

A very striking flowering plant, of which we have introduced the entire stock from Messrs. Mackay & Co., of Leige. It is the most acceptable form of the genus, and of few plants really valuable for their bloom introduced during late years.

We take from the Gardeners' Chronicle of June 14, 1876, the following remarks on this very interesting and new flower plant: "In habit and foliage it presents nothing different from familiar types of the genus, which when Malacca through our Peter Veitch. It received the award of a First-Class Certificate from the Royal Horticultural Society on the recent exhibition of the 15th of May. It is one of the most distinct of all the smaller Lomarias, and is well worth culture. -The Garden, May 5." The entire calyx here consists of two whorls of narrow slender bright red petals, the outer whorl being the larger, and this with its base equals the closed corolla. Both the latter and the calyx are of a red black. From the mouth of the erect tubular corolla the bright red staminal column protrudes about one inch, and bears numerous blue anthers.

As the flowers continuously throughout the year, but most freely in the winter months; it also commences to bloom when only from 2 to 4 inches high, and a small plant has from 10 to 15 blooms at one time. Also with its regular and pleasing foliage it will be exceedingly valuable for decorative purposes. It is also of few plants that so readily and easily flowered. It requires an intermediate temperature.

It has also received the award of a First Prize as the best new plant at Cologne, Brussels, Antwerp, Liege, and Paris.

Price 31s. 6d. each.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

Roses, Hollyhocks, Sunflowers, and other flowers, are introduced, but they are all bad and unnatural. 159, "Spring Flowers," Miss M. D. Mutrie, is an excellent picture of Azaleas, Violets, and Narcissus, with a peacock-feather fan for a background. 223, "Spring Time," Marian Chase, is a pleasant and tolerably correct painting, introducing Cowslips, Orchis mascula, and Nettles, but the picture is totally deficient of light. 233, "Spring Flowers," is a creditable little flower picture, but the Primroses are shown (perhaps purposely) as quite withered. 273, "The Sound of Many Waters," J. E. Millais, R.A., a landscape picture of lichen-clothed old red sandstone rocks, tumbling waters, and Firs and Larches, one of this famous artist's best landscapes. 352, "Wallflowers," H. J. Rhodes, is a well-executed flower subject. 353, "Field Mice," C. T. Rope, is notable for the introduction of the scarlet Peziza coccinea on a decaying branch. 358, is a capital portrait, by Lowes Dickinson, of Arthur Grote, Esq., late one of the Council of the Royal Horticultural Society. 388, "Basket of Roses," H. Fantin, an unsatisfactory picture, but the drawing of the foliage is good. 435, "Wild Flowers of South America," Miss A. F. Mutrie. This is a truly admirable picture both in drawing and painting; it represents a magnificent group of Orchids, such as *Odontoglossa*, *Cattleyas*, *Masdevallias*, &c.; and several species are introduced, and all are readily recognisable. The whole picture is very satisfactory, but if the real flowers were placed beside the representations, the colours of the latter would fall immensely; no artificial colours can approach the gorgeous purples and scarlets found in the species of *Cattleya* and *Masdevallia*. Experienced artists, who don't risk failure, seldom attempt them, because they know the originals to be simply unapproachable; inexperienced artists, however, often attempt them. 509, "A Baptism of Flowers," Albert Goodwin, is a charming picture of woodlands with young Beeches in spring; the ground is carpeted with Wood Anemones, Bluebells, and Primroses, amongst which are country children at play; in the foreground is a dowdy old woman with her back to the spectator, making her way towards a churchyard; the old woman is being pelted (baptised) with Primroses from the hands of the children. 640, "Snow in Spring," G. H. Boughton. This is one of the best pictures in the Academy, and represents a group of young folks with Hogarth's dog overtaken by a slight snowstorm in a woody place, 659, "The Passing Storm," J. C. Adams, appears to be an excellent landscape, with truthful effect of lurid sunlight after a storm, and deserves a far better position on the walls. 656, "The Source of a River," J. MacWhirter, an excellent study of a river-source, rich with wild flowers, Ferns, and Brambles, all well done; in the foreground is a white Foxglove and some red fungi, painted from memory, not Nature.

Teaching now the water-colours, we have 661, "Carrations," Emily Wympyer, which gives a correct idea of these plants. 663, "Lichen, Bark and Blossom," Miss B. Palmore, is a marvel of minute workmanship, but the entire picture, including the moth, is as flat and lifeless as a pancake. 655, "On the Tree-top," Emma Cooper, is a wren perched on *Acucuba* berries growing from nowhere in particular. 681, "The Twins," Edith M. Knapping, two red Roses very badly done. 613, "Azaleas," Helen C. Angell, not well executed, and the foliage very unsatisfactory. 695, "A Jug of Flowers," J. Jessop Hardwick, an indifferent study of Anemones and Polyanthus Narcissus. 697, "Cloisonnée enamel and flowers," Mrs. A. Lukis Guérin, a richly painted little drawing, much better than the ordinary run of the Academy floral subjects. 731, "Daffodils, Roses, &c.," W. J. Muckley, is a large group of flowers, thoroughly well

drawn and boldly painted—a floral picture of quite the first class. This picture, which consists of single and double Daffodils, Roses, Azaleas, Cinerarias, Tropæolums, &c., should be carefully studied by all would-be painters of flowers. 737, "Fallen," Mrs. Pfeiffer, a Eucharis bloom dropped amongst grass and Dandelions; the stock butterfly here puts in his eternal appearance. 739, "Azaleas and Pyrus japonica," J. Jessop Hardwick, an indifferent study of the plants mentioned. 775, "Mushrooms," J. Bligh, very good and natural. 783, "A Study of Herrings," A. G. Adams: this pair of dried bloaters is quite a relief after the flood of insipid Azaleas. 792, "A Bunch of Plums," J. Sherrin, is excellent, but how many times, alas, have we seen this bunch of Plums (like the overlasting Azaleas) before! 803, "Pansies," Emily Wympyer, is rich in colour and natural. 817, "Pine and Shell," J. Sherrin: this is a Pine apple and a snail-shell; these snail-shells are quite as great a nuisance as the Azaleas. What a change and relief it would be if some of the snail-shell painters would give us a slug or a worm or some other humble organism. 835, "Flowers," W. J. Muckley. Our remarks on 731 equally apply to this second bold and excellent picture of Rhododendrons, &c.: the perspective of the foliage is uncommonly good and correct. 840, "Fruit," Eleanor S. Wood: this is a "scenic" picture of Grapes, Pomegranates, and our too familiar and very old friend the Melon with a slice removed. 842, "Peonies," A. C. H. Lummore: a good picture of Peonies, but with the leaves too flaccid. 852, "A Bough of Plums and Apples," W. Kimpel, well executed, but we fancy we have seen it at least a hundred times before. 862, "A Bunch of Apples," J. Sherrin, a beautifully painted picture, the foliage being especially good. 897, "Azaleas," Anne Jenkins, very good, but we prefer Dandelions in figure. 875, "Roses," Helen C. Angell, well executed Roses in a glass. 884, "Cinerarias," Miss Lewellyn: this is a very good study of these plants in a common red garden pot; the drawing and colour are alike good. 887, "Azaleas," Constance B. Philipp, same as the other Azaleas, but we hope to see less of them in future. 903, "Sunflowers," Miss E. Walker: this study from Nature is thoroughly well done, the drawing and colour is bold and decisive and very natural, the tiger-moth is hardly seen. 1389, "Azaleas," C. Symonds: this is a somewhat rough painting in oil of white Azaleas, and of little interest. 1399, "Camellias and Azaleas," Miss M. D. Mutrie, a far more exact and truthful picture of these plants than the majority previously mentioned in this report.

Of figure-subjects there are many excellent examples, painted by such masters as Millais, Leighton, Alma-Tadema, Poynter, Herkomer, Gilbert, Long, and others, but we have no space for extended reference to these works, or, indeed, to many of the beautiful and truthful, or, indeed, which adorn the Academy walls. The life-size bronze of an athlete wrestling with a python, by Mr. Leighton, is one of the finest statues we have ever seen.

New Garden Plants.

PEZOTOPORA ROEGLII, Rehb.

This, the *Zygopetalum Roeclii* of my herbarium, has finally flowered with Sir Trevor Lawrence, who was so very kind to send me both flowers—one in December, 1876, and one in January, 1877. It is exceedingly difficult (as I have before stated, when describing *Bollea exaltata*) to make up one's mind as to the identity of fresh flowers of this alliance with the wild-grown, dried, shrivelled flowers. After having carefully sketched and described the fresh flower, one has to get it into just as miserable and shrivelled condition as the wild specimen, and then one comes to the point. Notwithstanding some insignificant discrepancies, I feel persuaded Sir Trevor has had the good fortune to flower the genuine plant. And what a flower it is! Can it be recommended

better, than by stating it is near Mr. Day's noble *Pezotopora*? In lieu of its usually rich violet-purple, this one boasts sepals and petals with splendid purpluro-rose colour with a very little green at the base. The blade of the lip, excepting the callus and the base of the column, too, are just of the same colour. I feel very thankful to Sir Trevor Lawrence for sending me these glorious flowers.

Speaking of those bulbless *Maxillarias*, I am sorry to state that some of my English correspondents, who tell me not only their pleasures, but their cares and sorrows too, deeply complain of the ingratitude of this group, which they feel inclined to place on the list proscribed Orchids. My private experience at Hamburg Botanic Garden is this, that these plants dislike a treatment with sphagnum, sand, wood, coals, and bricks alone. Give them good, rich wood soil in profusion, fresh air, good circulation, and good water, free of any manure, and they will thank you immediately by offering you numerous finger-like roots, as if they wanted to shake hands with you. But let us never forget the individual value. As the best people weave or feed as *Apocynum androsaemifolium*, and the best of us as *Sparganium angustifolium*, good plants. Thus, after seven years' troubles, we have just witnessed the predicted death of a *Vanda coerulea*, always declared a candidate for death, although other individuals of the same species have proved very well under the same treatment. H. G. Rehb, f.

PINUS OMORIKA, Panic.

At p. 470 of the present volume will be found some notes on this tree, and from the same source (*Monatsberichten der Gesellschaft der Gartenbauern*, &c.) we now extract the original description, given below, and the following additional particulars. One of the most noteworthy characters, Dr. Bolle says, pointed out by Dr. Panic, resides in the glaucous upper surface so you cannot grow certain miserable individuals to good plants. Thus, after seven years' troubles, we have just witnessed the predicted death of a *Vanda coerulea*, always declared a candidate for death, although other individuals of the same species have proved very well under the same treatment. H. G. Rehb, f.

THE GENUS AGAVE.

(Continued from p. 529.)

SERIES I.—CORIACEO-CARNOSUS.—Texture of the leaf rigid, not at all fleshy or yielding to the touch when mature. End spine large, hard and pungent.

Group 11. Marginata.—Edge of the leaf furnished all the way down from the top to the bottom with a distinct heavy border of the same texture as the teeth.

Having last time dealt with the Marginata with ensiform leaves, I proceed in the present paper to describe those in which the leaves are oblanceolate or oblong, at any rate decidedly narrowed from the middle to the top of the dilated base.

* GRANDFOLIA.

15. *A. Andrieuxii*, Jacobi, Nachtrage, p. 19.—Acaulescent. Rosette 5 feet broad and nearly 3 feet high. Leaves numerous, oblong-spathulate, 2 feet long, 7 inches broad, with a long strong pungent terminal spine, dull opaque green, not vitate, bandied and glaucous beneath. Petioles furnished with a straight grey-brown edge, and remote regular large denticulate teeth. Inflorescence unknown.

A native probably of Mexico. I know it only through Jacobi's description. It is the giant of the Marginata, and the only large species of the group with leaves of the *Solymus-amœna* type of form.

16. *A. Demetrianæ*, Jacobi, Monogr., p. 218.—Shrubly caulescent. Leaves very long, lanceolate-spathulate, nearly 2 feet long, 3 inches broad at the middle, narrowed to 2 inches above the base, and to a

* *Arbor exaltata*, comae anguste pyramidatis, laminae brevibus subverticillatis superioribus erectis, mediis horizontaliter patentibus sc inferioribus pendulis, ovatis, serratis, reticulis aciculis spinosis, nervo utriusque prominulo, foliis striatis, reticulis aciculis spinosis nervo utriusque prominulo, obsolete truncatis, apice acuminatis, venter aciculis cartilagineis superioribus paginae extimæ glaucis; stralibus sat parvis oblongis in ramis variegatis longitudo erectis, horumque in partibus ovatis, serratis, reticulis aciculis spinosis, nervo utriusque prominulo, obsolete truncatis, apice acuminatis, venter aciculis cartilagineis superioribus paginae obovatis alba ovata-cuneatis, subulnibus obovato-cuneatis, integris triplo brevioribus. *J. Panic.*

pungent brown point $\frac{1}{2}$ inch long, opaque glaucous-green, not vittate, but furnished with broad transverse deeper and paler-coloured bands, the base $1\frac{1}{4}$ inch thick, furnished with a distinct, narrow, continuous horny repand border, and broad, small teeth. Inflorescence unknown.

A native probably of Mexico. Described by Jacobi from the collection of the gentleman at Antwerp after whom it is named. So far as I am aware, no specimen has ever reached this country.

is one of the most handsome of these dwarf Marginatae. *A. Rohanii*, Jacobi, Monogr., p. 43, is a dwarf variety, with vitate leaves of a deeper green; and apparently *A. Leguayana*, Hort. Verschaffelt, which I have seen at Mr. Peacock's, is a narrow-leaved variety of this species (leaves $\frac{1}{2}$ foot long, $1\frac{1}{2}$ inch broad at the middle).

18 *A. Peacockii*, Croucher, in Gard. Chron. 1873, p. 1400, tab. 283.—Acaulescent. Leaves 40—60 to

and 207; Nachtrage, p. 15; Wochenschrift, 1869, p. 177; fig. 99; *A. Desmetiana*, Hort., non Jacobi; *A. Regeliana*, Hort., non Jacobi.—Acaulescent. Leaves 30—40 in a dense rosette, rigid, lanceolate-spathulate, 8—14 inches long, $1\frac{1}{2}$ —2 inches broad at the middle, narrowed to $1\frac{1}{2}$ inch above the dilated base, bright green, not vittate, $\frac{1}{2}$ inch thick at the base, $\frac{1}{2}$ inch thick in the centre, the point pungent, $\frac{1}{2}$ —1 inch long, the margin furnished with a continuous broad grey border, with copious, deltoid-cusp date teeth $\frac{1}{2}$ — $\frac{1}{2}$ inch long. Inflorescence unknown.



FIG. 98.—AGAVE HORRIDA VAR. MICRANTHA.



FIG. 99.—AGAVE HORRIDA, TYPICAL FORM.



FIG. 100.—AGAVE GHIESBREGHTII.



FIG. 101.—AGAVE GILBEYI.

** PARVIFOLIE.

17. *A. Ghiesbreghtii*, Lemaire; Jacobi, Monogr., p. 42; fig. 100.—Acaulescent. Leaves 30—40 in a dense rosette, rigid, lanceolate, 9—12 inches long, $2\frac{1}{2}$ —3 inches broad two-thirds of the way up, narrowed to 2—2 $\frac{1}{2}$ inches above the dilated base, bright glossy green, not vittate, $\frac{1}{2}$ — $\frac{1}{2}$ inch thick at the base, $\frac{1}{2}$ inch thick in the centre, the pungent end spine $\frac{1}{2}$ inch long, the border narrow, red-brown till a late stage, the back not striated with deeper-coloured lines, the copious irregular lanceolate-deltoid teeth 2—3 lines long. Inflorescence unknown.

A native of Mexico, introduced by Verschaffelt in 1862. It is now widely spread in our collections, and

a rosette, rigid, oblanceolate-spathulate, 9—12 inches long, 2 inches broad above the middle, narrowed to $1\frac{1}{2}$ inch above the dilated base, dull glaucous-green, with a pale central band, $\frac{1}{2}$ inch thick at the base, $\frac{1}{2}$ inch thick in the centre, end spine an inch long, the edge bordered with a moderately broad continuous horny line, at first red-brown, the subsistent deltoid cuspid curved prickles 3—4 lines long. Inflorescence unknown.

Introduced by Roelz, from Tehuacan in Central Mexico. Closely allied to Ghiesbreghtii, from which it differs mainly by its opaque glaucous vittate leaves. I have seen it only at Mr. Peacock's.

19. *A. horrida*, Lemaire; Jacobi, Monogr., pp. 43

A native of Mexico, introduced by Verschaffelt in 1862, and now widely spread in our collections. It is well marked by its dwarf habit, bright green colour, continuous broad border, and large grey teeth. There are many varieties, of which the following are the principal:—

1. *maculata*.—Leaves 50—60, broader than in the type (about 24 inches). Spines larger than in the typical form. Seen at Mr. Peacock's.

2. *micranantha*, fig. 98; *A. grandidentata*, Jacobi, Monogr., p. 207.—Border of the leaf narrower and spines smaller than in the typical form.

3. *Gilbeyi*.—*A. Gilbeyi*, Hort. Haage and Schmidt; Gard. Chron. 1873, p. 1205, fig. 270; Regel, Gartenfl. 1874, p. 89, with woodcut; fig. 101.—Leaves about thirty, not more than 3—4 inches long, 2 inches broad,

dark green with a pale stripe down the middle, the broad as broad as in the type, with 3-4 large spines on each side. Introduced by Koel from Tehuacan.

Treuequaria.—*T. treuequaria*, Jacq., p. 65.—Koch, *Wochen*, 1859, p. 173; *Nachtrag*, II., p. 105.—Leaves obovate, glaucous-grey, about 4 inches long by 1 inch broad, the border very broad, and the few teeth very large and curved.

I cannot make out clearly from Jacobi's elaborate description how his A. Magretiana, *Monogr.*, p. 215, a plant unknown in England, differs from horrida; A. horrida has been widely distributed in gardens under the names Desmetiana and Regaliana, but the plants described under these names by Jacobi are apparently different, and both belong to the group V., Rigida. This concludes the group II., *M. triginta*.
F. G. Baker.

THE NUTRITION OF FRUIT TREES.*

DR. GOEPPERT, in an article printed in most of the German gardening periodicals, on the necessity of scientific knowledge for the real advancement of horticulture, laid particular stress on the urgent need of the early investigation of the laws of the nutrition of plants, with especial reference to the determination of the indispensable elements as distinguished from those accidentally present in vegetable substances. Representing the first institution established in Germany for the purpose of conducting scientific researches bearing upon horticulture, Dr. Sorauer has taken up this subject with the intention of prosecuting his studies in this direction to the utmost of his power and resources. What follows is for the greater part in his own words.

With regard to the elements necessary in the food of cultivated plants the following facts may throw some light on the matter. At this experimental station, for three years past, trees belonging to various genera have been cultivated in nutrient fluids. From the circumstance that they are successfully cultivated, and exhibit a normal development, it must be assumed they obtain in sufficient quantity all that is absolutely necessary for their nutrition. The manner of procedure recommended by Dr. Goepfert for solving this question has not been followed, because it leads to disappointments, and because it can be replaced by something simpler. Goepfert proposed that soils, and the plants that flourished perfectly in them, should be submitted to analysis. This would take us direct to the goal if plants absorbed none but the necessary elements, which is not the case. Hence analyses would have to be made of a number of different soils, and samples of the same plants growing in them, in order to arrive at an approximate idea as to which of the ash constituents were accidentally present, and which are essential. Again, a chemical analysis of a plant growing in the earth gives no certain clue to the quantity of each of the constituents at least requisite to build up a gramme (15 grains) of the dry substance of the plant in question. A glance at a series of analyses of the same plant is sufficient to teach us how widely diverse the percentages of the various ash constituents are from different soils. To give a single recent example (Dieckmann's *Centralblatt für Agrar-chemie*, 1871, vol. 3, p. 435). See a series of analyses of *Lacera* grown in different soils—

	Granitic soil.	Chalky soil with flints.	Clayey soil with chalk.	Very chalky soil.
	P. cent.	P. cent.	P. cent.	P. cent.
Silicic acid	0.99	0.44	0.47	0.38
Ferric oxide	0.75	0.45	0.72	0.60
Magnesium carbonate	0.50	7.15	10.11	9.05
Calcium sulphate	7.31	1.84	1.31	6.50
Calcium phosphate	14.94	4.11	10.76	10.71
Calcium carbonate	11.42	48.25	49.68	30.49
Potassium carbonate	48.41	39.92	30.50	26.99
Potassium and sodium chlorides	6.67	3.90	0.68	6.98

The way in which this question has been investigated at Proskau has already been mentioned. The results obtained from (herbaceous) plants that had been thoroughly burnt in distilled water or quartz sand that had been thoroughly burnt to show that very different plants invariably require only the same ash constituents for their growth, and it was reasonable to suppose that woody plants would need no other nutrient substance. This assumption has also been confirmed. The ash constituents are presented in the form of the familiar nutrient salts. The water which the plant

* By Dr. Paul Sorauer, Director of the Experimental Station for Vegetable Physiology at the Faculty of Agriculture at Proskau. Condensed from the *Monatsschrift des Vereines zur Beförderung des Gartenbaues* for February, 1877.

uses and evaporates is replaced from time to time. According to the nature of the experiment, the nutrient solution is renewed within certain given periods. The solution was never of a higher concentration than 0.5 per cent., and the various salts were represented in the following proportions:—

Potassium phosphate	0.5 milligramme equiv.
Magnesium sulphate	0.4
Potassium chloride	0.2
Calcium nitrate	4.00

To which was added a small portion of phosphoric acid and oxide of iron. In this solution the following plants have been successfully cultivated:—Apple, Pear, Cherry, Plum, Peach, Grape Vine, Pine, Fir, Maple, Ash, Elm, Elder, Orange, Lime, Hazel, Robinia, Caragana, Gleditsia, Calycanthus, Ailanthus, &c.

Thus it will be perceived that trees belonging to the most distinct families require no other nutrient substances than our cultivated cereals do, and it will scarcely appear too venturesome to assume that the majority of plants can live upon these substances. If silicic acid and sodium, which are usually found in the ash of plants, be indispensable, the quantities needed are so infinitesimally small that that accidentally conveyed to the plants in dust, &c., is sufficient. A few plants, such as the salt-marsh plant, are an exception to this, and require a larger quantity of common salt. But very few plants are peculiar to certain soils, and therefore all garden plants may first be tried in the nutrient solutions, and, in case of failure, recourse may be had to analyses of the soil and plants.

So far as our fruit trees and the others enumerated above are concerned, these experiments have advanced the nutrition question to another stage. We now know what ash constituents must be present, and further experiments must determine the smallest quantity of each separate nutrient substance requisite to form 1 gramme of dry matter. But this part of the inquiry is of little importance from a practical point of view, as we are able to insure a surplus of all of the substances in the soil even after the heaviest crop. The principal substances, such as nitrogen, potash, and phosphoric acid, we can always increase by manuring, and as fruit trees require the same food as cereals, we can regulate the manuring according to the principles laid down in agriculture. In the main it resolves itself into a question of the presence of water, for water furnishes the solvent for all the elements of the soil. As cultivated trees, it should be remembered, have a different root-apparatus from the wild tree, which usually pushes a tap-root or a few main branches deep into the soil, into layers less exposed to fluctuations of temperature and moisture. So the wild tree has an advantage over the cultivated one in being able in dry seasons to pump the water from deeper layers of soil [and we may add that it is not so easily blown down]. In so far as this goes, they are right who recommend not cutting the roots of scedling trees. But trees raised in nurseries must of necessity be root-pruned in transplanting, usually on or less each time of re-planting, or when planted in their final destination few of them would live. Such trees can neither go wide nor deep for their water; hence the cultivator should pay more attention to the arrangements for maintaining an ample supply of water within reach of the roots of his trees. A question for science to solve is, how much water does a tree use in the production of a given weight of dry matter, and does the quantity vary with the conditions under which the tree is growing? These points will be the subject of future communications.

PLANT PORTRAITS.

ABUTILON ROSE-FLOREM., *Floral Magazine*, t. 253.—A new hybrid, stated to have been raised between A. Boule de Neige and A. Darwinii. It is of dwarf, fern-flowering habit, the flowers rose-coloured. (Williams.)

AGAVE SARTORI., *Botanical Magazine*, t. 6292.—One of the section *LUTEA*, distinguished from all the fleshy-leaved race by its caulescent habit. It was described under three different names by Jacobi, and under a fourth by Todaro. The figure now given is from a plant which flourished in the collection of W. W. Saunders, Esq.

ANTHURIUM DECHARDI. E. And., *Illustration Horticole*, t. 269.—A very handsome, white-spathed

Aroid, similar to A. Patini and A. floribundum, but with larger spathe. The plant will probably be grouped ultimately, along with the species just named, under the new genus *Amomophyllum*, lately established by Dr. Engler, in the *Gardener's Chronicle*, 1877, p. 319. A. Dechardi is one of M. Andri's discoveries in New Grenada, and he thinks so highly of it that he proposes to place it in the future as a plant for the million, like *Chilodactylus*.

AQUILEGIA CHRYSANTHA., *Gartenerflora*, t. 895.—This is the yellow-flowered Columbine concerning which there was some discussion in our columns in 1873.

CALLIPHERIA SUBESENTATA., Baker, *Botanical Magazine*, t. 6289.—This is the plant which has been grown in some gardens under the name of *Eucharis candida*, but it is not the true E. *candida* of Planchon, which was sent out by Mr. Bull last year. The plant has stalked ovate oblong leaves, and a truss of white funnel-shaped flowers, borne on a long scape. The figure is taken from a plant which flourished in the garden of M. H. Beaufoy, Esq., South Lambeth.

MASSANGEA (CARAGANA) MUSICA., *Illustration Horticole*, t. 268.—This is the Bromeliaceous plant, with beautifully marked leaves, which was originally sent out as *Tillandsia Musica*, and is named by M. André Caragana, but which is likely soon to be constituted by M. Morren as a new genus, under the name *Massangea*. In any case the orange bracts and yellow flowers, though rather showy, will not vie in beauty with any of the best of the plant order, so that it is still for its elegantly marked foliage that the plant will be valued in stores.

CATASETUM GNOMUS., André, *Illustration Horticole*, t. 250.—A species with lanceolate sepals of a greenish colour, spotted with purple spots, lateral petals lanceolate, shorter than the sepals, and of a violet colour; limb whitish, three-toothed, the central one hooded, sprinkled on the outside with purplish spots. There appears to be some doubt as to the specific identity of the plant, which will doubtless be cleared up by our learned friend, Dr. Reichenbach.

GLADIOLUS OCHROLEUCUS., Baker, *Botanical Magazine*, t. 6291.—A Kaffrarian species, with spikes of medium-sized straw-coloured flowers, introduced from the Transvaal by Mr. Bull. Independently of its intrinsic merit, it will probably prove useful to the hybridist.

NIPHEA ROEHLII., Regel, *Gartenflora*, t. 896.—A new species of *Niphea*, with ovate-stalked downy leaves and small whitish flowers on long stalks. It does not appear to be of much horticultural importance.

ONTOGLOSSUM CERYANTHA., *Floral Magazine*, t. 254.—A very fine variety of a new well-known Orchid, which was exhibited at the Royal Horticultural Society lately by Sir Trevor Lawrence. The figure is superior to that of many others in this publication.

PRIMULA PARRYI., *Gartenflora*, t. 894.—A species from the Rocky Mountains, with sessile oblong glabrous leaves, and numerous umbellate flowers borne on a scape. The flowers are of a purplish colour.

PRIMULA "ROSY MORN.", *Floral Magazine*, t. 255, is one of Mr. R. Dean's seedling forms, of a rich magenta colour, with a yellow eye.

RESTREPIA ANTENNIFERA., *Botanical Magazine*, t. 6288.—An Orchid which has been known for many years, but of which, as it appears, no satisfactory figure has previously been published. The plant is a native of the mountains of New Grenada and Venezuela, at 6000 to 10,000 feet elevation. It is a plant for the connoisseur rather than for the generality of Orchid growers.

RONDELETTA BACKHOUSII., Hk. f., *Botanical Magazine*, t. 6290.—A beautiful shrub, needing stove or warm greenhouse treatment, with spotted stalked ovate acute leaves, midrib red on the under-surface. The panicles are terminal and many-flowered, each flower about 3-½ inch long, salver-shaped and rose-coloured. The plant was received from Messrs. Backhouse, of York, and is probably of tropical South American origin. In any case, it is a most desirable but little known plant.

THAPSIA CARGANEA., *Botanical Magazine*, t. 6293.—An Umbelliferous plant, to which great interest attaches, as being the "Thapsia" of Dioscorides, celebrated in olden time for its healing powers, and supposed, but erroneously, to be the Silphium of the ancients. The plant was lately introduced by Dr. Leard, but it is an old denizen of our gardens.

VENIDA CERULESCENS., *Floral Magazine*, t. 256.—Of this a good spike is depicted from the collection of Messrs. Veitch.

LIBONIA FLORIBUNDA.

In the condition in which one usually sees this plant, the specific name appears a misnomer, and yet under a certain mode of treatment it really is one of the most floriferous and useful little plants it is possible to have for winter decoration, lasting as it does a very considerable length of time in bloom, besides being of an exceedingly neat and showy character; indeed, so serviceable is it, that I know of no plant I could so ill spare, as it is one on which I place the principal dependence from November to May, during the whole of which time the plants are studded with thousands of flowers, which, being of scarlet and yellow, quite outdo some of the flowers intended for winter decoration, with its hybrid variety *L. penhosiensis* as an edging, or interspersed among the glowing *Serico-graphis*, with which it is closely allied, the effect is most charming; and, as it requires no heat beyond that of a warm greenhouse, it is doubly valuable on that account. Of perhaps equal merit is *x. L. penhosiensis*, a cross between the above and *Serico-graphis Ghiesbreghtiana*, the leaves of which partake more of the character of the latter in a particular form, the flowers intermingling between the two, as it is likewise in general habit and size.

To get either of these sufficiently large to be serviceable, and in good condition for next autumn, cuttings should be put in at once, but before doing this it is better to place the old plants in a gentle moist heat to start them into fresh growth, in which state the young tips always strike more readily than when taken from them before they are on the move. Any close-confined place suitable to strike *Verbenas* or other soft-wooded stuff of that kind will do to stand them in—a situation in which they will root readily and soon be fit for potting off, which should be done in light soil, consisting principally of fibry peat or well-decomposed leaf-mould and sand. A nice hot-bed, such as a Melon or Cucumber frame, will be the fittest place for them to get a start, or, failing either of these, any light shelf in the stores where they can be kept well syringed both morning and afternoon till the weather is sufficiently warm to remove them to some of the cold pits or frames to complete their summer growth. This may be done by the end of May or June, when the plants will be ready to be planted in flats filled with sufficient leaves or other fermenting material in which to plant the plants so as to afford them a very slight bottom-heat and screen the pots from the sun—a matter of much importance on account of the desiccating effect it has on the roots, and which is a frequent cause of throwing the plants into that semi-leaves half-starved flowerless condition they are so often seen in.

The soil for the final shift should be composed of good fibry loam and leaf-mould, or peat and the former, in about equal proportions, with a fair sprinkling of sand to keep it open and porous. In this they should be potted somewhat firmly, and have the points of the shoots nipped out from time to time to induce a close bushy habit. In order to assist them as much as possible, choose early in the afternoon, having previously given a good syringing to engender a thoroughly moist atmosphere—a condition in which they greatly delight. By the end of August they should have completed their growth, and the whole secret of success in getting them to bloom satisfactorily lies in having them properly ripened, which can only be done by full and free exposure to both sun and air. Of course this must be done by degrees, or the leaves will become burned or discoloured, but by taking advantage of a dull day or two on first withdrawing the lights any injury of this kind may easily be obviated.

So long as the weather remains at all fair after the first week or so of hardening, they may with advantage be left uncovered day and night, but every care should be exercised in keeping them properly watered and well vented overhead at least once a day when ever it is at all hot and sunny. Treated in this way they will be covered with flower-buds by the end of October, when they should be moved to the greenhouse, and stood in some light position to expand their blooms, or if a few are wanted early they may be subjected to a little more heat, but in this caution is needed, for if the transition is too great or sudden, the leaves are sure to fall, and many of the buds likewise. Where extra large plants are desired, it is necessary to keep them from heat so long, and to prune back the shoots after flowering, much in the

way that *Pelargoniums* are treated; when, if placed in any forcing house at work, they will soon break, and should then be partially shook out and re-potted, afterwards returning to the same or a similar position to give them a start.

By pegging out the side branches after the potting has taken place, so as to form a good foundation or frame, it is an easy matter to have four-year-old plants at least 2 feet through forming dense bushes, which, with proper ripening of the young growth, as advised, are sure to be taken with a day. The largest and best of ours are of that description, and in 8-inch pots, which afford ample room for the roots if planted during the summer and well cared for as regards water, &c. An easier way of growing this *Libonia* is by planting it out in warm, sheltered positions in the open—a practice that has at least one recommendation in its favour, and that is, that it secures a thorough hardening and ripening of the twiggly shoots, on which, as before observed, so much of the success depends.

If treated in the above manner an ordinary garden frame should be made use of for the purpose of planting them in, towards the end of May, which, after they get a fair start, can be lifted and removed altogether, thus leaving the plants fully exposed till the autumn, when they should be lifted with good balls and kept close for a time, to get them established in their pots, in which they will be greatly assisted by copious syringing. Before planting them out, the bed in which they are to be grown should be properly prepared, either by putting fresh soil to a depth of 6 or 9 inches, or by a large admixture of leaf-mould or refuse peat, or any vegetable matter of that kind in a thoroughly decomposed state, so as to induce plenty of fibre close home, otherwise it will be a difficult matter to get them up with a sufficiently large ball to ensure their well-doing. 7. 5.

BRUSSELS BOTANIC GARDEN.

EVERY visitor to Brussels is familiar with the imposing appearance which the range of conservatories, placed on a commanding site facing one of the Boulevards, makes. But if this were the only claim the Botanic Garden had upon notice, it might well be passed over in this place. The fact is, however, that after having languished for some time as a private concern, the garden and its adjuncts have quite recently become Government property, and awakened to a new and flourishing existence, under the direction of M. Crépiau, who is ably seconded by a competent and zealous band of assistants. We believe that for this happy state and happier promise Belgian botanists owe their gratitude in great measure to the venerable Dumortier, who, as a legislator, has not forgotten his early allegiance. On the contrary, he has given signal proof of his devotion, and in the organization of the botanical department has rendered services which will not readily be forgotten. The extent of the garden, including the space occupied by the buildings, is about 6 hectares. It may be said that as a scientific establishment it dates only from 1870, the year of its purchase by the Government. Until that time it had been but a horticultural institution, the collections of which were of little or no use to the public.

There is now a much more varied and extensive collection than the house of plants was at all prepared to see, the houses unfortunately being more built for show than for culture; and there is a well-arranged herbarium lodged in a spacious and well-lighted room nearly 150 feet in length, which also contains a small working library. This herbarium has for its nucleus that of the late Von Martius, whose fine collections of dried plants and of vegetable products were acquired by the Belgian Government. Subsequently to the rich European acquisition, M. Bommer and Crépiau have been added, so that there is every prospect of this establishment taking rank among the most important of its kind on the Continent.

On entering the garden from the street the visitor is at once struck with the instructive system of labelling. In the case of the trees, not only the names, popular and scientific, and the natural order of the tree are given, but a sketch-map of the world on a small scale is affixed, on which is indicated by patches of colour the geographical distribution of the tree in question. The herbaceous plants are arranged according to the method of M. Dumortier, and planted in large circular beds. These are subdivided

by concentric beds, divided by radiating paths—a plan which is very convenient for classificatory purposes, and is less unsightly than the rectangular beds frequently adopted. Small wicker screens of a hood-like form, about 2 feet in height and a foot wide, are also adopted to screen the more tender plants from the burning sun, to which they are subjected in the exposed area of the garden, the soil of which is, moreover, very light. The glasshouses, seven in number, comprise one very long narrow range with a circular center surmounted by a dome, intended to receive the collections of fossil plants and of fruits, which might with much advantage be converted into a fine Palm-house. In addition to this fine range, the architectural pretensions of which are greater than its qualifications for plant growing, there are numerous smaller houses, the whole containing a larger and more varied collection than might be expected, while the cultivation is decidedly superior to that pursued in so many of the botanic gardens of the Continent. We confess our inability to see why the requirements of botanical science and botanical instruction should be deemed incompatible with good cultivation. M. Lubbers, the curator, seems determined to show that there is no necessary antagonism, and to put in practice those physiological dictates as to plant life which in many botanical establishments are reserved for the class-rooms.

Some of the plants, we may mention, suffered indirectly from the Franco-German war. After Sedan, as may be remembered, many French soldiers took refuge in Belgium. The hospitals and other institutions of Brussels were, with noble humanity, devoted to the care of the sick and suffering, and even the cellars of the botanic garden were utilised for medical stores, among them chloride of lime, the emanations from which in one night effected serious damage to the plants, many of which, such as a fine specimen of *Encyclanthes Alstemii*, still show traces of the injury. *Fandanus furcatus* flowers every second year in this establishment. Palms, Cycads, Aroids, and succulent plants are well represented. Among the former are fine specimens of *Livistona oliveiformis* and *Sabal Blackburniana* and *Ubraculifera*.

Tree and other Ferns, including fine specimens of *Angiopteris pruinosa*, *Teymanniana*, and other species, form a distinctive feature of the collection. They form the objects of special study on the part of M. Bommer, who has been so kind to nominate even a moderate selection of these plants, but we may at least allude to a plant which M. Bommer considers to be a hybrid between *Blechnum brasiliense* and *Lomaria gibba*, between which, in truth, it seems to be intermediate. It was a chance seedling found growing in the vicinity of the two species above-named. In any case it is a distinct form, and has been aptly named by M. Bommer as *x Blechnum lomarioides*. This Fern has appeared in English gardens on several occasions, and was shown under the name of *Lomaria gibba major* so long since as 1868. *Hemidictyon marginatum* is here found to thrive best when its roots are in water.

Of Orchids there is already a collection of some 350 species, but in the matter of Orchid culture English growers have little or nothing to learn from their Continental friends. *The Rambler*.

GREENHOUSE PLANTS.

THEIR CULTURE AND MANAGEMENT.

SWAINSONIAS.—These handsome flowering plants are natives of New South Wales, and are deserving of general cultivation; they bloom freely from July to September, coming in at a season when flowering subjects are scarce; they are of somewhat straggling habit, very distinct from most others that require similar treatment as to soil and temperature; they continue opening a succession of flowers for many weeks, produced in bunches from the current season's wood. This continuous flowering habit, and these Swainsonias are especially useful for conservatory decoration, although those who want flowering subjects for exhibition during the latter part of summer will find them of service. They are free growers, and will succeed well in a mixture of peat and loam, in equal proportions; or, if peat cannot be had of good quality, they will grow in loam, particularly if it contains plenty of fibre, so as to maintain it in a healthy state for some years; this is always an important condition, that cannot be too often impressed upon those who have not had much experience in the cultivation of things of this kind. It

frequently happens that a certain soil, either peat or loam, will answer for a time, but soon gets into a state that precludes the possibility of the plants grown in it keeping in health, and when such things are put in soil of this nature that do not well bear partially shaking out and a renewal of the material in this way, an unsatisfactory condition is sure to follow. If the usual nursery-sized young plants are begun with they should in April be moved into larger pots; supposing them to have plenty of healthy roots, they will bear a 2-inch shift. These are not delicate-rooted subjects, but they require efficient drainage and a porous soil; for this reason add one-seventh sand, incorporating it evenly with the soil. Swainsonias like tolerably hard potting, consequently use the potting lath freely, so as to make the soil firm. If the plants have any straggling shoots they should when potted be shortened back, at the same time tying them well out, so as to induce the lower eyes to break; if this is not done with these plants nothing but the topmost eyes

bright weather they will be benefited by a little shade. About the beginning of August again cover them, and stop any shoots that are taking the lead. Continue the use of the syringe until the middle of September, when the advent of cooler weather will render it not necessary. Through this and the preceding month admit air freely to mature the growth before the autumn gets too far advanced. All through the growing season give sufficient water, as when in active growth they require more moisture in the soil than some plants, but from the time in the autumn when they cease to make much more progress, and during the winter, apply only enough to keep the roots slightly moist. Winter them in a light house in a temperature of 40° in the night. Again repeat about the same time in the spring. The second season they will do with a 3-inch shift, using the soil now in a little more lumpy state, but still with enough sand to keep it open and porous. Stop the shoots, and use a moderate number of neat

S. galegifolia alba: a white-flowered form of the above.

S. coromillifolia: purple flowers.

S. Osbornii and *S. Rollissonii*.

Insects.—Aphides sometimes attack the young growth, for which fumigate. As already mentioned they are liable to red-spider, but the continued use of the syringe recommended through the growing season will, if persisted in, always keep them clear from this pest. If they become affected with scale, these must be kept under by sponging and the use of a soft brush. *T. Balms*.

ADOLPHE BRONGNIART.

The following autobiographical notice of the late eminent French botanist has been placed at our disposal by his son, M. Edouard Brongniart, to whom, as to M. Rothschild, through whose intermediation it was forwarded to us, our hearty thanks are due. It



THE LATE ADOLPHE BRONGNIART.

will break, which prevents the possibility of their acquiring sufficient shoots to furnish the future specimens properly. After potting use no more water for two or three weeks than may be requisite to keep the ball from getting too dry; let the atmosphere be a little close until they begin to rot, have the stage on which they stand moderately moist, and damp the plants overhead every afternoon. Continued and free use of the syringe is necessary all through the growing season, not alone to promote growth, but to keep down red-spider, which is liable to become troublesome if the plants do not receive enough water overhead. Swainsonias will flower in a small state if allowed, but it is not advisable to let them bloom the first season, as they would not make flower enough for it to be worth while sacrificing the growth, which its presence would prevent being made; consequently, all the shoots should have their points pinched out about the beginning of June, again tying down the strongest. This is essential, as these plants are apt to push much of their strength into a portion of the shoots, leaving the remainder weak; but by keeping these stronger ones led out the strength becomes equalised. In very

sticks to keep them in their places, and afterwards for training them to. After potting treat them as in the preceding year as to syringing, air, shade, and water at the roots. The shoots must not be again stopped, but as they advance train them to the sticks, in which position they will begin to flower about July, when the plants can be taken to the conservatory, where they may remain until the blooming is over, when they should be at once cut-in moderately, placed in their winter quarters, and treated as before. Give 3 or 4 inches more pot-room in the spring, according to the quantity and condition of the roots. No stopping of the shoots will be required this season, but they should be trained regularly to the sticks, and treated through the summer and autumn as previously.

If it is not deemed desirable to grow the plants into large specimens, they may the ensuing spring, and for a year or two following, be kept in a good flowering state by the use of manure-water; in this case it should be supplied regularly every other time or so that they require water, but it must not be given too strong.

The following varieties are worth a place:—

S. galegifolia: a handsome red-flowered kind.

forms the supplement to what we have already published on the subject at p. 274, vol. v.

Adolphe Brongniart, son of Alexander Brongniart, one of the most celebrated geologists of the beginning of this century, was born in Paris in 1801, and devoted himself from his youth to the study of natural history, under the direction of his father. The study of medicine was associated by him with that of botany and zoology. He became Doctor of Medicine in 1826, and 'agrégé' in that faculty in 1827. He had previously published some zoological and botanical papers in the *Memoirs* of the Museum of Natural History, and an *Essai d'une Classification Naturelle des Champignons* (1825). In 1824, in association with MM. Audouin and Dumas, he began the publication of the *Annales des Sciences Naturelles*, a journal which is still continued, and which contains numerous memoirs of M. Brongniart on vegetable anatomy and descriptive botany, among which may be cited the 'Memoir on the Generation and Development of the Embryo in Phanerogamic Plants' (1827), a memoir to which the prize for experimental physiology was awarded by the

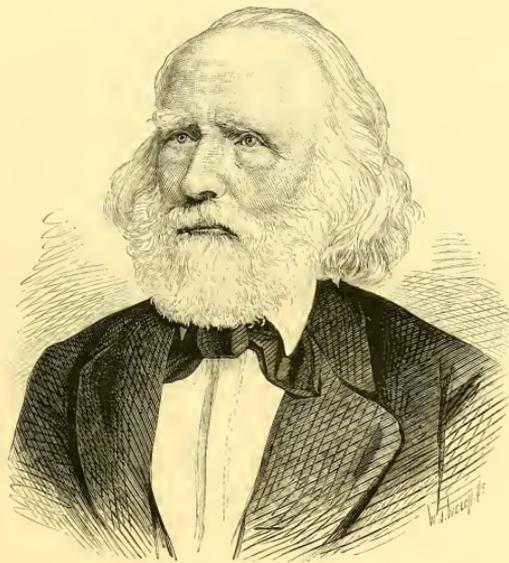
Academy of Sciences in 1827; 'Researches on the Structure and Functions of Leaves' (1830); monographs on Rhamnus and Bruniaceae, &c. His researches on fossil plants, of which he was one of the first to make a careful study, were published at this time in his *Prodrôme d'une Histoire des Végétaux Fossiles*, and in his *Histoire des Végétaux Fossiles*, the published portion of which forms a quarto volume with numerous plates. After the publication of these works M. Brongniart, who had during two years (1829-30) acted for M. Cuvier at the Collège de France, and for M. Desfontaines at the Jardin des Plantes (1831-1832), was nominated, on the death of the latter botanist in 1833, to the post of Professor of Botany and Vegetable Physiology at the Muséum d'Histoire Naturelle, and was likewise elected his successor at the Institute in 1834. His lectures, which in a three years' course ranged over all departments of botany, were continued almost without intermission to the period of his decease. In

has not been generally adopted among us, yet his physiological researches on the formation of the ovule and of the embryo, his numerous monographs, and especially his labours in the department of fossil botany, placed him among the foremost whom British men of science delight to honour. His courtesy and kindly demeanour likewise endeared him to those strangers and young botanists who had occasion to consult him.

ALEXANDER BRAUN.

By a singular coincidence it has fallen to our lot to have to present to our readers in the same number portraits of two deceased botanists, each among the foremost in his own country—one in France, the other in Germany. The circumstance is eminently suggestive, not only of a comparison of the doings of the two men, but also of their national characteristics. This would, however, be out of place in this journal, and

the leaves, the other independent of it and dependent on structural causes. These morphological observations and the speculations connected therewith at length bore fruit in the remarkable work by which he is best known in this country, a translation of which was published in 1851 by the late Professor Henfrey, under the title of the *Rejuvenescence of Plants*. This work is characteristically German in its amount of speculative thought and practical observation, at the same time theoretical matters are not only based on observed facts but kept within due control—which is more than can be said in the case of all German philosophers. Of like nature is his dissertation on the question as to what is to be considered the individual unit in a plant, which is complete in itself, from which nothing can be taken without rendering it imperfect, to which nothing can be added which is not superfluous. These requirements in the higher plants are supplied by the shoot or expanded bud. Teratological investigations naturally occupied much of his attention, and he was always alive to their value as indicating the laws of growth. Some



THE LATE ALEXANDER BRAUN.

1843 the botanical garden of the Muséum was planted in a larger area, and in accordance with a method of classification devised by the Professor, who published on this occasion a small volume under the title of *Enumération des Genres des Plantes Cultivées au Muséum d'Histoire Naturelle de Paris suivant l'ordre établi dans l'École de Botanique en 1843*. A second edition of this work appeared in 1850. The *Nouvelles Annales*, the *Archives du Muséum*, the *Annales des Sciences Naturelles*, and the *Compte Rendus de l'Académie des Sciences*, contain many memoirs of M. Brongniart on vegetable anatomy, on fossil plants, and on various points in systematic botany. In 1852 M. Brongniart was named Inspector-General of Superior Education, by virtue of which appointment he was for several years a member of the Imperial Council of Public Instruction. He was made a Chevalier of the Legion of Honour in 1834, Officer in 1846, and Commander in 1864."

M. Brongniart died in the spring of last year. In this country his qualifications were highly valued, and, although his system of classification

would demand more space than we can give to it. Alexander Braun was born at Regensburg, in 1805, and died at Berlin on March 29 of the present year. He filled the office of Professor at Giessen, at Friburg in Brisgau, and for several years past at Berlin. As early as 1822 we find him writing on the species of Oxalis and on the plants growing wild in the neighbourhood of Carlsruhe, but he first became famous by his celebrated paper on the arrangement of the scales of Fir cones in 1830. The explanation of the difficult and complex question of Phyllotaxis was thus established on its present basis, and amongst other excess the floral arrangements of *Delphinium* were thus explained by him. Morphological investigations were ever a favourite pursuit with him. He was one of the first to insist on the importance of ascertaining the relative position of the carpels to the bracteoles, and to explain the anomalous position of certain carpels by pointing out the existence, potential if not actual, of a second row of carpels. In his paper on spiral torsions in flowers he points out that there are two kinds of torsion—one which is in accordance with the spiral arrangement of

of his latest publications indeed have had reference to the unusual conformation of plants and to the structure of Cycads. But while it is his morphological publications which have hitherto brought him most repute, Braun was a keen, judicious, and accurate systematist. He early studied the Algae, Charas, and Equisetums; he gave as a descriptive enumeration of the species of *Selaginella* cultivated in gardens, and in the annual issues of the *Dietsch Societät* he described various plants cultivated in the fine botanic garden of which he was the head, and whose reputation has so much increased under his direction. Dr. Braun took an active part in the work of the Berlin Horticultural Society, and was ever ready to assist the science to which his life was devoted.

Florists' Flowers.

THE LOVES OF THE FLORISTS.—It is often very amusing to discover the accidental truth of florists' descriptions of flowers to the distinguished public characters after whom they are named. The following, for instance, are taken from the spring catalogue of one of our leading florists:—Lord Elcho, fine

bold flower, good for exhibition; Prince Bismarck, very dark and double; Lord Granville, dark and satiny; Lord Derby, pure true blue, clear eye; Lord Beaconsfield, bright carmine and brilliant crimson, of great substance, few flowering, distinct; Mr. Gladstone, dark and very incurved (a soft-wooded plant); Samuel Plimsoll, large, and very constant, of perfect form, extra fine; John Bright, a fine improvement on earlier forms, and the best of this class ever sent out. This exhausts the list of statement popular with our English florists, and the fitness of the descriptions of the flowers to the distinguished personages after whom they are named makes one suspect more than mere coincidence, and that it is due to the subtle likeness which exists between all living things, and which close observers of Nature like gardeners are quick to catch and identify. By no act of unconscious cerebration would a gardener ever identify any flower of earth or heaven with Mr. Lowe, *N. in the "Globe,"* [A brimstone-coloured Hollyhock named Match Tea has been suggested as appropriate: Ems.]

DOUBLE STOCKS.—Irrespective of any kind of selection or manipulation for the purpose of specially promoting the production of double flowers, there is not a strain of double Stocks in existence that naturally produces more double flowers on the average than does the old Purple Queen, or, as here it is locally termed, the Twickenham Purple. From 70 to 75 per cent. I have regularly found to be the proportion of double flowers. A bed of this kind now in flower looks at the first glance as though all the plants were double, and, I find, gives exactly 80 per cent. of double flowers—an average high enough to suit the most exacting, considering that the proportion of singles gives a poor seed crop. The Scarlet Queen does not give such a high proportion of doubles, as its average is about 65 per cent. These kinds are much appreciated by market growers for cutting from after the Wallflowers, as they furnish such a large quantity of sprays or branches of flowers. Of course double kinds are most desirable, but, double or single, all are cut, and oftentimes none are left to give seed; this is, however, of little consequence, as good seed can always be had in the locality from some of the cottagers, who cultivate a few for that purpose.

In gardens where it is desirable to secure good masses of flower during the month of May there dwarf scarlet and purple Stocks are very showy beds, but to be well done they should be planted out in the summer in the beds where they are to bloom. This arrangement, however, is difficult to carry out in beds specially devoted to bedding displays. Although not so valuable for market work, yet the Brompton strains are, perhaps, more favoured, especially by cottagers, who dearly love to have a few fine spikes of the deep scarlet Giant standing out in brilliant array in their gardens. Without doubt a huge spike of either the scarlet or white double Brompton is a grand flower, which can scarcely be rivalled by any other hardy biennial. If it does not largely grow from the seed, the leading spike is taken off before its fine qualities are developed, and the side shoots furnish but a meagre handful. The Brompton Stock should be grown only as a decorative border flower, and then if the plant be robust its rich and massive beauties are fully displayed. The white Brompton gives of double flowers about 50 per cent., and the best strain of scarlet about 40 per cent. Intermediate Stocks are so commonly grown in pots that it has got to be an article of belief that they can only be properly seeded in pots. This is however wide of the truth, as they seed well and produce as large a percentage of double flowers in the open ground as when grown in pots. To get a good plant in the open, however, it is necessary that they should be turned out from pots towards the end of April, or if lifted from the seed-bed in the ordinary way they root badly, and do not readily get established. If potted up singly into small sixties, or two plants in a large sixty, and kept in a cold frame for winter, they will turn out in April with a good mass of roots, and are ready for removal. Intermediate, both white and scarlet, give from 75 to 80 per cent. of double flowers, and the proportion left for seed is few enough to pay for their cultivation for that purpose. That well-known summer Stock, Mauve Beauty, has for several years well maintained its double character, invariably giving 75 per cent. of double flowers. A. D., *Budfont*.

—Among the TULIPS employed in the ornamental gardens in the Regent's Park is a novel double variety, named ROZENKROON. It is quite distinct in the section, and gives us something of the charming rose colour of the fine single variety Proserpine in a double form. The flower-stalks are stiff and erect, and it is both a striking and an effective bedding sort. The old Gloria Solis is also very good, and stands up well, better than its more double and telling colleague, Tornesol, as the latter is apt to hang its head in heavy rain. The double varieties appear to be better adapted for bedding purposes when only Tulips are employed than the single forms, as they are more durable, standing exposure better, and not shedding their petals so quickly.

—When examining a mixed border of hardy flowers in an old-fashioned garden a few days ago, we were much struck with some groups of TULIPS, some eight bulbs of one variety forming a group. Quite telling spots of colour were thus obtained, and the decaying effects heightened from the fact that the colours of the varieties employed were alternated. Such well-known sorts as Couleur Cardinal, Scarlet Van Thol, Vander Neer, White Pottebakker, Golden Prince, and Royal Standard among the singles; Ja and Gloria Solis, Rex Rubrum, Rozenkroon, La Candeur, Tornesol, Yellow Tornesol, and Duke of York, among the double varieties, are well adapted for grouping in borders in this manner.

—The flowers of the double white sweet-scented NARCISSUS, and also of the POBY'S NARCISSUS, are largely grown for cutting for market, and at this season of the year bunches of fragrant blossoms are to be met with. In some of the fruit gardens it is found that Gooseberries will do well under standard Pears, and they are planted in lines between the trees. Then between the Gooseberry bushes are planted clumps of Narcissus, and here they remain till they get well established, when they throw up an abundance of flowers. They are also grown in other ways, but the one just indicated can be commended on the ground of economy of space and the flowers of both forms of the Narcissus appear to be very fine this year, in common with those of most other bulbous plants.

Forestry.

FENCES.—My last paper, on erecting and maintaining plantation fences, was for want of space so far incomplete as to necessitate its being taken up again. Cheapsness and efficiency, I may again repeat, are essential conditions to be observed in erecting plantation fences. Other conditions do not merit their respective claims, and are entitled to no consideration if they deserve. The claims of appropriateness and good taste ought always to be regarded, and it will be found, though contrary to what many believe, that in erecting fences of whatever kind, good taste, or what pleases the eye, may be observed, without increasing the expense to any appreciable extent; indeed, as a rule, an unsubstantial and badly erected fence is always an eyesore, while a substantial and well-erected one is a pleasing object. The lines, curves, and positions of fences, too, are far more the product of forethought and judgment than of expense, at least a well-learned line and good position of fence may be as cheap as one the very opposite. Nor does it by any means follow that because a fence is made to look well that it is a dear one, or because it is unsightly that it is a cheap one.

Tastes in individuals differ as widely as their faces, hence the variety and diversity of shades, colours, forms, compositions, and patterns met with all over the country. Some have a fond liking for green, because they say grass and foliage in general is of that colour. Others dislike green, but are fond of blue, because the sky is blue. Some again like stone colour, some prefer oak colour, some again see most beauty in brown or mahogany. That there is no hard, fast, and fixed rule for taste is now generally admitted, and it is well always to consult those who are entitled to be pleased with the object, as to their wishes, and specially so respecting shades and colours. I had once the honour of erecting fences upon an estate where the proprietor had an equal dislike of blue or tarred colour. The fences referred to were wooden palings, and were fences of various descriptions. The extent of fencing was too great to admit

of painting with oil paints, because of the expense, and the alternative acted upon was to steep the wood in a solution of bark, Alder or Oak, with the addition of a little quick-lime. The wood in the sawn state was allowed to remain in the steep from ten to fourteen days, at the end of which it was taken out, of a reddish-brown colour, which fortunately pleased the proprietor's taste, and not only retained the colour permanently, but the wood was evidently improved in durability, at least the softer and younger descriptions of it was so.

It is often difficult to know how best to colour palisade garden fences so as to please the eye. To paint them with even the cheapest description of oil paints, without the surface of the wood being first planed and dressed, is simply impracticable. Tarring with coal-tar renders them too dark and dull for ordinary tastes, and is besides offensive both to smell and touch. If we seek diligently, however, and long enough, we usually find, and so it has proved in my case. An excellent substitute for paint and coal-tar is found in the following prescription, which is both cheap and simple in its application, and highly beneficial to the wood.

COLOURING FENCES.

The composition is as follows, and it may be made and used by any person of ordinary capacity. A box, tins, pail, or barrel, is first provided of any dimensions, to be made up to a quantity to suit the work, and comparatively air and water-tight, so as to admit of covering up to confine steam and retain water. A bushel, less or more, of quick-lime is provided, reduced to a fine powder, and passed through a sieve or screen as in preparing mortar for plaster-work. To the lime water is added, and the mixture is brought to the consistency of thick cream. To each bushel of lime one-sixth part of common coarse salt should be added; but the mixture a short time, say fifteen minutes, skimming off the froth as the boiling goes on, and by slow degrees during the boiling add for every 5 bushels of lime and water 1 lb. of potash and 4 quarts of fine sea or river sand. Apply either hot or cold with a common whitewash brush, when it will adhere to the wood, and remain so as long as oil paint. If the colour is too light to please the taste, a little ochre, red-lead, or other colouring matter may be added, to suit the desired shade.

WIRE NETTING.

Since rabbits have become so plentiful over many parts of the kingdom as to render crops, whether trees, cereals, or vegetables, unsafe, wire netting has become a new and indispensable requisite. It is found that any width of netting less than 30 inches is too little, and the meshes should not be less than 1½ inch, and for garden protection 1½ inch. No. 17 gauge is a good strength of netting, and which I generally use. In erecting the netting, a small common No. 6 or No. 7 wire should be extended along the posts to attach the top of the netting, and on no account allowed to hang loose, otherwise persons in climbing over the fences are certain to crush it down, and otherwise injure it. The evil of burrowing through below the netting has to be provided against also, and there are various methods of doing so; some place bricks on edge, some put down slab deals or paling rails, some put the netting 2 or 3 inches into the ground, and others fold it back a few inches upon the ground, and peg it down till such time as the grass grows up and secures it. I have tried all the modes enumerated, and found each to possess some peculiar advantage, and at same time present some disadvantages. The burying or folding of the netting, for example, increases the cost of the fence just to the proportional width buried or folded at the bottom. Bricks are expensive, and wood soon decays.

Another method I have tried of securing the bottom of the netting is by means of setting a single row of stones in the form of a causeway along the front or exposed side. In order to place the stones properly, a narrow trench or notch is taken out with the spade, and the stones set carefully all along close to the netting. I have tried this method, and it is also very secure, for no sooner do the feet of the rabbits feel the hard stones than they desert from further attempts at burrowing. It is also most durable, from the nature of the material used. Wire netting, I may add, can at present be bought at 8s. per lineal yard, galvanised, and of the description above given. Cheaper and weaker netting is not commendable, as strains and accidents soon render it unsafe, durable and inefficient. C. J. Michie, *Cullin House, Cullin, May 12.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—One of the greatest mistakes made in plant culture by those who have not had much experience, is to perform different operations, especially such as potting, at a fixed time, often whether the plants require it or not. It is no uncommon occurrence to see the occupants of a particular house potted indiscriminately all at once, whether or not the state of the roots is such as to warrant it. Although stove plants are by no means so impatient as greenhouse subjects of treatment slightly at variance with what they like, yet it is always better to move a plant when it is commenced to grow; neither does it matter in the potting of stove plants about the weather being hot and dry, or a circumstance that is so prejudicial in its effects upon hard-wooded greenhouse plants; consequently, any stove subjects that at the time of the general potting were not in a condition for moving, may now receive a shift. As to the cultivation of stove plants, as in all others in the matter of root-room, it is necessary to discriminate between those that will succeed in moderate-sized pots, and others that never attain anything like their wonted size and vigour with the comparatively small amount of root-room. It may be taken as a rule, that all plants of a deciduous character that through the winter have the soil kept very dry whilst in a state of rest, and at the annual potting bear a good portion of their roots to have rotted, do not need large pots, as plants of an evergreen character that of comparatively little of the old soil removed, with no reduction of the roots. Plants of the former description, when their roots have got fully hold of the soil, may be repotted by the use of manure-water, be kept growing vigorously without requiring a second potting such as the evergreen kinds that were moved early will frequently need about this time. Where any work of this kind is necessary it is well to attend to the plants first that have yet to be made will not receive the full benefit from the new soil. Dipladenias required for exhibition purposes should have their shoots trained round the trellises as soon as the flowers begin to open, so that there is no need to stop them; and in the conservatory for some time during the hottest part of summer it is well to let the shoots remain for some time yet growing in the usual manner near the roof, for the reason that when once bent down they do not rise so readily as when they are allowed to grow so that in their turn will flower yet might not be in bloom at the time wanted. To give that most useful plant, *Bougainvillea glabra*, the deepest shade of colour, it is capable, as has been already noticed, of standing much longer on the plants as soon as they are formed and whilst yet in their green state, before they have acquired much colour, the plants should be moved into a cooler house than the stove, where they will gradually get into their lower temperature, and tested; this *Bougainvillea* attains a colour almost equal to *B. spectabilis*. Where the flowers are required for cutting it is especially advisable to subject it to this treatment, and so managed they will stand in an ordinary conservatory for two months with little perceptible alteration; and in this way a few moderate sized plants grown in 10 or 12-inch pots, and not trained too closely, are very effective during the summer among the comparatively few flowering subjects then at command. In the case of plants of a similar character that are intended for use in the conservatory about mid-summer, should now, if possible, be put in a house or pit where they can receive more air and a lower temperature, so that the plants should afford them. The result of this preparatory process for a few weeks is that they do not show the effect of the change to any serious extent, and will remain in much better condition until the summer is far advanced. The same remark also holds good in respect to all plants of a like tender character required for table or room decoration. If a few spring-stemmed *Coleus* of the many fine coloured varieties that now exist are moved into a cooler house, and kept growing in a little shade, with water, they will make useful decorative plants in the course of a few weeks, their bright colours harmonising well with either flowering or other fine-leaved subjects. Where climbers are grown to the rafters, or irregularly in any way under the roof and of a strong free habit of growth, they will now require attention, so as to keep them within bounds, removing a portion of the shoots entirely if necessary, otherwise they soon exclude light to an extent that does away with the possibility of anything succeeding properly under them. Cuttings may be put in yet of any, either winter or summer-flowering stock, of which there appears to be a deficiency; in the case of the former they will not get so large as those that are put in by some, but will come very useful for successional flowering; with summer blooming plants of a

permanent character and quick growth there is yet time for them to attain sufficient size to make nice small flowering specimens for the summer. Where there is an intention to increase the stock of *Impatiens* by taking off crowns or breaking up large plants together, this should be done immediately after flowering, before growth commences; but as there is no set time for their blooming, and in different seasons, it is better to do as they are treated, there can be no particular time of the year assigned for their propagation, but as with many they will now be done flowering, it will be a suitable time for division: keep them for a few weeks in a moderate shade in a moist and airy atmosphere. With the advancing season the worst description of insects will increase apace. These will require unremitting attention to their destruction; and plant culture, in this respect, is the same as in the case of plants where they are not kept well under it is useless to attempt the growth of many of the very finest flowering plants that need heat. *T. Baines.*

FLOWER GARDEN, ETC.

The weather is now favourable for garden operations, which it is hoped may continue. Planting may be pushed forward with energy and care. Proceed with the plants that are well prepared and hardened off, reserving the more tender and late sown ones for later, by which time the ground will be getting warmer and in a more congenial state for subtropical plants. If any of the beds are more sheltered than the others these had better be done first. Heat, which is not after all so much to be feared, is the vent of frost, which may come at any time this month. The ground generally being in good condition as regards moisture, the plants will not require so much water after being turned out in the beds, and cold hard water, if it can be avoided, should never be used for plants of any description. Whatever style of gardening may be adopted, the material made use of ought to be planted so as to give satisfactory results. Slow growing plants which require a long time to do well, and their sowing should always be planted thicker than those of stronger growth. After the planting is finished a small hoe may be run through the beds, which will encourage the plants to root, and give the ground a more finished appearance. If the plants are to be cut in damp or showery weather, the work is then much more easily done. I find the late frosts have killed the young shoots on the Box hedges and edgings, but Roses do not seem to have suffered much, and the fruit crops. The last few days has made a visible difference in the appearance of the grass. The mowing-machines must now be kept at work, for the lawns require to be cut after the manner of a lawn, and the Dalries being in full bloom a few days after they have been gone over. Keep the general work as well forward as the busy season will permit. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

FIGS.—If the growths require any regulation whereby sunshine, light, and air may be rendered more fully operative, it should be done just prior to the fruit commencing to colour; and in order to give it every assistance to develop itself freely, all growths which require it should be stopped, of course excepting the terminal shoots, which should be allowed to grow, the laterals, which will need attention in this way now, will be confined to subsequent growths proceeding from laterals which were formerly pinched, and may of course produce a second crop, but should be nipped off at the second or third leaf from the last branch, and this procedure be continued as it becomes necessary throughout the season. With the exception of Strawberries no fruit which is grown under similar conditions is so much improved in quality as Figs are, at this time of the year especially, by a proper course of treatment being applied during the ripening process; a matter of such moment should therefore evoke especial interest in this particular. Borders which have been well saturated as before indicated, will contain sufficient moisture as to dispense with further applications of it till such time as the first crop of Figs ripened, and should not be suffered to become dry, but should have given to it whatever may be necessary betimes in the day. Keep the heating medium constantly warm, and insure a circulation of warm air, by means of the ventilators at the apex of the house open a little at night. The minimum temperature should be about 65°, and the maximum under solar influence about 90°, with a current of air passing through the house, and in Figs, as in other crops, if the springing should be abandoned until the crop of fruit is gathered, and then be resumed again for the benefit of the succeeding crop. As

soon as the fruit is gathered from very forward trees in pots, proceed with the use of the syringe over the trees as a general rule, and in the case of the winter crop of fruit if it be plentifully formed, on such trees. In later houses copiously syringe the trees twice every day at this season, to keep the atmosphere moist and to keep down red-spider, and ventilate as previously recommended. *George T. Miller, Wyeombe Abbey Gardens.*

HARDY FRUIT GARDEN.

The favourable change in the weather that set in on the 9th has already had a most beneficial effect on Appricots, Peaches, and Nectarines, all of which have made considerable progress since that date, and with general advantage to give the attention to keep them clear from aphides, the injuries & effects of the cold cutting winds and late frosts may soon be effaced. As regards fruit in every garden I have yet visited, it is almost a total failure, and I never remember seeing trees of the above kind in a worse plight than they did a fortnight or so back, as most of the young wood in Apricots was completely killed, and scarcely a leaf on Peaches or Nectarines could be seen but what showed unmistakable signs of having been killed by the end of the season. In cases where the final disabbling of these has been unavoidably delayed, no time should be lost in carrying it out, that the strength of the trees may be concentrated in the proper channel, and so have a fair chance of giving the attention to keep them active life those ubiquitous pests of the garden, red-spider, and unless the garden energy or syringe is brought into early use, their rate of increase will be something marvellous, and will do the trees a good deal of harm. The proper time to do this is late in the afternoon, as then the bricks absorb a good deal of the water, and give it out slowly during the night, much to the benefit of the foliage, and it is of almost equal importance, to the great detriment of the colonies of spider lurking in the crevices behind to supply forth with the return of solar heat and renew their attacks. Apricots will require close watching for some time to come to keep them free from grubs, which are generally more or less troublesome at this season. The most expeditious way is to go over the trees and squeeze between the thumb and finger any leaves or young growths that are curled or appear likely to have these destructive creatures on them. The foliage can be done much quicker than hand picking, and is equally efficacious. Plums, too, are frequently affected in the same way, and if not attended to suffer even more severely than Apricots, that renew their foliage more readily.

Of all grubs, however, the Gooseberry caterpillar is the most voracious, and perhaps the most difficult to extirpate once they effect a footing. The old adage that prevention is better than cure is especially applicable in their case, and hearing this in mind I always strike some fresh-slaked lime and straw over the bushes, which answers the double purpose of manuring the ground and killing the larva. In cases where they have already put in an appearance, the best remedy is to get a quantity of Foxglove leaves and stems, and use them in the manner of a mulch, or hot water after being brained to let out the juice they contain. After standing a few hours the liquid should be strained through a fine hair sieve or piece of muslin, and applied through a syringe so as to wet the whole of the leaves and stems, and to get them open. Hellbore powder dusted over while the dew is on the bushes is likewise useful, but not so effectual as the above.

The double-bearing Raspberry, which is so useful in the autumn, and in the winter, and which, however, will now require attention by way of thinning out the young shoots, which should be done so as to leave only six or seven of the strongest and best situated, unless the shoots are very far apart, in which case more may be left, and in order to afford them every assistance possible, mulch the ground heavily with rotten manure, to keep their roots in a uniform state, but never dig amongst them or disturb the soil beyond what is requisite with the hoe, to eradicate weeds. To insure more early raters of Strawberries for laying in pots, forced plants should be turned out at once in well enriched soil, in some convenient situation, where they can be kept well supplied with water to give them a start. Not only are they good for this purpose, but they are also very useful for forcing, and where they can be had should be planted in preference to runners, as they never fail to produce abundant crops in the year following, and often afford a few dishes of fruit the same autumn, when the weather is favourable. In the case of Gooseberry, but of little value till autumn, the blooms now on them should be picked off, when they will flower again later on. *W. C. Sheppard, Woodroving.*

THE

Gardeners' Chronicle.

SATURDAY, MAY 19, 1917.

APPOINTMENTS FOR THE ENING WEEK.

WEDNESDAY, May 23	Glasgow and West of Scotland Horticultural Society's Summer Show.
THURSDAY, May 24	Royal Horticultural Society of Ireland; Second Spring Show.
	London Society's Anniversary Meeting, at 3 P.M.
	Horticultural Society's Spring Show.
FRIDAY, May 25	Orleans House Club (Twickenham) Horticultural Exhibition (two days).

PARTICULAR attention has always been given to determining the TEMPERATURE in which this or that PLANT is accustomed to live, and importance has been attached to certain temperatures, sums of heat, annual, summer, or spring means, to the neglect of the changes within certain limits. Further, the so-called records of the temperature of the air are usually the readings of thermometers on walls or fences, or in frames, and principally in the shade, sometimes 2 or 3 feet high, and sometimes much higher. But the temperatures which prevail in lesser heights above the ground, in which many plants live, have been too little observed. Again, the insolation temperature has not been sufficiently taken into account, for this frequently deviates from the temperature of the air. In the experimental garden at Proskau a number of thermometric observations were made by DR. TSCHAPLOWITZ during the course of last summer on a plot of clayey soil, in which Beetroot and other vegetables, and Helianthus annuus, and other annual plants were growing. The temperatures and their courses were observed at depths of 2 and 3 decimetres (about 7.9 and 11.8 inches) below the surface of the ground, and at 1 and 5 decimetres (about 4 and 20 inches) above the surface, in all cases under the influence of the direct rays of the sun. In addition to these observations, where desirable, the prevailing temperature at 1 metre, or 1.5 metre (about 40 and 50 inches) above the ground was noted. And at the same time the temperatures of the leaves of Beet, &c., the stems of luxuriant plants of Helianthus, were determined. The latter were obtained by inserting a slender thermometer, graduated into tenths (fourths of Fahr.) of degrees, as deeply as possible in the stem. In this way a number of curves of temperature were obtained for comparison. Considerable difficulties attend the determination of the prevailing temperatures on the surfaces of leaves. Theoretically they should lie between the dew-point and the temperature of insolation read from a thermometer hanging against a leaf in full sunshine. But it is difficult to determine the temperature of any substance, and still more so to express in figures the amount of warmth communicated by one body to another. Experiments were made with chlorophyll, green paper, &c., on the bulbs of thermometers to ascertain roughly the best absorbing power of the surface of leaves. Although these experiments must be regarded as very imperfect, and were not instituted till October, the results indicated a great difference in the power of absorbing heat by leaves, according to their aqueous contents, structure, coloration, &c. There was considerable diversity in the experiments themselves, but in all cases they showed as the sun descended a temperature of 3° to 5° Fahr. higher than that indicated by naked thermometers close by; and in solitary cases the difference was as great as 7° to 9°. Large leaves of Beet, &c., were quickly plucked and pressed in quantity around the bulb of a thermometer, and the temperatures thus obtained were compared with those of a thermometer hanging close by the plants between 12 and 15 inches

above the ground. The following table illustrates this experiment:—

	9 A.M.	10 A.M.	11 A.M.	12 P.M.	2 P.M.	3 P.M.
July 18:—						
Naked thermometer ..	11.6	12.8	15.2	16.5	22.0	15.5
Temperature of leaves ..	9.5	10.5	16.8	21.0	23.0	25.3
July 29:—						
Naked thermometer ..	19.1	19.0	23.0	16.3	26.0	23.5
Temperature of leaves ..	15.0	17.8	20.5	23.0	25.0	26.0

On a subsequent day it happened that, while the observations were being taken, the sun suddenly appeared from behind a dense cloud. This was about 8.30. The temperature of the naked thermometer fluctuated between 20° and 20° 4' C., and leaves of different plants had shown 18°, 18° 3', 17° 9', and 18° 2' C.; but after the appearance of the sun, a plant could not be found which gave a temperature of 17°, and they were all between 16° and 17°. However, after the lapse of half an hour they had recovered their normal temperature in relation to the course of the sun, as expressed by the figures in the above table. It is quite explicable that the afternoon readings should be higher than those of the forenoon. The high insolation temperature of July, the relative stillness of the air, and the high specific warmth of the water which the plants slowly evaporate, have probably something to do with it; and it appears that the sudden fall of the temperature of the leaves just recorded should be ascribed to the more rapid evaporation; in fact, that it was the cold of evaporation. The temperature of the points of the leaves differed widely from that of their bases. The point of union of leaves on the top of a Beetroot, in which a hollow for the bulb of the thermometer was rapidly cut out, exhibited some singular fluctuations corresponding neither to the insolation temperature at 40 inches above the ground nor to the temperature of the soil at a depth of 8 inches. They seem to be connected with evaporation, but the observations on this point are too incomplete to afford any trustworthy information.

DR. TSCHAPLOWITZ gives tables of a considerable number of sets of observations, but we have space for no further comment on the present occasion. His remarks on the whole series of observations have not reached us yet in full, but if they contain anything of interest we shall make some extracts from them.

THE CASCADE AT CASERTA, near Naples, represented at fig. 104, is one of those pieces of architectural and engineering gardening, on the merits of which opinions are likely to differ beyond hope of reconciliation. The mountains for miles around form the collecting ground, whence the water is conveyed by canals and aqueducts to a tunnel in one of the mountains, from this it falls some 50 feet into a basin, and from thence in a series of leaps in a straight line down the slope of the hillside, in full view of the palace, as shown in our illustration. The impression at a little distance is of a sheet of glass placed on a sloping surface, and is not proportionate to the vastness of the construction and the immensity of the volume of water, while the rigid formality of the whole reminds one of a railway cutting, or some other strictly utilitarian fabrication. Those who remember the cascade down the hillside at Chatsworth will have little difficulty in supposing that the cascade at Caserta supplied the idea for that on the banks of the Derwent.

We understand that at the forthcoming show in the horticultural department of the Bath and West of England Society, to be held at Bath, June 4—8, two ten-guinea cups, one for amateurs and one for nurserymen respectively, will be awarded to cut blooms of TEA ROSES. A jury of three nurserymen will be told off to judge the amateurs' collections,

and a similar number of amateurs will pass sentence on the nurserymen's productions.

— We are informed that a large ROSE SHOW will be held at the ALEXANDRA PALACE, on Saturday, June 30, for which a liberal schedule is being prepared. The schedule will shortly be ready, and may be obtained on application to Mr. JOHN A. MCKENZIE, 1 and 2, Great Winchester Street Buildings, London, E.C.

— A VERY CURIOUS FORM OF DISEASE has lately been forwarded to us, which occurred in SOME CAMELLIAS planted out in a bed, the house in which they are planted being shaded with canvas. The leaves are very pale and the shoots weak, but there does not seem any reason to believe that they have been affected either by cold or drought caused by radiation, still less by direct action of the sun. The leaves are regularly spotted over with brown specks, which look at first much like the work of some thrips, and this in fact may possibly be the first cause, but if so the subsequent effect is very curious. Each speck, whether orbicular or irregular, consists of a dark brown hard disc surrounded by a raised border, the brown tint sometimes spreading beyond the border, and more rarely extending over a considerable portion of the leaf. The disc consists of leaf-cells distorted, the walls being gorged with brown matter, similar to that occurs in so many morbid conditions of vegetables, with the cuticle very dense. Very rarely there is a slight cavity of a paler tint filled with minute cells, which have very much the appearance of the early stage of the fructification of some Spheria, though like the whole, as in some observations on pustules in the animal kingdom, there is merely a simulation of fungi. The hardening of the discs so as to resemble cortical cells is very curious whatever the cause may be, which might possibly be difficult to discover even on the spot. *M. J. B.*

— MR. WAINWRIGHT, the talented gardener at Rushton, near Kettering, has lately sent us a Potato, which exhibits a condition somewhat like that figured at vol. iii, p. 247 of this journal. Professor DYER very properly suggested that the tubers produced within the original tuber [sometimes] owed their position to "an inversion of the rind of the Potato and to the gradual absorption of the cells of the central portion from the pressure exerted by the ingrowing tubers." In the case before us only a single tuber has been generated, so that we have been able to trace its origin to an inverted bud, at the same time a quantity of spores being thrown off at the base of the bud, and running over the tuber so as to look like an exaggeration of the copper-ew. The tuber was not formed till the shoot had penetrated for an inch and a quarter, its whole course being marked by the conversion of the cell-walls into brown matter, as in the Potato murrain, which reminds one of the effect on adjacent cells of the penetration of the young Peronospora. *M. J. B.*

— What a magnificent ornamental tree the DOUBLE BLOSSOMED CHERRY is! In the forecourt gardens of many houses in the suburbs of London there are large trees, every branch of which is wreathed with densely-packed lines of pendant blossoms. The beauty of the tree when in full bloom is best revealed when looked at beneath. Year after year shows no diminution of its marvellous floriferousness.

— The occurrence of various forms of what were formerly described as species of *Rhizomorpha* in mines, without a trace of fruit, makes it always matter of interest when they are found in fructification. A specimen from the Wharfedale Silkstone Collieries has lately been forwarded to us, in which the tawny, strongly-branched mycelium bears an abundant crop of a minute form of *Agaricus velutipes*. In such cases the normal characters are seldom preserved, and the gills, even when well formed, do not bear spores. In that before us the pilei do not exceed a quarter of an inch, many very much smaller, and though the greater part of them show the usual characters, in one the gills are decurrent with an umbilicated pileus, so as to resemble an *Omphalia*. There is no doubt, however, about the species. HOFFMANN has figured in his work on the fungi of the Hercynian mines an *Agaric*, under the name of *Agaricus myurus*, which is clearly a mere form of *A. galericulatus*. With it two forms of

Rhizomorpha appear, one white and the other a black kind, which is very common in this country under decayed bark. This has not, we believe, ever been referred to its origin, though one form has been traced to a Polyporus, and another to Xylaria. It is probable that this is a state of the very common Agaricus galeritatus. The Rhizomorpha is clearly very abundant in Austria, as it is a popular remedy amongst the peasantry for diarrhoea in horses. M. J. B.

— THE FRUIT ORCHARDS round London have been very gay and attractive for weeks past, but now that the Apple trees are coming into bloom they are taking on some of the most charming hues they have

serve to give occupation in their own quarters to marauders among birds, and so keep them from the fruit garden, and the sin of stealing—if their natural propensity to prey on fruit is to be regarded in such a light. A selection of Apples worked on the Paradise stock might form a portion of a list of deciduous flowering trees, and the hint is freely offered to catalogue makers.

— THE CLIMBING TROPÆOLUMS are most effective greenhouse and conservatory plants at this season of the year, for when well established in pots they bloom with great freedom. An excellent illustration of this fact is afforded in one of the houses in Mr. KINGHORN'S nursery, at Sheen, Richmond. The

growth will set in after the recent rains, and blossom will soon appear. One large field of Peas of several acres in West Middlesex contains Sangster's No. 1 for the earliest crop, then Laxton's Supreme, Harrison's Glory, Vetch's Perfection, and a local selection of a somewhat similar character. Peas in well-manured ground ought to get such a start now as will result in heavy crops.

— The following are the PARKS and OPEN SPACES placed by Parliament under the control of the Metropolitan Board of Works:—Finsbury Park, 115 acres; Southwark Park, 63; gardens on the Victoria, Albert, and Chelsea Embankments, and in Leicester Square, 14; Blackheath, 267; Hampstead Heath,

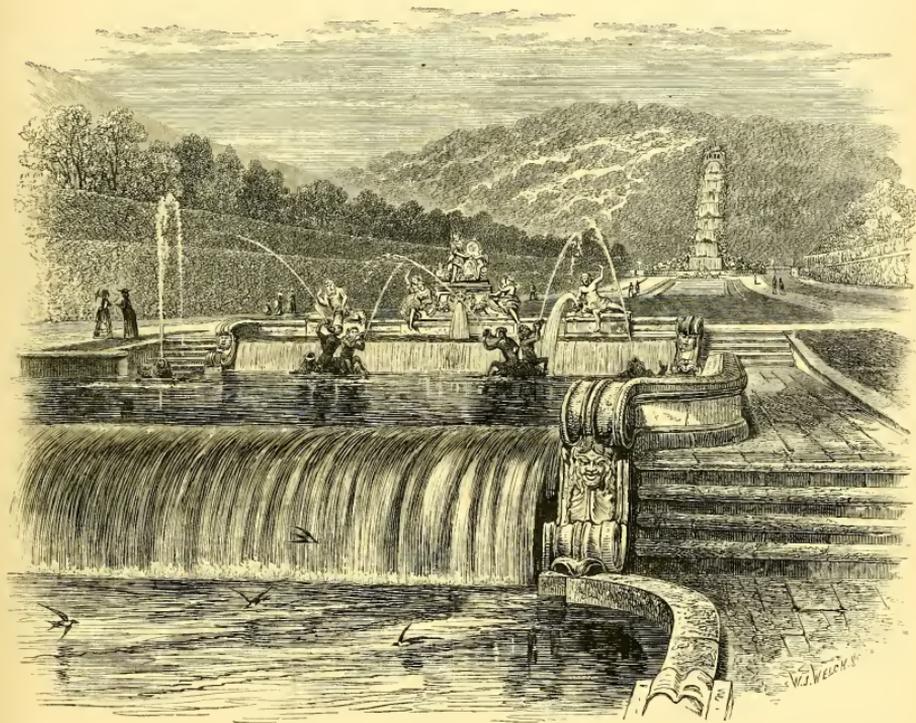


FIG. 104.—THE CASCADES AT C SETA, NEAR NAPLES.

yet displayed. The blossoms of the Plum, Pear, and Cherry, are almost, if not quite wholly white, but when the Apple blossom expands charming tints of pink and pale rose are prevalent. The Maxx Codlin, one of the earliest of the Apples, is largely grown for market, for in addition to its being early it is invariably a large cropper, and will fruit when the trees are quite young. At the time of blooming the trees can be readily detected, and just now they are forming sheets of blossom, of a lively pink tint. As fruit cultivators are generally agreed that this Apple is well suited for shallow soils and exposed situations, and as it does not make a rapid growth, it appears to be thus well adapted for shrubby borders, the fringes of woods, and indeed for many places where it is desired to produce effects in the landscape. Plums and Cherries might be associated with it in shrubberies and belts of trees, and any fruit produced would

varieties employed are Triomphe de Gand, and Ball of Fire, scarlet; Vesuvius, crimson; and Triomphe de Hyras, yellow. The plants are in good sized pots, and stand on the stage, the shoots being trained up pillars, and then along the roof of the house. The pots stand in pans, and a little manure water is occasionally given. It is when the plants get a hard and woody stem that they flower so freely, and the number of blossoms produced is very large.

— The lateness of the season is seen in the MARKET PEA CROPS, which are this year considerably behind their usual forwardness. In 1876 the Pea blossom was much injured by frost on April 28, but now on the forwardest, Sangster's No. 1, the flowers are beginning to be seen, and the buds were tinged by the frosts of the 6th and 7th inst., which will tend to make the crops later still. But a vigorous

240; Shepherd's Bush Common, 8; London Fields, 27; Hackney Downs, 50; Well Street Common, 30; North Mill Field, 20; South Mill Field, 28; Clapton Common, 61; Stoke Newington Common, 51; waste land at Dalston Lane and Grove Street, Hackney, 1; Tooting Beck Common, 144; and Tooting Graveney Common, 63; total, 1093½ acres. Negotiations are going on for acquiring the following open spaces:—Clapham Common, Boxal Heath, Plumstead Common, Wormwood Scrubs, Brook Green, Elbrook Common, and Parson's Green—in all 607 acres.

— Those of our readers who have attended as exhibitors at the fruit and flower shows at the Crystal Palace, and whose business has brought them in contact with Mr. F. W. WILSON, the Company's manager of shows, will regret to hear that the long connection

between that gentleman and the Crystal Palace Company has been somewhat suddenly severed, owing to a scheme of retrenchment originated by the Board of Directors, which has also involved the retirement of the General Manager, Mr. WILKINSON. Mr. WILSON has been in the company's service a quarter of a century; for many years of that time as Natural History Superintendent, and latterly as manager of most of the popular natural history exhibitions held at Sydenham. As such it was Mr. WILSON'S privilege, as we know it was his pleasure, to meet a great number of exhibitors, by whom, on account of his energetic character, straightforward, manly conduct, and naturally disposition, he held in high esteem; and we feel sure that they will regret as much as we do that such long and valuable services as Mr. WILSON has rendered to the Crystal Palace Company should have met with such a poor reward from its economy-stricken Directors.

— To the majority of gardeners the MORELLO CHERRY is chiefly known as a wall tree only; as the cultivation of it as a STANDARD is mostly limited to market gardens, and even in these its growth is far from common. As seen just now in full bloom standard trees of from ten to twelve years of age are verdant pictures, graceful in appearance, and beautiful with thousands of snow-white petals, like diamonds. The well-known spray-like growth that invariably characterises this Cherry on walls adds greatly to its beauty as a standard, and its slender pendulous growth brings it in appearance near to the Weeping Willow. As a market tree it is one of the most profitable of fruits, as it seldom fails to produce a crop, and this is sold at a good price at per dozen pounds, either for tarts or preserving. In isolated places the birds manifest a special fondness for the fruit of the Morello, but no complaint is made where grown in bulk; perhaps the very abundance of fruit generally found in extensive fruit orchards renders the depredations of the birds less perceptible. With the strong taste that prevails for flowering and other decorative trees on lawns and conspicuous places in gardens, it is remarkable that the Morello Cherry should have been almost overlooked. In habit it is an excellent companion tree to the Laburnum, blossoms with great freedom, and retains its bloom on as long as most other spring blooming kinds, and when covered with its rich coloured ripe fruit it presents an object singularly graceful and beautiful. There are few of the ordinary decorative trees that can claim to produce a fruit crop capable of utilisation. In this respect the Morello Cherry has special claims upon the planter, as it so admirably combines the useful and the ornamental.

— The daily papers record the fact that FOREST FIRES are making great ravages in North-Eastern New York, Long Island, Massachusetts, New Hampshire, Maine, Pennsylvania, Canada, and near St. John, New Brunswick. The large part of the White Mountains is in flames. The summer hotels in danger, and the railways are interrupted. A great number of mills and dwellings have been destroyed, and hundreds of persons are destitute.

— We are glad to find that the very small disused brying-ground now called by a euphemism the DRYLY LANE GARDEN has been reopened. It will remain open to the poor under a new code of regulations, daily from 10 till dusk. It will be remembered that on the first occasion of its being opened a few tiny shrubs were trampled down by the throng. Let any one who has a garden of his own, or who can gain access to a breezy common, take a tour of inspection in the squalid courts of Dryly Lane, and then say whether acres of breathing space are not required instead of the miserable little area dignified by the name of a garden. Surely those who would make capital out of what disturbance took place do not know what Dryly Lane is, and do not know the urgent need of any means of promoting cleanliness and godliness in the wretched dwellers in the neighbourhood.

— A correspondent asks us to tell him of any means of destroying the WILD LILY on a GRAVEL PATH. We know, or think we do, a Lily when we see one, and are not altogether ignorant of the nature of a gravel path, but a wild Lily on a gravel path is indeed a puzzle to us. We may say at once that a wild Lily,

truly so called, on a gravel path, is a myth of the Mrs. 'ARRIS description; but, still, what can be meant by the word Lily? This is only another illustration of the worthlessness of popular names. Speak to a botanist of a Lilium or a Lily in its proper signification, and he knows what you mean, but in popular parlance there are African Lilies, Attamaco Lilies, Barbadoes Lilies, Belladonna Lilies, Blackberry Lilies, Brisbane Lilies; other "Flax Lilies" called Cape Coast, Corua, Cuban, Day, Fire, Flax, Lycoris, Guernsey, Ixia, Jacobean, Knight's Star, Lent, Mexican, Persian, Pond, Prairie, Rock, Rookwood, St. Bruno's, Scarborough, Superb, Swamp, Trumpet, Whiteman, say nothing of Water Lilies, Lilies of the Valley, and Lily of the Valley Tree, and perhaps more. Now not one of these has any claim whatever to be called a Lily; moreover, we do not think any one of them is likely to be wild on a gravel path.

— We are glad to welcome a new part of the *Flora des Serres*, the first which has appeared since the death of its founder, LOUIS VAN HOUTTE. It opens appropriately with a portrait and memoir of the distinguished horticulturist, the memoir, however, containing little that was not made public at the time in the horticultural journals. The editorship, as we had occasion to mention, has been confided to M. J. E. PLANCHON, to the great satisfaction of those who are interested in the correct nomenclature and botanical history of the plants they cultivate. We shall take an early opportunity of alluding at greater length to the contents of this part.

— Professor ASA GRAY this writes to us with reference to the vexed question of the DIRECTION OF SPIRAL GROWTH:—

"In the *Gardener's Chronicle* for January 13 ALEXANDER BRAUN (whose death we now deplore) is cited as one in the formidable list of botanists who view the direction of a coil or turn of a spiral, &c., from the inside, and who would therefore say that the overlapping of the corolla lobes in a Gentian was to the left, in a Periwinkle to the right. Now I have at this moment happened to glance at an early paper by Professor BRAUN upon such 'torsions,' published in the *Flora*, 1859, and a French translation in the *Ann. Sci. Nat.* of the same year (vol. 380); here he takes the opposite view, and speaks of *Gentiana* as uniformly turning to the right, and *Vincis* to the left, just as BENTHAM and HOOKER now express it. Now, was not this view adopted, probably, on account of its naturalness, and given up afterwards in deference to Linnean authority?"

— We were hardly prepared to find so great variation and so small an amount of RAINFALL as 38 inches in the island of Jamaica, as is recorded in the *Jamaica Gazette* of March 1, from which it appears that during the year 1876 the rainfall at various parts of the island was respectively 125, 117, 62, 40, and 38 inches (omitting fractions).

— According to the official report of the BOTANICAL GARDENS OF JAMAICA the establishment in question is in a satisfactory condition, and a large number of useful plants have been propagated and distributed. The Librarian Coffee is doing well, especially on the lower altitudes, where plants only planted out a little over a year have borne fruit. Coffee culture is largely increasing in Jamaica, and on the southern slopes of the mountains it is stated that the wholesale destruction of the forest for Coffee cultivation has materially lessened the rainfall and other conditions of moisture, thus rendering the climate comparatively dry, and therefore peculiarly fitted for the successful cultivation of Coffee. Cocoa is largely and successfully grown, the climate and labour resources of the island being peculiarly favourable to it. Sugar-cane, Pine-apples for the New York market, Divi-Divi, Cocos-nuts, Cinchona, Eucalyptus, and Jalap, are all successfully grown in the island.

— Mr. WILLIAM GORRIE has been well-advised in reprinting from the *Transactions of the Agricultural Society of Scotland* the description of the TREE MALLOW (*Lavatera arborea*), as an agricultural plant for cattle feeding, papermaking, and other purposes (Edinburgh: NELL & Co.) The Tree Mallow is a native of the sea coasts of this country, and even where not native thrives admirably, as on the

Kentish coast near Sandgate, where it may be seen growing close to the sea, and may be used for sheltering newly planted trees, &c. It is by no means an unattractive plant in such situations, and we are glad to find Mr. GORRIE advocating its culture for papermaking purposes, cordage, &c., as well as for the sake of its seeds, which furnish a valuable feeding stuff for cattle. From what we ourselves have seen on the small scale, and from the evidence Mr. GORRIE puts before us in his pamphlet, we would urge those interested, and who have the opportunity, to make the trial. The plant is a little tender in some situations, though native on the Bass Rock, Fife, Perth, but on the west coast of Scotland and the Western Isles, the south and west coasts of England and Wales, and in Ireland, the plant would probably do well.

— Dr. UHLWORTH proposes to continue the NOMENCLATURE BOTANICUS of FEEFFER, so as to include the names of all orders, genera, species, and varieties of plants published from 1859 to 1876 inclusive. Of the great value of such a publication to all who have to make use of the literature of botany, it is needless to speak. If carried out in the same elaborate and exhaustive manner as the *Nomenclator*, it will be a marvel of human industry and patience.

— In the *Monatsschrift des Vereines zur Beforderung des Gartenbaus* (Berlin) for April, Dr. K. KOCH gives some particulars respecting THE NURSERY OF BOSKOP, in Holland, and its neighbourhood. Nearly the whole population is engaged in the pursuit of raising forest trees, fruit trees, Roses, &c., for export. The area devoted to this purpose is from 500 to 1000 acres—a small area, of course, in comparison with the large extent of land under this culture in Britain, though large for a single locality. Three-fourths of the business is with Germany. With England, it is stated, the annual export amounts in value from 25,000 to 30,000 gulden—about £2125 to £2625. The principal plants sent to this country are variegated Hollies, dwarf Roses, hardy Azaleas, Planes and other deciduous trees. A rough estimate of the value of bulbs and tubers exported is fixed at £170,000. In this communication Dr. KOCH says nothing respecting the novelties he met with in principal trees and shrubs, the study of which was the primary object of a prolonged visit.

— At the St. Augustine's (Canterbury) Petty Sessions, on Saturday last, a man named JOHN BROWN was charged with stealing a quantity of Watercress, value 3s., at Ash-next-Sandwich, the property of Wm. FOAD. The prisoner (who pleaded guilty) and another man, not named, being having absconded, took a truck over to Ash during the night of Thursday and filled it with Watercress from the garden of the prosecutor, who traced Cress on the road from his premises to the St. Martin's Hill turnpike-gate, Canterbury. He went to a lodging-house in that city, and there saw a large quantity of Cress, which he identified as his, it being marked with soot. The Bench sentenced the prisoner to two months' hard labour.

— Mr. W. THOMSON sends us a leaf of Gros Colman Grape, with two side lobes and one terminal one on a long slender stalk. We never saw such an occurrence in a Vine leaf before, but it is what might be expected to occur in any palmately divided leaf.

— At the Society of Arts lately, Mr. WILLIAM TAYLER entertained his audience with an amusing lecture on "Thaumatodendra" (?), or the WONDERS OF TREES. Most of his illustrations are well-known to students of tree lore, but are none the less interesting on that account. We cite the following passages from this lecture:—

"There are new tales of portents at Coomassie; one, especially, of the truth of which we are assured, is certainly, at least, a very singular coincidence. The word Coomassie means 'the town under the tree,' and was so-called because the founder sat under a broad tree surrounded by his warriors, while he laid out the place for the future town. The market-place was marked off around the tree, and it naturally became the great festive tree of the town. On the 6th inst. the day upon which Sir GARDNER sent his ultimatum to the king, a bird of ill-omen was seen to perch upon the tree, and half an hour afterwards a tornado sprang up, and the festive tree was levelled to the ground! This caused

a profound sensation in Coomassie, which was no little known by the letter of the day upon which the fish tree had fallen."

Alluding to the Banian, the lecturer proceeded:—

"But the most remarkable evidence of the extraordinary power of the pendent roots of the Banian has been lately exhibited in the celebrated Temple of Juggernaut. The great Hindoo Temple of Juggernaut is notorious throughout the world. Built at a cost of half million was, being, it is black with age. After seven centuries this sacred place, which has suffered from droughts and encroachments of age, has been suddenly found to be on the verge of destruction. The seeds of the Banian and Peepal tree have got under the foundations; and the whole fabric has become loosened. The ruin is first indicated by the fall of some large stones, just after the gods had left the temple on the last car festival. Had they fallen a few minutes before they would have been smashed to atoms. This catastrophe has, as may be imagined, caused great consternation, and is likely to have a disastrous effect on the *prétige* of the great Juggernaut. It is a curious coincidence that the most celebrated Hindoo temple should have been thus undermined by trees: but sacred, if not divine, by the whole Hindoo nation. Is it accident—or Nemesis?"

Here is what is said of Lady GRIMSTON's tomb:—

"I dare say some here present will have heard of the very strange incidents connected with the tomb of Lady ANNE GRIMSTON, in Tewin Water Churchyard, Hertfordshire. As far as I have been able, and after much inquiry, to ascertain, Lady ANNE GRIMSTON was, if not an unbeliever, at least a sceptic, and was occasionally heard, which she herself would soon believe that trees would, after her death, grow out of, as some say, her heart, others her tomb, as that there should be a resurrection of the body from the grave. Lady ANNE GRIMSTON, as did her ancestors before her, died: she was buried, and a substantial tomb enclosed with an iron railing was erected over her remains: twelve months after burial seven small saplings of an Ash tree appeared close to the tomb; they were allowed to grow; superstition probably preventing all interference; they grew, and after some time they raised the solid tomb from its distance from the ground, at the same time supporting it with their branches, and at the present time, in exact accomplishment of the alternative suggested by Lady ANNE, seven full-grown Ash trees are in full foliage around the tomb, the principal tree having germinated from that part of the tomb in which the heart of the deceased was situated.

Here is another singular coincidence:—

"One other remarkable instance of mysterious, or at least unaccountable growth, is now, and has for many years, attracted attention and surprise at Ross, in Hertfordshire: the story, which has been related to me by several eye-witnesses, is this:—The Man of Ross is a name and character which has been immortalised in the well-known lines of Pope. He was peculiarly partial to the Elm tree, many of which he had cherished with peculiar devotion. So long as he lived, no one presumed to interfere with his cherished favourites; but after his death several trees made their appearance at the door of the church, gradually forced their way into the interior, passed through the Man of Ross' pew, and grew up together inside the church, where they were still growing side by side, occasionally lopped when rising so high as to touch the roof."

NOTES ON OPEN-AIR VEGETATION FOR APRIL.*

THE weather during April upon the whole has been cold, and much against open-air vegetation, perhaps more so than has been observed on April 30 for many years: the wind nearly the whole month having an easterly tendency except on the 20th, when it got round to the south-west, and a few hours' warmth was the result, which brought forward the flowers of the Norway Maple and certain Elms, also the young leaves of some of the Hawthorns, besides greatly increasing the size of the leaf-buds of certain Planes and Horse Chestnuts, but without expanding them. After that day the wind got round to the east again. Vegetation has progressed very slowly, so much so that the forest vegetation, with the exception of the few examples quoted, has quite a wintry appearance. Herbaceous vegetation is also far behind, the diminutive condition of many plants being very marked. Some of the ordinary early blooming plants have been also late of flowering. The Crown Imperial (*Fritillaria imperialis*), which is often past at this time, is

scarcely yet in perfection. Many Scillas and other spring bulbs which usually flower in March are now in full bloom, and even the common Crocus may still be found in flower, and Snowdrops were also procurable about eight days ago. Standard plants of Ribes sanguineum have not been particularly good this season, their flowers being still much behind. Many other examples might be quoted, the foregoing, however, are sufficient to show the backwardness of vegetation. In my report for March I stated that certain species of Cupressinæ had suffered severely. The browning complained of is still going on, and many of the plants then noticed are permanently disfigured.

During the month of April the thermometer has been ten times at or below the freezing point, indicating collectively 50°; the six lowest temperatures were on the 10th, 11th, 12th, 14th, 20th, and 25th, when 26°, 26°, 23°, 24°, 23°, and 27° were respectively registered; while the six highest night temperatures were on the 5th, 9th, 15th, 16th, 21st, and 22d, indicating respectively 39°, 40°, 40°, 40°, 42°, and 38°. The prevalence of low night temperatures of late has been remarkable, nor can it be explained while so much snow lies in various parts of the country. Throughout April the six highest night temperatures, as already noted, only amounted to 23°, being lower than had been noticed during the corresponding month last year, when the six highest indicated collectively 29°, all counted above zero, or 47° above the freezing point for April, 1877, and 101 for April, 1876.

On April 30 ninety-seven species and varieties of plants were counted in flower on the rock garden, while the corresponding day last year 122 were noticed. The most conspicuous at the present time are *Adonis vernalis*, *Anemone nemorosa bracteata* alba, *A. Robinsoniana*, *Aubrietia grandiflora*, *Colchicum soliboliferum*, *Diondia Eppactis*, *Draza arborescens*, *Erica herbica alba*, *E. h. intermedia*, *E. h. nana*, *Erythronium grandiflorum*, *E. giganteum*, *E. g. roseum*, *Fritillaria aurea*, *Orobancha elegans*, *Polygala Chamæboxus*, *Primula ciliata purpurata*, *P. denticulata*, *P. helvetica*, *P. integrifolia*, *P. nivalis*, *P. purpurea*, *P. vulgaris*, *Pulsatilla bracteata*, *Paschikiana scilloides*, *Saxifraga cordifolia*, and *S. retusa* extend to the limits of our own requirements. The following spring plants complete the list annually recorded to show the period of flowering:—

	1877.	1876.
<i>Symphylanthus caucasicum</i>	April 8	March 13
<i>Narcissus Pseudo-Narcissus</i>	" 12	April 3
<i>Adonis vernalis</i>	" 12	" 5
<i>Fritillaria imperialis</i>	" 14	" 11
<i>Hyoscyamus physaloides</i>	" 16	" 2

In my monthly returns "on open-air vegetation" it is not usual to give any remarks on the vegetation of the current month; but as the present month of MAY, so far as it has gone, has been rather an exceptional one, I cannot refrain making a few observations in order to show the amount of cold we have had up to this time. Frost has been seen, more or less, every morning, with two exceptions, varying from 1° to 8°, making collectively (up to this date, May 10) 30°, the exceptions being on the 9th, when the thermometer stood at 33°, and on the 10th (this morning) at 37°.

The frosts experienced during the May months for the last twenty-three years are given in a table on p. 523 of the twelfth volume of the Botanical Society's *Transactions* for 1876-77. In May, 1855, were registered in 1861, 21, and in 1859, 13, in 1874, 16, and in 1876, 26°. From this table it will be seen that during four years no May frosts were noticed, during five years 1° only each year were recorded, and for twelve years from 2° to 6° were registered.

It is difficult at the present time to say with exact certainty the period vegetation is behind former years, probably not less than three weeks. For twenty-eight consecutive seasons we have had the young branches of the Beech, each 5 inches long, to hand to the students attending the botanical class. On the 8th, 9, or 10, to show an example of an alternate leaf this year no shoot is yet out of its winter scales. Many other examples of open-air trees to show venation and prolepsis daily occur, all, however, behind; and while other plants are now in good condition, such as the *Fritillaria imperialis*, which is generally past at this time for class purposes.

In consequence of the length of time leaf-buds have

been pent-up, caused by the long ungenial spring, it is but reasonable to expect that as soon as a favourable change takes place, and the present moisture in the ground we shall observe a rapidity in the development of foliage such as we have not before seen.

Home Correspondence.

Lessons to the Young Gardeners at Kew.—SIR C. W. RICHMOND has mistaken in supposing that the system of instruction given to the young gardeners at Kew has proved a failure. That the contrary is the case is shown in my several annual reports to the Government on the progress and condition of the Royal Gardens since 1874, when the lessons were commenced. The system in question consists of evening lessons (not lectures) given to the young gardeners in the elements of structural, physiological, and geographical botany, chemistry, and meteorology, both for their general improvement and for the special purpose of qualifying them for holding appointments in India and the Colonies, as well as in scientific establishments at home, for which a knowledge of plants and their uses is an indispensable qualification and their useful products, is required. Those who commence a course are required to go through it, and to keep full notes of the subject taught in it; these notes are frequently inspected by the instructors, and finally reported on to the Director. At the end of the session a certificate of attendance at any course is given, but only in case of the notes having been satisfactorily kept; and further, the certificate of conduct &c., which every young gardeners carries away with him from Kew when he leaves its service, states whether he has or has not availed himself of these lessons. It is true that the original proposal to give such instruction was, when first announced, met with dissatisfaction by a majority of the young gardeners then at Kew, who expressed a wish that instruction in floriculture and bedding out should be substituted for it. This wish was, of course, not entertained, and the system, which once began, was cordially received by the young gardeners, and continues to give excellent practical results. Many applications have been made to me by outsiders for permission to participate in the instruction, but the system, being lateral, is not likely to be extended to the limits of our own requirements. Its success or failure does not in any way affect the question of the expediency or otherwise of the Horticultural Society instituting courses of instruction in horticulture proper, but the department of which such as fruit and vegetable growing) are not practised at Kew. *F. D. Hooker, Director, May 14.*

Productive Pig Trees.—THE Rev. Canon Agles, Barnack Rectory, has a Fig tree which occupies one side of a south roof. For twenty years past it has been yearly either pruned or nailed, and has not increased in its simply enormous. Another reverend gentleman in this quarter (Stamford) has one of the same variety that overtops the wall from 5 to 6 feet, and which I have repeatedly seen laden. Fig trees under the rule-of-thumb system of culture certainly bear fruit, but not with such freedom as the naturally grown trees. Three years ago I felt determined to try a similar plan, and am thankful to say with the best results. This season the promise is so good that I have treated the new shoots with a tie to the wall and main stems. *R. Gilbert.*

Abies Menziesii and A. Engelmanni.—M. ED. ANDRÉ's notes on *Abies Menziesii* and *A. Engelmanni* on p. 562 of your issue for May 5 are very interesting, in so far as they are correct; but I have a suspicion that the department of which he gives respecting this species (admittedly, however, not all of his own proving) is inaccurate, and calculated to mislead and hinder cultivators of such plants in Britain from adding to their collections one of the most beautiful and hardy of Spruces. I inform us that young plants of *A. Menziesii* are readily distinguished from Engelmanni by the tips of scales of their buds being reflexed. I have never seen *Menziesii* with reflexed scales; and I ask, in your examination of the specimen sent, whether he is correct in this statement. (In the specimen sent *Menziesii* the scales are not reflexed.) They also show that the leaves of Engelmanni are not "more slender" than those of *Menziesii*, but that the former is "more to a long, and the latter, the most formidable" of Spruces; and, as to the scales of its buds, they are decidedly recurved. But to prove this, pray never examine them in damp or rainy weather, as then they are more or less straightened out, and addressed to the buds, as if to prevent the lodgment of water. Furthermore we are informed that "on seeing the two species side by side, it is seen that *A. Engelmanni* begins to grow in spring a full month

* Read at the May meeting of the Edinburgh Botanical Society, 19, J. McNab, Curator of the Royal Botanic Gardens.

before A. Menziesii;" and that under cultivation "in America it is developed before any other species of Conifer, and the culture of it should not be recommended anywhere but in the North of Europe." We are certainly much indebted to Mr. André for telling how A. Engelmanni behaves in America, Russia, and France, and I shall now have pleasure in letting him know how it behaves here in Derbyshire. To do so it is necessary to state that the oldest plants here, as far as I can ascertain, were brought from France, and to compare them with plants of other species it is only fair that they all be of the same age, and growing on the same ground-level and subjected to the same conditions of life. I find that the branches of all kinds of these plants, and I believe, paradoxical as it may sound, are always last to start—have gone on uninterrupted by frost for at least seven years, and now (May 12) they are just commencing to grow, the majority of the buds being yet apparently dormant. They have entirely escaped the rather severe frosts experienced towards the close of the last and the beginning of this week. Plants of Menziesii, on the contrary, have already grown an inch or more, and many of their newly-made shoots are killed. Yesterday two years ago had a quantity of Engelmanni Spruce, Nordmanni Fir, and common and golden Yews, growing together on a low-lying part of our ground; they had made from 1 to 3 inches of growth, when an early frost in the night drove us back to where they had started from, without injuring a leaf of the Spruces. Lastly, the reason which M. André gives for Engelmanni beginning to grow in the spring is that "plants growing at a great height, or in high northern latitudes, on being transplanted to a warmer climate, begin to open their buds at the first spring-like day." If M. André is right, I would ask you what is the pine tree on the upper reaches of the Rocky Mountains, when transferred to England is notably the last of all our Pines to start in the spring? Here at present it shows no sign of life, but our native Scotch and other firs from warmer latitudes grow nearly as far on the same ground level, have made from 2 to 3 inches of growth. My knowledge of the climatal and other conditions of life of the numerous forms of Coniferæ in their native habitats is too limited to warrant me in attempting to explain why M. André has given a reason for. Nevertheless, it is not without reason that I believe that there is no characteristic more strongly impressed on plants than their inherited tendency to start into growth at a certain time, and under the conditions of life of the specific habitat admit of, even when they are, under cultivation, subjected to moderately different conditions. We see this exemplified in certain Cypressæ raised in Britain from seeds collected by me in the year 1851, near California; they make a double growth in one year, the second growth late in the autumn, and even form their catkins and flower before Christmas—its very best proof of them having made a second growth. It is exactly here they grow, and I believe, that the want of moisture at their roots towards the close of the "dry season" checks and helps to mature their growth early in autumn, and then the periodical warm showers which begin to fall on or about November 1 reinvigorate them, and they begin to grow. *George Syme.*

The Oak and the Ash.—What will the weather prophets say this year when they make their observations on the relative expansion of the leaves of these trees? Last year the Ash was some three weeks later than the Oak, but this season the two were nearly almost simultaneously [not in our garden. Eds.], so that there is little to choose between them. The reason is probably to be found in the fact that the Oak is later in expanding, as almost all deciduous trees are, but the Ash being one of the very latest finds the weather sufficiently genial to allow of its expanding its leaves at the usual period. If this has any significance in relation to the weather we may look for one of those happy seasons which are neither too wet or too dry, too hot or too cold, and suits everybody. Such a season may well be expected to prove a meteorological millennium. *Alex. Dean.* [In this matter the great individual variation of particular trees seems always to be overlooked. In South Middlesex, the Ash being one of the very latest finds of Oaks, one in leaf, others not so forward as the tardy Ash, which has scarcely begun to move. Eds.]

The Cucumber Disease Stamped Out.—Last spring I sent for your inspection some fruits and foliage of Cucumber plants very badly infected with the disease commonly called galling. After my communication I made several attempts to get rid of the disease. I procured seeds of plants from a distance, experimented with different soils, &c., raised seedlings and planted in a new house that never before had a Cucumber plant in it; but, alas! no matter

where they were grown, the too well-known symptoms quickly put in an appearance; the gunning in the fruit and stems and the crippled foliage soon made their appearance. Not one Cucumber presented for the table did I cut the whole of last year. With Melons and Vegetable Marrows the disease proved quite as fatal, even at long distances apart. I struggled on till this year, sowing and planting in all directions, till I was nearly worn out. Not one Cucumber did I reap, all my efforts being in vain. In this stage I felt somewhat puzzled as to what should be my next attempt. I then determined to root out and burn every plant on the place. The two houses where the Cucumbers were growing were thoroughly washed, hauled, every particle of soil and all that was movable was cleared out; we next gave the houses a good washing with strong soap and water as hot as it could be applied, and afterwards three coats of paint inside and out. The walls and pipes were well scoured and dressed with hot lime and turpentine several times. After all being made pure, instead of commencing again I gave the houses a rest for more than two months, throwing open all the ventilators and fully exposing them to wind and weather. On December 13 I closed the house and made another sowing of Telegraph and Tender and True; the plants came up and had a healthy look, and as the days lengthened made rapid progress. At the first fruiting time, on May 17, and I am pleased to say that from that day till this not the least symptom of disease has appeared on the plants or fruit. I attribute my success chiefly to the two months' rest, the thorough disinfecting of the place, and syringing the plants with a weak solution of a weak solution of sulphur. Should any one be labouring against this most tantalizing disease I recommend them to put the above remedy into execution, and I feel sure success will crown their efforts. The fruit and foliage I send you on the 17th inst. is that of Tender and True, and I think when you have seen it you will agree with me that the Cucumber disease is stamped out. [Certainly so for the specimen received is concerned. Eds.] *C. Bloxham, Gr. to Sir P. D. F. Duncombe, Bart., Brickhill Manor, Blechingly.*

Flowering of Phormium Colensoi.—Permit me to inform your correspondent, James Clelland, who inquires about the blooming and sending of Phormium Colensoi, that this handsome variegated plant was first introduced to me here in the summer of 1875, producing a spike of inconspicuous brown and green flowers, similar to those of the unvariegated kind, each horn-shaped tubular flower being filled to the brim with a species of exceedingly pungent resinous matter, and wasps. It did not flower, 'set or ripen seed, which was of little consequence, as seedlings of this plant come up, not as you say in your answer mostly green, but invariably all white or cream colour, and being devoid of chlorophyll cannot live. *W. G. Wood, Edgemoor, Queensland, Co. Cork, Ireland, May 13.*

Antipodal Hyacinths (see p. 591).—In reference to the zonals made in your last issue respecting the above, I beg to say that it is no new thing, as I have had one in my possession for the last quarter of a century, but simply under the name of Hyacinth of the modern style of make than what I have, as mine is of the upright, plain style, like the old-fashioned Hyacinth glass, but is 2 feet high without the bell, which is about 6 inches high, and this is taken off the zone, as it is used, as it is in fact, as a vase when not in use, which is the mode of cultivation I simply get a little moss and place at the base of the bell, to keep the soil, if you use soil, from falling through; unless you use all moss or cocoa fibre. Place the bulb in the centre close to the bottom, of course with the roots towards the inside, and then fill with the ingredients you use, placing the other bulb in the usual way, as in ordinary planting. You can then place them in the dark to rot, as is customary, and when they are sufficiently developed they can be placed in the vase, which is filled with water, and the one grown up and the other down. It is much the best to use bulbs both of one habit as near as you can, as sometimes one gets ahead of the other, and spoils the appearance. You can use both of one colour or different colours. The Narcissus answers quite as well to grow in them. The water will require to be frequently changed, as it is very apt to get green, and when it spoils the appearance, but a little charcoal is very beneficial in the water. A few gold fish would be of great use in the vase, and would excite a great interest, but that is according to taste. I like the style of the figure given in preference to the one I have, as it is more modern in appearance and looks handsomer, and would stand much sary. The object of the drawing is to show the arrangement of the drawing-rooms, &c., for a centre, and smaller ones on each side it looks very grand, in fact it is worth having all interested in the cultivation of the Hyacinth. *J. S. C.*

The Frost and the Fruit Crops.—Throughout the fine fruit gardens in West Middlesex the frost has proved very destructive to the Plum and Pear blossom, and of both the fruit the crop will be light. Plums had largely set, but the fruit were frozenthrough, and are fast falling; whilst three-fourths of the Pear blossom is literally blackened and useless. Cherries have not so largely suffered as the bulk of the blossom was not expanded, whilst Apples, unusually late, have almost entirely escaped. Gooseberries were largely favoured by an abundant leafage, but much of the fruit is injured, and will presently fall. Strawberries promise well, but few of the earliest blooms have suffered. Strawberries show a wonderful blossom, and the recent fine rains and general warmth may assist to produce a heavy crop of fruit. *A. D.*

Foxgloves.—The great improvement that has been effected in these during the last few years renders them very desirable plants to cultivate, especially where they can be accommodated with a tolerably open situation near woodland walks or semi-wild places, for either of which positions they are eminently adapted up to the summit of the garden, and here and there, as generally seen, they should be planted in large, bold masses, in imitation of Nature, who never scatters her treasures with a sparing hand, but is lavish and prodigal to an extraordinary degree, and the most beautiful flowers that we possess follow her teaching. Although Foxgloves will grow almost anywhere and in the poorest of soils, there is no comparison between them and such as are liberally treated, a striking instance of which was apparent here in the year 1876. In ground so prepared the ground reached the height of upwards of 7 feet, with huge spikes of flower as striking as they were beautiful. Any one, therefore, who would see them at their best should prepare for them in like manner, by breaking up the soil to a good depth at the particular spot it is intended to grow them, and, as they send their roots far down, to work in towards the bottom a good dressing of rotten dung, on which they will feed, and last double the length of time in bloom they otherwise would yield. In ground so prepared they should be sown in irregular patches, so as to be as informal as possible, and thinned out to distances of about a foot apart; or a better way will be to sow at once in light rows, and an stilling in the autumn, and in narrow rows, to stand till large enough to plant out, which they will be by the autumn, and sufficiently strong to bloom freely the following summer. By weeding out any inferior kinds, and saving seeds only from the best, more and most distinct, deterioration may be prevented; and if any showing superior qualities are cross-fertilised improved strains will be the result. Those we have were obtained from Ivery of Dorking, and so large and finely marked are the oldest varieties of Gloxinias, in which in form and general appearance they bear a close resemblance. *S. W.*

Verbenas: Store Pots.—Verbenas at this time of year, after so many croppings, may be said in many cases to be of little service for planting out, but if encouraged to grow when the striking season is over they will come in useful for furnishing cut flowers. Store pots of Verbenas turn out most profitable; when early in the spring they get a good shift like single plants in good strong soil, they then grow very much more luxuriantly. For keeping Verbenas, too, during the winter, it is a good plan to have a layer of good strong soil at the bottom of the cutting pots, as they often damp off from want of vigour. *Robert Mackenzie.*

The Weather in South Lincolnshire: Fruit for Prospects.—The thermometer ranged very low for the first eight days in May, viz.—May 1, 32°; cold with hail, wind N.; 2, 35°, cloudy, N.W.; 3, 30°, cold with hail, N.; 4th, 23°, cold with snow and hail, N.E.; 5th, 26°, clear, frosty, hail—N.E.; 6th, 24°, clear, frosty, hail—N.E.; 7th, 26°, clear, frosty, hail—N.E.; 8th, 28°, clear, frosty, N.E.; 9th, 35°, thunder, stormy rain, S.E.; 10th, 40°, stormy, thunder, lightning, with heavy fall of rain and hail; three-quarters of an inch fell in four hours. Pears, Cherries, and Plums were full, but few in hand; sufficient much; Apricots, where not well protected, are destroyed; early Potatoes cut down to the ground; early Peas are sipped; Asparagus making its appearance, all cut down; Box-eggs, young mow all in, and according to their hardness. Apples are not yet in bloom, and, as far as we can see, are safe, with an abundant show of bloom-buds. *D. Lumdin, Bloxholm Hall Gardens.*

Ivy.—Notwithstanding what Mr. Goodacre has said respecting Ivy tending to make buildings damp, I still affirm that it has quite the opposite tendency. I

lived in a house for eleven years which was completely covered with Ivy, and all the year round the soil at the base of the leaves was dry and hard, and the house was perfectly dry. Again, the stables here are some 20 feet high, and the walls are all covered with Ivy, and neither the horses, if they could, nor the men who sleep in the bedrooms over, have any reason to complain of damp in the building as dry as a chip. If the Ivy encourages damp, how does it come to pass that every April we exercise our fire brigade on the Castle, for the twofold purpose of washing out the gutters, and of drying and giving the plants a thorough soaking? The Ivy is a giving plant, and drinks up a quantity of moisture. All buildings should have a "damp course," to prevent the damp rising in the walls. It can be either lead, slate, cement, or a mixture of any of these, and is good for that purpose. Let this be attended to, and the spouting of the caves made perfect, and there will be fewer complaints about damp in buildings. I like to see the saddle put on the right horse, and therefore say—

7. "A rare old plant is the Ivy green."

7. *Rust, Erythra Castle.*

Weeping Beech Trees.—In the interesting account given by your correspondent "Rambler," of the Botanic Garden at Lewes, mentions the Weeping Beech as of large size. There is an extremely handsome tree of the same kind at this place. The trunk at 4 feet from the ground is 8 feet in circumference; the diameter of the branches 4 feet north and south, 74 inches east and west: this would give a circumference of about 240 feet. I am desirous of knowing whether this is a large tree of the kind, and I shall be obliged by your answer to 70 years' residence. *E. H. Mynnell Langley, Dorset.* [Certainly a fine specimen.]

Aerides crassifolium, Parish and Rehb. f.—I was very glad to see this charming plant referred to by Professor H. G. Reichenbach fil. in your last issue (see p. 599). Four years ago R. B. Dodgson, Esq., of Blackburt Fold, Blackburn, sent me a specimen of Mr. Whitehead, carefully lifted down a vigorous little plant growing in a basket suspended near the roof and showed it to me as one of the good things sent home by the "big white man," the Rev. Mr. C. P. Parish, and distributed by Mr. Stuart Low, I remember Mr. Whitehead handled the plant most carefully, and gave a start of joyful surprise when a young flower-stem was detected pushing its way from the axil of one of the twenty-five carmine or anemine-purple flowers which he exhibited at the Blackburn flower show on May 25, 1873, where it was much admired by myself, Mr. Gower, and other visitors. It appears quite distinct in habit from Lady Larpent's *Aerides* (A. falcatum). The flowers being larger, more richly coloured, and far more gracefully arranged on the spike. A. Houlettianum, a buff-intined form of the last-named species, exhibited by Sir Trevor Lawrence last year at South Kensington, is another distinct plant, and is known in English gardens as A. Mendeli; indeed, it was exhibited, and I believe certificated, under that name. My description of this plant, published in the *Garden* in May, 1873, will interest Professor Reichenbach, as he has so nearly we agree as to the affinity of this lovely plant.

"A robust and well-grown specimen of the rare species (*Aerides crassifolium*) has at last been flowered by Mr. Whitehead, gardener to F. B. Dodgson, Esq., of Blackburn, Lancashire. It has been called 'the best' which is very laudable, and, in fact, considering we have the noble A. Fieldingi, and the still more handsome and rare A. Schröderi. This new specimen is the Messrs. Low's importations, and is easily distinguished, even when not in flower, by its broad, thick leaves, and dense habit. Its flowers call to mind those of A. falcatum Larpente, being similar in colour and habit, but they are produced on a long, drooping spike. Their colour is also much deeper and more effective than that of the last-named species, being a soft, clear anemine-purple, shading off into white at the base of the segments. The petals and sepals, belonging to this species is similar to that found in the petals of *Phalenopsis Ludemanniana*, but they are twenty times as long on a spike. The plant will doubtless be exceeded as the plant develops itself. This *Aerides*, as has just been stated, is as yet very rare, but I think it clear, and reasonable to suppose, that it may be something superior to those of others, it is doubtless soon find its way into the most select collections." *F. W. B.*

The *Marchal Niel Rose*.—You did me the favour to insert in your number for May 6, 1876, an

account of my method of growing the *Marchal Niel Rose*. I am again adopted the same plan, with the exception of not having cut the fifty yellow *Roses* (of the two single shoots), most, if not all of which, have measured at least 5 inches across. The plant is now cut back to two single buds, each of which, I expect, will again grow to the usual length of 21 to 22 inches in the course of the present season. *Max Holburn, Herts, May 15.*

Protecting Peas with Paraffin.—Having seen in the *Gardener's Chronicle* a short time since a letter from one of your correspondents stating a way of protecting Peas from rats, mice, birds, &c., by coating the Peas for two minutes in benzoline before sowing, I acted on his advice, with the following result. I procured some good sound seed of Culverwell's *Profric* marrow, soaked them in benzoline for two minutes, and sowed them in the usual way. After watching them very carefully for some considerable time, to see if the mice or rats did trouble them, I found they did not interfere with them at all; which put out your correspondent's statement as far as mice and rats are concerned, but not one of which came up, and on close examination I found the Peas rotted in the ground. I write this in hopes it will save some of your readers from trusting to such a dangerous experiment. *R. W.*

Reports of Societies.

Crystal Palace, May 12.—The Crystal Palace on Saturday last presented a more than usually gay appearance—the occasion being the annual May show, and an display of plants much superior to any other that has been seen here for several years—a circumstance the more remarkable, inasmuch as only two prizes were offered for competition in each class, the directors, in the fit of economy that has so suddenly overtaken them, having disallowed the sums usually given as third and fourth prizes, though we believe that late in the day such prizes were awarded to those who deserved them. Another cause of complaint amongst the exhibitors was the non-provision of the usual breakfast, which was not given, though no doubt that effect had been issued, and some of the exhibitors, to be sure, endeavoured to remain at many hours through the usual passes being withheld. Such practices are mean, not economical, and can only be practised once with any effect. We believe the prevalent feeling amongst exhibitors is in favour of the system which provides third and even fourth prizes, the amounts, though small, contributing "something towards expenses"—a very heavy item when large plants are in question. In addition to the plants and cut flowers being of a much improved order of merit, we have to notice an improvement in the arrangement of the show, which met with the hearty approval of the visitors and exhibitors. For a number of years past the staging has been erected in narrow parallel lines down the centre and sides of the grand promenades on either side of the central transept, a plan which prevented anything like an effective arrangement of the subjects sent in for competition. On the present occasion all this was done away with, and instead four large broad sets of staging had been erected in the centre. These broad and rather low stages were admirably fitted at Saturday, and the general effect produced was a most decided improvement upon the old style.

FLOWERING PLANTS.—The display of flowering and fine-foliaged stove and greenhouse plants was especially good, and showed in considerable numbers. The leading class for flowering plants was that for nine open to amateurs, in which Mr. Chapman, gr. to J. Spode, Esq., Hawkesyard Park, Rugeley, came in 1st. The most noticeable subjects in this fine group were specimens of *Chorozeema Chandleri*, a bush about 5 feet over, and splendidly flowered; *Dracophyllum gracile*, about 4 feet through and well bloomed; *Bougainvillea glabra*, of about the same dimensions, and full of flowers; *Fimelia mirabilis*, a large well-flowered bush; *Erica odorata*, a plant about 3 feet through, and beautifully flowered—one of the most meritorious plants in the show; *Ixora coccinea*, a fine and profusely bloomed plant; *Anthurum Scherzerianum*, &c. The 2d prize went to Mr. B. Peed, gr. to Mrs. Tredwell, St. John's Lodge, Lower Norwood, who also staged an admirable group, conspicuous in which were a grandly flowered *Eparis Eclipse*, about 4 feet high and the same through; *Chorozeema Chandleri*, about 5 feet high and 3 through, well and evenly flowered; very good examples of *Clerodendron Bal-*

fourianum, *Imantophyllum miniatum*, *Azalea Exstrane*, and *Erica Cavendishiana*, together with admirably flowered plants, such as *Erica verticosa*, *Erica calycina*, and *Convolvulus*. Mr. Tudgey, gr. to T.F. Grosveold Williams, Esq., Henwick Grange, Worcester, came next in order of merit, having a capital lot of plants, which, however, were scarcely forward enough in bloom. The corresponding class for nurseries contained only one entry—that of Messrs. T. Jackson & Son, Kingston, to which the 2d prize only was awarded, the plants being much behind time in the development of their blossoms. The amateur class for six, was won by Messrs. T. Turner, Garbidge Hill, Ewell, who were bracketed equal 2d. The form had good-sized, well furnished, and admirably flowered specimens of *Erica verticosa coccinea* minor, *Clerodendron Balfourianum*, *Ixora coccinea*, *Erica eximia* superba, *Chorozeema Chandleri*, &c.; and the latter equally fine examples of *Erica dentata*, *Azalea coccinea*, *Clerodendron Balfourianum*, *Darwinia tulipifera*, and *Aphelisis macrantha purpurea*, &c. Mr. B. Peed contributed amongst others the specimens of *Azalea coccinea*, *Clerodendron Balfourianum*, and a beautifully flowered bush of *Eriostemon pulchellum*, about 5 feet high and 4 feet through. In another group, shown in the same class by Mr. Bristow, gr. to G. Campbell, Esq., Woodhall, South Walsham, the plants were of a more three spikes, and a fresh, nicely flowered ball-trained plant of *Euphorbia splendens*—not a frequent visitor at flower shows now-a-days.

The open and amateurs' classes for eight and six *Heaths* respectively were well contested. In the amateurs' class, the 1st prize in the prize list was taken by Mr. G. Legg, gr. to S. A. Kalli, Esq., Cleveland House, Clapham Park, who appears to be as much at home with *Heaths* as he is with fine-foliaged plants and carpet bedding. The plants which he staged in this class were of a most excellent even size, clean and vigorously grown, and thoroughly well flowered, the varieties being *E. insignis*, *depressa*, *Caodollanea*, *Victoria*, *Cavendishiana*, and *tuberosa*. The second prize went to Mr. Tudgey, who had a capital lot of plants fully in flower, and in the case of a specimen of *E. elegans*, which was very fine. A well-flowered but unevenly-matched group came from Mr. Peed, the best being examples of *E. eximia* superba, *persepolis*, and *monticola*, &c. The open class for eight brought out Messrs. T. Jackson & Son, Mr. Peed, and Mr. Legg, who stood in the order of merit as named. The Kingston firm had large and nicely-flowered plants of *E. depressa*, *affine*, *viridis*, *ampullacea*, *obovata*, *Eximia*, *viridis*, *Wilsoni*, and *perspicua* nana. Almost equally good were the specimens of *E. verticosa grandiflora*, *elegans*, *Cavendishiana*, *eximia superba*, *verticosa coccinea* minor, &c., from Mr. Peed. Mr. Legg's plants were small but splendidly flowered, and an extra prize was awarded to them.

AZALEAS have not been so well shown for some time, being represented here both in considerable numbers, and generally in grand condition. The leading exhibitor of *Azaleas* at the present time, Mr. Ratty, gr. to T. Turner, was the successful competitor for the 1st prize in the open class for nine, and the amateurs' for six, with a splendid lot of plants. In the first-named class Mr. Ratty showed plants from 5 to 6 feet in height and 4 feet through, perfect cones of richly-coloured plants, such as *Azalea coccinea*, *Victoria*, *Georgiana*, *Model*, *Beauty of Europe*, *Eulalie Van Geet*, *Holloriana*, *Dac de Nassau*, *Mrs. Fry*, and *Criterion*. Mr. James Child came in 2d with a group of somewhat smaller plants, profusely bloomed. Mr. Turner turned the tables on the exhibitor who was awarded to Mr. Turner for a capital lot of standards. In the amateurs' class Mr. Ratty staged a set of standards of immense size and almost flat-headed, the leading show being *Kingstonia*, *Victoria*, *Eximia*, *viridis*, *Wilsoni*, *perspicua*, *obovata*, *Coquette de France*, &c. Mr. B. Peed, who was 2d here, also showed well; and in a group from Mr. J. Bristow we noticed a charming cone about 5 feet high of *Azalea sinensis* alba. Mr. Turner turned the tables on the successful amateur in the class for twenty in 9-inch pots, showing an evenly matched, well flowered lot of half specimens, conspicuous amongst which for their brightness of colour and general excellence being *Apollo*, *Eugenie Marci*, *Chorozeema Chandleri*, *Souvenir du Prince Albert*, and *Mons. Cavellier*, &c.

ORCHIDS were not represented so well as usual, either in number or quality. Mr. B. S. Williams amongst many others, was the exhibitor of the best order named, *Azalea*, which had *Vanda tricolora* insignis, with three spikes, and *Bombia macrantha*

promptly and courteously replied to my letter to him that he sent me a fragment of a dissected plant. I have examined and compared it carefully with *Urocytis colchici*, and arrived at the conclusion that Dr. Farlow had some justification for his opinion that it was distinct. The spore masses are rather smaller, and darker in colour. When the spores of the two species are mixed together upon a glass slide and placed under the microscope the spores appear to be distinguished with facility, so that there is really an appreciable difference between them. Notwithstanding this, I am of opinion that the differences are of a doubtful character, and that the spores may be distinguished by local influences, and external conditions generally. Whilst Dr. Farlow would regard it, somewhat reservedly, as a new species of *Urocytis*, I should think it should term it *Urocytis colchici* var. *capitata*. It raises the old question of limitation of species, and upon this it is unnecessary to enter. Let each man be persuaded in his own mind.

New Variety of Mushroom.—Mr. Worthington Smith exhibited a drawing, with dissections, of a new and apparently very distinct variety of the common Mushroom. The original plants were grown on shelves by Mr. John Walker, of Thame, near Oxford. Mr. Smith stated that the plants in question differed in several important points from the ordinary Mushroom, the most striking being the presence of bold, white, cloth-like flukes on the top, after the manner of *Agaricus muscarius*, but without patches of green, and the remains of a white cloth veil, which completely enveloped the young plants in infancy, after the manner of the members of the subgenus *Amanita*, to which *Agaricus muscarius* belongs. This is foreign to *Peziza*, to which the Mushroom belongs. Mr. Smith expressed his belief that the new plants were hybrids between the Mushroom and some other *Agaric* at present unknown. In the new edition of the *Agaricæ*, there is a *Peziza* which has a new variety of *Agaricæ*, close to the common Mushroom, and named *Clotiosa*. This sub-genus is distinguished by the presence of a universal veil, distinct from the cuticle of the pileus, analogous with *Amanita*, and agreeing with it in its shape, with the new variety of Mushroom in question. The flesh of the Thame Mushroom changes to faint rose or yellowish sienna (at length darker) on being cut or broken. The edges of the crowded gills are at first white, at length brownish, and finally black. The spores feel the same size as, but paler in colour than, those of the ordinary Mushroom. The whole plant is very fleshy, somewhat dry, and with a powerful odour; stem hollow, with a distinct pile.

It is a Mushroom of the first class, and the table.

Grafted Cherry Tree.—The same gentleman showed a drawing of a singular grafted Cherry tree, now growing near Harpenden. The point of attachment between the stock and scion is 7 feet from the ground line; the smooth stock (wild Cherry) is upwards of 3 feet in circumference, whilst the gnarled and rugged scion is more than 6 feet in circumference. The sudden disparity in size of the stem gives the tree an extraordinary appearance.

Malformed Primroses.—Dr. Masters showed specimens of malformed Primroses, which had been referred to him at a previous meeting, as well as others which he had since obtained from Miss W. de Beccles, and their correspondents. The changes in these were numerous and interesting, the most remarkable consisting in the change of stamens into carpels, the anthers bearing ovules instead of pollen. In some instances the stamens were lobed or divided, some of the lobes bearing ovules, while others were rolled round into secondary carpels, with distinct styles and stigmas. Dr. Masters made some remarks on these flowers, as illustrating the peculiarities of the structure of Primulacæ, due, as he considered, to the presence of choripetalous stamens, while the petals become doubled or many times repeated by splitting, the stamens also split off from the petals, and the placentas detached in like manner from the carpels; and exhibited drawings of the flowers made by Mr. Worthington Smith. Mr. G. Fenelon also showed drawings made from similar flowers, and made some comments on the singular changes presented. A fuller account of these remarkable flowers will probably be published on another occasion.

Malformed Calceolarias.—Dr. Masters showed a drawing of the malformed Calceolarias shown at the last meeting by Mr. F. W. Burbidge. The chief peculiarity consisted in the formation of a flattened, petal-like lobe at the junction of the filament with the anther.

Hermaphrodite Flowers of *Capsella Luvoniana*.—Dr. Masters exhibited drawings of an autogamous one of *Capsella Luvoniana*, specimens of which were not examined by Sir Syms, of the Elvston Nursery. In the same spike the lower scales bore anthers, while the upper bore ovules. One of these scales bore on its outer and lower edge two anther cells, and on the centre of its inner surface a solitary stalked erect ovule.

in the chair. With a large exhibition at the Crystal Palace on the previous Saturday and another one at Regent's Park on Wednesday, it was not to be expected that much would be shown here to-day, and such proved to be the case. The principal contributions consisted of a small group of the Roses from Messrs. Girdle, Veitch & Son, and a pair of half specimen Azaleas from Mr. Charles Turner, and a nice collection of stove and greenhouse plants from Messrs. Cutbush & Sons, Highgate. The Roses shown by Messrs. Veitch were all half specimens, well-grown and nicely flowered, the sorts best represented being *Baronne de Rothschild*, *La France*, *Madame Lacharme*, *Alfred Cochard*, *Captain Christy*, *Alpha Rose*, *John Hopper*, *Duke of Edinburgh*, *Charles de Beek*, *Duc de Nassau*, and *Comte de Paris*. A silver medal was awarded for the group. The same firm also sent a fine lot of plants of the new creamy white *Hydrangea*, *Thomas Hogg*, which appears to be a strong grower, and certainly throws large trusses of flowers. Also four new varieties of *Azalea mollis*, one of which, named *Coerule de Paille*, a free flowering plant, with straw-coloured blossoms, to which a First-class Certificate was awarded. *Aurantiacum* and *Flaberrima* have orange and white, and the *Comer paille* is white with yellow base. *Dracena Robinsoniana*, also shown by Messrs. Veitch, is an upright growing plant, with green and crimson and yellow striated leaves. This was also awarded a First-class Certificate. The *Fuchsia* *Comer paille* was awarded for the fine group of *Azalea* above alluded to, and which contained amongst others beautifully-flowered and finely-colored examples of *Souvenir du Prince Albert*, *Roi Leopold*, *Charles de Beek*, *Duc de Nassau*, and *Comte de Paris*. Mr. Turner, and the beautifully-colored new *Jean Vervaeke*, &c. To Messrs. Cutbush & Son a silver medal was voted for the group of stove and greenhouse flowering and fine-foliated plants, containing a number of the most favoured ones, and which are now rarely seen. Among them were nicely-flowered plants of the pretty Australian *Hypocylonia robusta*, *Erica reginiana*, *Boronia serrulata*, *Erica mirabilis*, *Correa cardinalis*, *Erica persulcata* alba, a nice flowering species, with small white blossoms; *Chorozema Henchmannii*, &c. Sir Trevor Lawrence, Bart., M.P. (Mr. Spyners grower), received a First-class Certificate for *Ocandium crispum marginatum grandiflorum*, a very large-flowered variety, as its name implies; a *Calla* *Albiflora*, a plant of the same genus, with white, spiky, of *Ocandium* *triumphans superbum*; and a botanical Commendation for *Hoelleia Lowiana*, a singular-shaped, lemon-yellow-colored and sweet-scented Orchid, described at p. 484, vol. ii., 1874, and p. 154, vol. iii., 1876, in *Solms-Laubach's* *Botanische Mittheilungen* by the late Albert Bruchmüller, who sent the stock to Mr. Low; and *Ocandium metallicum*, "a surprising novelty," described by Professor Reichenbach, at p. 394, vol. v., 1876. The same gentleman also showed a specimen of *Ocandium* *triumphans superbum*, a remarkably vigorous and healthy plant, with three spikes of splendidly colored flowers, of *Cattleya Schilleriana*, a rare plant, and one that is generally considered very difficult to grow; and a specimen of *O. citroscentum* roseum, with very delicately colored flowers.

Messrs. William Paul & Son, Pall's Nursery, Waldham Cross, sent half-a-dozen boxes of cut blooms of *Roses*, containing many fine flowers, to which a bronze medal was awarded. H. J. Elwes, Esq., Preston, Cirencester, was awarded a First-class Certificate for *Cypripedium candidum*, with a white slipper-shaped lip, yellow staminoide, and bronze-colored sepals and petals, with a delicate odour of a very distinct and pleasant character. A specimen of *Tulipa undulatifolia*, dark scarlet; *Calceolaria crenatifolia*, bright canary-yellow; and *Eilseena longipetala*, white, and *Cypripedium candidum*. Mr. Oberlander, of Sir R. W. Feek, M.P., sent a very distinct *Arctostaphylos orthoceras*; and J. D. Llewellyn, Esq., Penllegre, Swansea, sent cut flowers of a Sikkim *Rhododendron* from the open air. To Mr. Cannell, The Nursery, Swatley, a vote of thanks was accorded for a dozen bunches cut from a small group of new Clematises, which included the following varieties:—*Undine*, double, rose purple; *Milla*, Torriani, single, rose pink; *Madame de France*, fine size; *Margaret Dunlop*, lavender-blue, and fine size; *Xerxes*, large deep bluish purple, and the President, a large plum-purple flower, with a pale bar. Mr. Wills received a bronze medal for a small group of *Antirrhinum* in variety, and a similar one was made to Mr. Mayo, Com Market Street, Oxford, for two boxes of beautiful cut blooms of the *Marchal Niel Rose*. From Mr. R. Dean, Kanelagh Road, Faling, came a small group of plants, which included a very fine specimen of a very distinct and healthy cut flowers of *Saxifraga granulata* fore-flores, one of the very dwarf and pretty white *Veronica repens*, the distinct *Viola pedata*, *Sempervivum Boissierii*, a bronzy leaved distinct form; and *Polyanthus Vulcan*, a very dark velvety black flower with bright golden centre.

FRUIT COMMITTEE.—H. Webb, Esq., in the chair. The only subjects that came under the notice of the committee to-day were a brace of *Tender* and *True Cucumbers*, sent by the raiser, Mr. Jas. Douglas, of F. Whitburs, Esq., to show that they were the same plant, and indeed the same branch, they will vary in the length of the neck; an excellent dish of *Grosse Mignonne Peaches*, from Mr. Samuel Jenks, of G. D. Lynam, Esq., Brambley, Esq.; *Gristed*; specimens of *Ward's Longford Hybrid*, in the style of *Scarlet Gem*, but no improvement on it, from Mr. Ward, of the Earl of Rudon, Longford Castle; a so-called white American Cucumber, more resembling *Ward's Longford Hybrid*, sent by Mr. J. Wright, Esq., Osmaston Manor, Derby; and several seedling Cucumbers of no particular merit from the same gentleman. Votes of thanks were accorded to all.

Royal Botanic. *May 16.*—The first summer exhibition of this Society was held in the large marquee in the Society's gardens on Wednesday last, and it has seldom been our lot to attend a more successful one. The show tent, with its grass-green covered slopes and undulating forms, and its roof to most of our readers—was filled to overflowing with an admirable selection of the usual subjects that come in for exhibition at this season. If the exhibition be, comparatively speaking, a poor one, and if it looks like a show of flowers, it must leave our readers to imagine what the display to-day, which was really admirable from whatever point it was looked at; and Mr. Coomber, the garden superintendent, must be congratulated on the happy results of his gathering from various compartments and miscellaneous collections sent in. We can only regret that the exhibition was not seen by so large a number of visitors as it deserved to be, in consequence of the rain and the unfavourable weather—most unpropitious for a flower show, drenching showers of rain falling at frequent intervals throughout the day. As was to be expected, a number of the plants shown to-day had also appeared in many of the competitions held at the Crystal Palace, but, last, but not the least, the cool, sunless weather had been favourable to the preservation of their flowers, and none of them looked any the worse for their visit to Sydenham.

STOVE AND GREENHOUSE FLOWERING PLANTS were admirably shown, especially in the amateurs' class for ten, in which Mr. Chapman, gr. to J. Spode, Esq., Hawkensyard Park, Rugeley, came in first; Mr. B. Peel, gr. to Mr. Tredwell, Lower Norwood; and Mr. H. G. Peck, gr. to Mr. H. G. Peck, Esq., Henwick Grange, Worcester, 3d. The plants staged were with few exceptions the same as those shown at the Crystal Palace, and therefore need not be further alluded to. That the class was, however, a good one may be gathered from various examples of *Ademanda fragrans*, *Darwinia tulipifera*, and *Eriostemon lineofolium*. The nurseryman's class for twelve included collections from Messrs. T. Jackson & Son, Kingston; Mr. B. S. Williams, Holloway; and Mr. J. Peck, Roupell Park Nurseries, Norwood; and the prizes went in the order named. The most remarkable specimen in Messrs. Jackson's group were of *Darwinia tulipifera*, *Rhododendron formosissimum*, a very distinct *Arctostaphylos orthoceras*, *Azalea Baron de Veitve*, &c. Mr. E. Tulge had the finest half dozen amongst amateurs, which comprised a very well flowered and fine specimen of *Erica elegans*, a remarkably good *Darwinia tulipifera*, *Azalea Cochard*, *Erica verticillata magnifica*, very good; *Anthurium Scherzerianum*, and *Aphelax macrantha rosea*, the last-named not being quite out. Mr. Chapman took 2d honours, with a very fine lot selected from his group of plants for Saturday. G. Legg, gr. to S. A. Ralli, Esq., Cleveland House, Clapham Park, was 3d, with beautiful young specimens of *Darwinia tulipifera*, *Erica Cavendishiana*, *Epacris Elchiae*, *Allamanda grandiflora*, *Croton*, *Croton Balfourianus*, &c. and an extra prize was awarded to Mr. James Child, gr. to Mrs. Torr, Garbond Hill, Ewell, the most showy of his plants being *Bougainvillea glabra*, *Azalea concinna*, and *Darwinia tulipifera*. In the corresponding class for amateurs, Mr. G. Legg was 1st, Messrs. T. Jackson & Son were again placed 2d, and Mr. B. S. Williams 2d.

Roses have seldom, if ever, been shown better by either Mr. Turner or Messrs. Paul & Son, Chesham, than they were by these renowned growers to-day.

Mr. Turner especially was in grand form, winning the 1st prize in each of the three classes devoted to the ever-popular flower, with specimens as regards size and beauty—like those which have never been seen before. The Cheshunt plants were but little indeed behind those which gained the 1st prizes, being in all respects marvels of cultivation—of which any grower would be proud to have the open class for six Mr. Turner was with a magnificent lot, the largest plant of all being one of Paul Ferns, from 6 to 7 feet high, and about 5 feet through, with splendid foliage and a superb lot of buds. Next in importance was a fine glass bush of Edward Morren, about 4 feet high and 6 feet through, and most profusely flowered—and such flowers—the finest Edward Morren we have yet seen. The other specimens, also, were good. Messrs. J. and S. Duke of Edinburgh, G. Forster, and Paul Verdier, Messrs. Paul & Son's group, which came in 2d, consisted of large and exceedingly well-flowered bushes of Edward Morren, Victor Verdier, Docteur Andry, Celine Forestier, John Hopper, and Charles Lawson. It is hardly to be expected that amateurs should make a good fight with the nurserymen; nevertheless, the third prize in this class was taken by an amateur—Mr. Moorman, gr. to the Misses Christy, Coombe Bank, Kingston, who put up a capital lot of well-bloomed plants. Next year we propose to set a class for six Roses confined to amateurs. In the nurserymen's class for nine, Mr. Turner's 1st prize group consisted of large and very fresh plants, clothed with beautiful foliage and thoroughly well flowered. The winners on a first-class basis were, in descending order, as also were those on a grand bush of Miss Ingram. Juncos, Victor Verdier, Maréchal Vaillant, Charles Lawson, Midlle, J. Levett, M'delle, Victor Verdier, and La France, were also very good. Messrs. Paul & Son were 2d, and had a fine group of well-flowered specimens of Elis Morel, Horace Vermet, Marquis de Castellane, John Hopper, President, Marie Baumann, Dupuy Jamin, and La France. In the class for twenty in 8-inch pots the same order of merit was observed, both growers showing remarkably well.

AZALEAS were in excellent form, and by their size and brilliancy of colour added much to the general effect. The 1st prize for six went to Mr. Ratty, gr. to R. Thornton, Esq., The Hoe, Sydenham, who showed the best specimens he had at the Crystal Palace on Saturday, and they were still in very fine order. Mr. James Child was a good 2d with large and particularly well-flowered clean and fresh specimens; and Mr. G. Wheeler was 3d. In the second round of the competition, the plants which Charles Turner was 1st, showing a splendidly flowered group of dwarf standards with large-sized heads. The specimens of Duc de Nassau and Comtesse de Flandre were densely covered with magnificent blossoms. For six in 12-inch pots Mr. Turner also came in 1st, with a beautiful lot of standards and pyramids of medium size, and all finely bloomed. Grandis, Charmer, Mons. Thibaut, Roi de Holland, and Duchesse de Flandre were the best of the brightly coloured ones, and Apollo the finest among whites. Mr. Ratty was a good 2d. For six in 12-inch pots Mr. Ratty came in 1st again, with a very good group of small pyramids, thoroughly well bloomed, especially the specimens of Roi des Doubles, and Duchesse Adelaide de Nassau; and Mr. G. Wheeler was 2d with medium-sized and beautifully flowered examples of Elegantisima, Model, magnifica, perfecta elegans, Leopold I., and Criterion; 3d, Mr. James Child.

THE HEATHS were in excellent form, as we have seen them here. Only one group of twelve was shown in the nurserymen's class, and to that, which came from Messrs. T. Jackson & Son, and consisted of medium-sized, nicely-flowered plants of well-known sorts, the 1st prize was awarded. The best of the brightly-flowered plants were staged in the open class for six in which Mr. G. Legg came in 1st, Mr. B. Peck 2d, and Mr. G. Wheeler, 3d. For twelve in a class confined to amateurs, Mr. G. Legg also came in 1st, with a fresh, clean, and neatly grown set of plants of medium size, mostly very well flowered; E. Victorine Lindleyana, depressa, insignis, Candolleana, and Cavendishiana, Mr. B. Peck being a good 2d, and Mr. E. Tudgey, 3d.

THE PALMS were fairly presented as to numbers, as well as in quality. For 1st prize for six in the division confined to amateurs was won by Mr. E. Tudgey, who had large plants of *Alphosia australis*, *Dicksonia antarctica*, and *Cyathes dealthata*, and smaller but very good ones of *Davallia Mooreana*, *Adiantum polypodioides*, and *Gleichenia*. For six in the nurserymen's class Mr. Wheeler was 2d. The nurserymen's class for six brought Mr. B. S. Williams to the front with large and very fresh plants of *Davallia Mooreana*, *Gleichenia rupestris*, and *Asplenium Clivii*; and also *Cyathes dealthata*, *Dicksonia antarctica*; 2d in the same class was Mr. J. H. Ley, with a very unevenly matched set, consisting of tall specimens of *Alphosia Van Geertii* and *Dicksonia antarctica*, a fine fresh plant of *Neottoptis australis*, a good *Davallia Mooreana*,

a half specimen of *Gleichenia dichotoma*, and a small plant of *Platyercium alaicorum*.

THE FOLIAGE PLANTS were admirably shown, and provided abundant material for creating strong contrasts with the flowering subjects. Mr. G. Legg, gr. to S. A. Ralli, Esq., Clapham Park, came in an easy 1st amongst amateurs for six with a remarkably fine group, which consisted of a tall specimen of *Peperomia*, *Dioscorea Shepherdii*, splendid bushes of *Crotons Weismanni* and variegatus, and a noble young *Stevensoniana grandifolia*, &c.; 2d, Mr. E. Tudgey, with a good selection from his Crystal Palace group; 3d, Mr. H. Hill, gr. to H. C. Taylor, Esq., Clapham Park. For six in the nurserymen's class Mr. B. S. Williams was 1st with a notable plant of the distinct *Cycas Armstrongii*, and large, well-furnished examples of *Caladium Bronngiartii*, *Maranta Veitchii*, *Dasylium acrotichium*, *Croton pictus*, &c. In the corresponding class for nurserymen, Mr. B. S. Williams was 1st amongst nurserymen with a large and very fine *Cycas circinalis*, a remarkably good *Chebearopsis humilis*, large, well-furnished and brightly coloured plants of *Crotons Weismanni* and *Youngii*, and handsome specimens of *Pandanus Veitchii* and *Dasylium acrotichium*; and Mr. John H. Ley, who had large and finely coloured *Crotons variegatus*, and *angustifolius*, a very good *Alocasia Lowii*, *Cocos Weddelliana*, &c., was 2d. In the open class for six Mr. G. Legg was 1st with a group of which Mr. J. H. Ley came in 1st with an interesting assortment, most noticeable amongst which were *Cycas revoluta* and *circinalis*, *Dion edule*, *Yucca filamentosa variegata*, *Zamia Lindenii* and *duplata*, *Agave filifera*, *Spathoglottis*, and *Strobilanthes* came in 2d, including such subjects as *Agave densiflora*, showing for flower, *Salmiana americana variegata*, *Geminiifolia filifera*, *aloifolia variegata*, and *univittata*; various species of *Cycas* and *Encephalartos*.

THE ORCHIDS, as usual, made a very effective display on the slope usually devoted to them. Mr. Denning, gr. to Lord Londesborough, came in 1st in the amateurs' class for six, with *Odontoglossum citreolum*, with three fine spikes; *Cattleya superba*, with four richly coloured flowers; *Dendrobium Parishii*, with four beautiful spikes of delicately coloured blossoms; *Aerides Veitchii*, with one spike; *Odontoglossum Pescatorei*, with five nice spikes; and *Odontoglossum Roezlii*, with fourteen good flowers. For six in the nurserymen's class Mr. G. Legg was 1st, and splendidly flowered *Oncidium ampliatum majus*, *Cypripedium Stonei*, with four very fine flowers; a good specimen of *Cattleya Mossie superba*, &c. Mr. F. Newman, gr. to W. J. M. May, Cr. Market Street, Oxford, was 2d, with 3d, showing nicely flowered specimens of *Dendrobium Falconeri* and *Wardianum*, a very good *Phaleonopsis Luddemanniana*, *Cypripedium Stonei*, and *niveum*. Mr. H. Heims, gr. to F. A. Philby, Esq., Avenue Road, Regent's Park, showed half-dozen, which included a large and admirably flowered specimen of *Dendrobium densiflorum*, and was awarded an extra prize. In the nurserymen's class, Mr. B. S. Williams was 1st with a fine fresh group, including *Cypripedium niveum majus*, with five spikes; *Odontoglossum Pescatorei*, with two spikes; *Oncidium Marshallii*, very good; *Vanda suavis*, with four beautiful spikes; a fine *Dendrobium densiflorum*, and a good pan of *Cypripedium niveum*. Messrs. Jackson & Son were a close 2d, showing fine dry-flowered plants of *Vanda suavis*, *Odontoglossum citreolum roseum*, a beautifully coloured variety; *Cattleya Mossie superba*, and *Saccolabium tuberosum*, with six good spikes, &c. Mr. H. Heims, 3d, with *Vanda*, *Avenue Road*, Regent's Park, showing half-dozen, and was awarded an extra prize.

SHOW PELARGONIUMS, in the absence of Mr. Ward's famous specimens, did not show up so well as usual, and, as regards competition, there was none, only one exhibitor appearing in each of the three classes. Mr. G. Legg, gr. to W. Watson, Esq., Clapham Park, had the 1st prize for nine, his plants being from 2 to 3 feet across, very neatly grown, and full of flowers, not yet, however, at their best. Mr. James was also awarded the 1st prize in the amateurs' class for six with a fine group of half-dozen plants, which gained the 1st prize for Mr. Turner in the nurserymen's class were a little more forward in bloom, but not so good as specimens as Mr. James' plants. *Isabella*, *Maid march*, &c. were the best of the varieties staged, and they are all good in form and colour. Mr. James also secured the highest award in the class for nine *Calceolarias*, with very nice plants about 15 inches over, with plenty of fine-sized flowers. For six in the nurserymen's class Mr. G. Legg was 1st, with a group of nine *Calceolarias*, with 2d. Old-fashioned hardy herbaceous plants, i.e., plants that were introduced previous to the commencement of the present century, were represented by a solitary specimen shown by Mr. Robert W. Terry, Esq., Peterborough House, Fulham, to which the 1st prize was awarded. The plants shown were *Silla campanulata* and its white variety, *Abrietta deltoidea*, *Narcissus poeticus*, and *Iris germanica*.

NEW PLANTS were not shown in such great numbers as we have seen them at previous summer exhibitions here. The principal Certificates of Merit were awarded to Messrs. Low & Co., Clapton, for *Dendrobium suavisimum*, a very fine new species in the style of *D. Cambridgeanum*, the flowers being of a bright orange colour, and the fringed lip blotched with dark crimson; to Messrs. J. and S. Duke of Edinburgh, for *Lomaria discolor* var. *pinnatifida*, *Dracena terminalis alba*, *Aralia filifolia*, *Adiantum Williamsii*, *Microlepis antirrhifolia*, and *Croton Andreanus*, the veins of whose broad elongated leaves are picked out by a reddish brown colour margined with yellow; to Mr. Anthonir Brownii; to Messrs. Bell & Sons, nurserymen, Norwich, for *Adiantum Capillus-Veneris* var. *corymbiforme*; to Messrs. E. G. Henderson & Son, for *Blandfordia flammea* var. *elegans*, whose large flowers are of a reddish brown colour margined with pale yellow; and to Messrs. William Rollinson & Son for *Azalea indica Rollinsonii*, a very dwarf and free flowering "hardly Japanese plant," the flowers of which are double, and of a soft rose pink colour. Floral Certificates were awarded to Messrs. George Jackson & Son, for *Clematis Lady Egmout*, a fine eight-sepalled flower, white, shaded with mauve, in colour; and for *Clematis Shode*, also a large and perfect eight-sepalled flower, of a bright satiny mauve colour margined with a lighter shade of mauve, and to the C. *linguata* type, and are free and vigorous growers. To Mr. Noble, Bagshot, for *Clematis Xerxes*, C. Margaret Dunbar, and C. Midle, Torriani, and to Messrs. E. G. Henderson & Son, for *Mimulus cardinalis*, a very fine plant, with flowers of a bright blue blotched with crimson. A striking new *Petunia*, named Mount Beauty, was shown by Mr. Kingsbury, Bevois Valley Nursery, Southampton. The flowers are about 3 inches across, and have a wide, open, fluted throat, with a lighter colour and a centre filled with very purple, the prevailing colour of that part of the flower which surrounds the throat. It is evidently a strong-growing and free-flowering variety, and certainly very distinct.

THE MISCELLANEOUS CLASS was, as usual, a very extensive and important one, many varieties being shown which the schedule does not otherwise provide for. The four half-circular sloping banks which flank the centre of the show tent were filled with collections of plants contributed by Messrs. James Veitch & Sons, Mr. G. Legg, Mr. J. H. Ley, and Mr. B. S. Williams. Mr. J. H. Ley. The first-named firm filled two of these slopes, the first and the most effective one being composed of dwarf forced *Rhododendrons* and *Ghent Azaleas*, the brilliant colours of which were admirably set off by plants of *Campanula*, *Primula*, and *Japanese Maples*. The second slope occupied by the Chelsea firm was filled with a similar group of half-specimen Roses to that shown at South Kensington on the previous day; and being margined with Japanese *Acer*, with a very white and cheerful effect. The group from Mr. Williams was also remarkably attractive, being composed of good specimens of various *Palms*, *Dracenas*, *Cycads*, and *Tree Ferns* at the back, with such flowering subjects as *Orchids*, *Veronica*, *Geraniums*, and *Campanulas*. The *Orchids* the most noticeable were *Cattleya Mendellii*, *Dendrobium crassinode*, *Barberiana*, *Oncidium leucochilum*, *Odontoglossum gloriosum*, *Oncidium sacodes*, *Cypripedium acule*, &c. Other good plants also here represented were the fine hold-leaved *Anthurium crystallinum*, several of the elegant new *Aralias*, *Crotons*, dwarf *Palms*, *Agaves*, and such-like fine-leaved subjects. The Forest Hill group, which occupied the third slope, consisted mainly of neat specimens of handsome-leaved plants, such as *Palms*, *Dracenas*, *Aralias*, *Caladiums*, and *Bicolor Pelargoniums*, &c. This collection occupied the slope conjointly with a small group of new and rare *Fortifolia* plants, and a group of *Leaves* of the large show tent we came across a miscellaneous group of stove and greenhouse plants, from Mr. G. Wheeler, gr. to Sir Francis Goldsmid, Bart.; another group of *Rhododendrons* and *Ghent Azaleas*, and a group of *Orchids* and *Campanulas* from Messrs. James Veitch & Son; an attractive collection of forced *Rhododendrons* and stove and greenhouse plants, from Messrs. James Cutbush & Son; a large collection of *Orchids* and *Campanulas* from Messrs. J. and S. Duke of Edinburgh; a group of new and rare flowered *Musk*, from Messrs. Harrison & Sons, Leicester; a small group of new *Clematises*, from Mr. Noble, Bagshot; an exceedingly fine collection of hardy herbaceous plants, from Mr. R. Parker, Tooting; a group of new and rare flowered *Musk*, from Messrs. May & Co., Cr. Market Street, Oxford; a showy collection of alpine *Auriculas*, and two boxes of cut flowers of brilliantly coloured *Tulips*, from Mr. Turner; and a nice group of *Azaleas*, from Messrs. Ivory & Son, Dorking. To most of these subjects extra prizes were awarded.



SUNK FLOWER-BEES.—In small Villa gardens, where any variety in the common arrangement is acceptable, a little circular flower-bed sunk in concave form to the tiniest possible central pool, instead of being raised in the usual convex mound, has a very good effect. For the little pool (if nothing better offers) a small tub, or a piece sawn off the end of an old cask, and well sunk in the ground, answers excellently, of any size that may be liked—a couple of feet across, and about 10 inches or a foot in depth, is a convenient measurement.

With a little care the plants, and any picturesque rock-like pieces of stone, or burl, may be arranged round this, so as to give the appearance of a natural cistern; the small quantity of water is useful as being always at hand, warmed, and aired for special needs; whilst the constant emptying and refilling, easily managed by a few buckets of water, keeps the tiny pool in order.

The slightly sunk position, with its moist air and protection from drying draughts over the roots, appears to suit many plants perfectly, and gives a picturesque "bit" of natural grouping of water, rock, and varied landscape, which is always attractive in itself, and with care it is always (except in the dead of winter) bright with some flowers.

Crocuses and Hyacinths of different kinds, first with flowers and then with foliage, look well amongst the stones; Irises, double Calchas (a most effective and permanent plant), hard Ranunculi, low Damask Rose bushes, Campanulas, S.weet Williams, and endless old favourites according to taste, succeed in date of flowering; and their foliage bending over the pool, or standing up in rich luxuriance, is always ornamental.

As the brown tint of the withering leaves of the balls is not an eyesore amongst the few morsels of rock, they may be allowed to pass quietly away, and any bright temporary flower planted by the side reveals the spot. But however it may be arranged, the little sunk bed is usually a favourite spot with visitors, and a great convenience to its amateur owner.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, MAY 16, 1897.

MONTH AND DAY.	BAROMETR.	TEMPERATURE OF THE AIR.		WIND.	RAINFALL.
		Hygrometric depression from Glasgow's Fathes 64th Edition.	WIND.		
		Range.	Mean for day.		
		Temperature of Sun (range of 10 days).	Temperature of Rain (range of 10 days).		
		Lowest.	Wind Force.		
			Direction.		
			Direction.		
May 10	30.2	59.0-59.5	7.0-3.2	S.W.	0.00
11	30.7	58.0-58.5	11.8-6.0	S.W.	0.74
12	30.0	58.0-58.5	10.0-6.0	S.W.	0.44
13	30.5	58.0-58.5	7.0-6.0	S.W.	0.24
14	30.7	58.0-58.5	11.8-6.0	S.W.	0.06
15	30.1	58.0-58.5	11.8-6.0	S.W.	0.06
16	30.1	58.0-58.5	11.8-6.0	S.W.	0.24
Mean	30.5	58.0-58.5	11.8-6.0	S.W.	0.60

- May 10—A fine day, cloudy, cool breeze.
- 11—Overcast and dull till 1 P.M. Fine, bright, but cloudy after.
- 12—Cloudy and dull with occasional rain. Thunder heard in rain.
- 13—Dull morning, very dark at times. Occasional light rain till 1 P.M. Fine after P.M.
- 14—A dull overcast day, frequent thin rain.
- 15—Dull with frequent thin rain till noon. Fine and bright till 4 P.M. Cloudy after.
- 16—Dull, with frequent showers of rain. Fine and bright at intervals.

LONDON: Baromet.—During the week ending Saturday, May 12, in the vicinity of the metropolis the reading of the barometer at the level of the sea decreased from 29.86 inches at the beginning of the week to 29.50 inches by the afternoon of the 9th, increased to 29.59 inches by the morning of the 10th,

decreased to 29.52 inches by the evening of the same day, and increased to 29.61 inches by the end of the week. The mean reading for the week at sea level was 29.65 inches, being 0.45 inch below that of the preceding week, and 0.20 inch below the average.

Temperature.—The highest temperatures of the air observed by day ranged from 69° on the 5th to 54° on the 6th; the mean value for the week was 62½°. The lowest temperatures of the air observed by night were 40° on the 5th to 45° on the 6th; the mean value for the week was 39½°. The mean daily range of temperature in the week was 23°, the greatest range in the day was 33½°, both on the 7th and 8th, and the least 12°, on the 11th.

The temperatures of the air and the dew-point and the departures from their respective averages were as follows:—6th, 41° 5', 10° 1'; 7th, 47° 5', 4° 2' 8"; 8th, 50° 1', 6° 0'; 9th, 54° 3' 2"; 10th, 52° 3' 4"; 11th, 49° 4' 6"; 12th, 47° 4' 7"; 13th, 51° 3' 5". The mean temperature of the air for the week was 49°, being 2° 5' below the average of sixty years' observations.

The highest readings of a thermometer with blacked bulb in vacuo, placed in sun's rays, were 135° on the 7th, 138° on the 8th, and 130° on the 6th and 9th; on the 12th the highest reading was 81°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 25½° on the 8th, 26° on the 7th, and 27° on the 6th; the mean for the week was the least at Liverpool, 20°, and the greatest at Cambridge, 43°; the mean range of temperature from all stations was 34½°.

Wind.—The direction of the wind was variable, and its strength gentle. The weather during the week was fine and bright. Distant thunder was heard on Saturday afternoon, the 12th inst.

The wind was strong during the week; the amount collected was 0.28 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 69° at Blackheath, 68½° at Cambridge, and 67½° at Leicester; at Sunderland 56° was the highest temperature; the mean value for all stations was 49°. The lowest temperatures of the air observed by night were 25½° at Cambridge, and 26° at Sheffield; at Liverpool 39½° was the lowest temperature; the mean value from all stations was 31°. The range of temperature in the week was the least at Liverpool, 20°, and the greatest at Cambridge, 43°; the mean range of temperature from all stations was 34½°.

The mean of the seven high day temperatures was the highest at Cambridge and Manchester, both 64½°, and the lowest at Sunderland, 51°; the general mean from all stations was 57½°. The mean of the seven low night temperatures was the lowest at Manchester, 34½°, and the highest at Brighton, 43½°; the mean from all stations was 39°. The mean daily range of temperature was the greatest at Manchester, 29½°, and the least at Sunderland, 10°. The mean daily range from all stations was 18°.

The mean temperature of the air for the week for all stations was 46½, being ½° above the value for the corresponding week in 1876. The highest was 49° at Blackheath and Brighton; and the lowest 42½° at Hull.

Rain.—The amounts of rain measured during the week at the several stations varied from 1½ inch being the least at Bradford and Hall; the average fall from all stations was half an inch.

The weather during the week was generally fine and bright. Thunder was heard at Wrotesley in the north and at Weymouth in the south. The highest winds were seen at Bristol on the 7th, 8th, and 9th inst.

SCOTLAND: Temperature.—The highest temperatures of the air ranged from 58½° at Greenock and 51° at Leith; the mean value from all stations was 54½°. The lowest temperatures of the air varied from 28° at Perth to 35° at Greenock; the mean value for the week was 42°. The mean range of temperature in the week from all stations was 22½°.

The mean temperature of the air for the week from all stations was 44½, being 3¼° below the value for the corresponding week in 1876. The highest happened at Greenock, 46°, and the lowest at Edinburgh and Leith, both 43½°.

Rain.—The fall of rain at Edinburgh was three-quarters of an inch; at Aberdeen one-tenth of an inch only was measured; at Perth no rain fell; the average fall over the country was a quarter of an inch.

DUBLIN.—The highest temperature of the air was 59½°, the lowest 31½°, the range 28½°, the mean 49°, and the fall of rain 0.05 inch.

JAMES GLAISHER.

Answers to Correspondents.

ABNORMAL MELON: E. M. The condition is not unfrequently in Cucumbers, but we have never seen it so great an extent as in your specimen. It is the result of a check to growth in the fruit.

BOOKS: James Hopton. If you will state exactly what your requirements are we will endeavour to enlighten you. **Books for sale.** A book of orders, such as you require is published at 1/4, Fleet Street.

DAISY: J. S. Mantou. A malformed flower, of no value.

NAMES OF PLANTS: H. B. T. Ionopodium acule.—*C. E. F.* The Ivy is probably a chance variety, which we cannot undertake to name.—*S. H. W. Trevisan.* Brassia Justiana.—*H. Hartley.* Dendrobium pulchellum and the rare Odontoglossum Ruckertianum.—*F. S. Cary.* 1. *Grevillea rostrata*; 2. *Agrostis nemoralis*; 3. *Agrostis prostrata*, a form of *V. luceriana*; 4. *Saxifraga cernua*.—*H. B. Senio* perianth.—*F. Barr.* 1. *Scilla maritima*; 2. *Hyacinthus non-scriptus*; 3. *Senecio (Kleinia) articulata*; 4. *Asclepias curassavica*; 5. *Senecio mikanioides*; 6. *Kivina humilis*.—*H. J. A. Watson.* 1. *Oxalis stricta*; 2. *Oxalis maculata*; 3. *Alyca reptans*.—*S. 2.* *Pellagium ardens*.

PANDANUS VETCHI: P. G. R. Both *Pandanus Vetchii* and *P. paniculatus variegatus* should be in a shade when the sun is upon them, but never in cloudy weather, as the more light they receive without the unobstructed rays of the sun coming directly upon them the better they will colour, though at the time our correspondent requires them (August) the white colouring of the leaves formed first in the season is not usually so pure as whilst they are young.

PROFESSIONALS AND AMATEURS: W. F. T. A gentleman's gardener who is allowed to occasionally sell fruits, plants and seeds, is not actually an amateur, but by this means, should certainly be classed as an amateur.

RHODODENDRONS AND LAURUSTRIS: F. C. F. Both may be pruned back with advantage. It shows a sad want of care and attention on the part of some. The only remedy that we can suggest is to insert a plentiful supply of pieces of Potatoes and Carrots about an inch under the surface of the soil, and examine these every morning, burning all the worms that you catch. You must either follow this plan up closely or turn out the Vines and the border too, and start afresh.

THE OLIVE: G. Bath. It would doubtless be hardy against a wall.

WILD LILY: W. F. C. If our correspondent will oblige us with a specimen we may be able to tell him what to do.

WIREFORMS: A. D. C. If your statement as to the numbers of the border is exaggerated, it shows a sad want of care and attention on the part of some. The only remedy that we can suggest is to insert a plentiful supply of pieces of Potatoes and Carrots about an inch under the surface of the soil, and examine these every morning, burning all the worms that you catch. You must either follow this plan up closely or turn out the Vines and the border too, and start afresh.

CATALOGUES RECEIVED.—Messrs. L. Menard & Sons (Comptoir, Street, Albany, New York, U.S.A.), Catalogue of Plants, Trees, Shrubs, &c.—Messrs. E. G. Henderson & Son (Fine-appliance Nursery, Manila, Valde, and Weymouth, Catalogue of Soft-wooded Greenhouse and Bedding Plants.—Messrs. Ireland & Thompson (Craigleith Nursery, Comely Bank, Edinburgh), Catalogue of Stove and Greenhouse Plants, Ferns, Foliage, and Miscellaneous.—Messrs. J. B. S. Williams (Victoria and Paradise Nurseries, Upper Holloway, London, N.), Illustrated Descriptive Catalogue of New Plants.—Messrs. J. B. S. Williams (Noordwijk, Haarlem, Holland), Catalogue of Dutch Roses, &c.—Messrs. Léveillé & Sons (25, Rue du Louvre, Ivry-sur-Seine, Paris), Catalogue of New Roses.

COMMUNICATIONS RECEIVED.—L. H., Darlington (Box and contents specified).—J. B. S. Williams (Box 400).—F. V. R. (L. H., H. E. W. M., J. B. A., D. C., H. S., D. R., D. G., C. G., S. (answered in another column).—J. G. O.

Markets.

COVENT GARDEN, May 17.

There has been a marked improvement in our market during the week, and all classes of goods have been more readily cleared, prices remaining much the same. French importations consist of Cherries, Apricots, Asparagus, Peas and Beans, Tomatoes, and young Carrots and Turnips, all of which are arriving in large quantities. Cabbages, Cauliflowers, and young Potatoes being us, but do not arrive in as good condition as earlier in the season. **James Webber, Wholesale Apple Market.**

VEGETABLES.

a. d. s. d.		d. s. d.	
Artichokes, per bush.	0 0 0	Goooseberries, green,	0 0 0
— Eng. do.	0 0 0	— young,	0 0 0
Asparagus, French,	0 2 0	Herbs, per bush.	0 0 4
— Gent., per bush.	0 2 0	— <i>Saxifraga</i> , per bush.	0 0 4
— Italian, per bush.	0 2 0	Leeks, per bush.	0 0 4
— F., natural, per bush.	1 6 0	Lettuces, per doz.	6 0 0
— English, per bush.	1 6 0	— <i>Curly</i> , per doz.	6 0 0
Beans, French (new),	0 1 0	Mushrooms, per doz.	1 0 0
per 100	0 1 0	Onions, per bush.	10 0 10
— French, Long,	1 3 0	— young,	0 6 0
— pod, 16-bushal.	0 8 0	Parley, per bush.	0 0 0
Beet, per doz.	0 2 0	— <i>Red</i> , per bush.	0 0 0
Cabbages, per doz.	1 0 0	— <i>Shelled</i> , per qt.	0 4 0
Carrots, per bush.	0 7 0	Potatoes, new, per lb.	0 4 0
— New York, per bush.	0 7 0	— <i>Early</i> , per bush.	0 4 0
— <i>Spanish</i> , per bush.	0 1 0	— <i>Spanish</i> , per doz.	1 0 0
Cauliflowers, per doz.	0 6 0	— <i>New Jersey</i> , per doz.	1 0 0
— French, each 1 0 0	0 6 0	— <i>Rhubarb</i> , per bush.	1 0 0
Celery, per bundle.	0 2 0	— <i>Salsify</i> , per bundle.	1 0 0
— <i>Shredded</i> , per bundle.	0 2 0	— <i>Turnip</i> , per bundle.	0 6 0
Cucumbers, each	0 0 2	Spinach, per bush.	2 6 0
Endive, per doz.	0 0 2	Tomatoes, per doz.	3 0 0
— <i>Estivada</i> , per doz.	0 0 2	— <i>Large</i> , per doz.	6 0 0
Garlic, per lb.	0 6 0	— <i>New</i> , per bush.	2 0 0
Potatoes.— <i>Keen Regents</i> , 2s to 2½; <i>Keen Regents</i> , 4s to 4½; <i>Keen Regents</i> , 4s to 4½; <i>Keen Regents</i> , 4s to 4½.			

FRUIT.

Table listing various fruits like Apples, Grapes, and Lemons with their respective prices per bushel or dozen.

CUT FLOWERS.

Table listing cut flowers such as Anemones, Blue Lilies, and Carnations with their prices per bunch or dozen.

PLANTS IN POTS.

Table listing potted plants like Begonias, Calceolarias, and Geraniums with their prices per dozen.

SEEDS.

Text describing seed prices and market conditions, mentioning 'The sowing demand being nearly over, and scarcely any speculative buying yet sprung up...'.

CORN.

Text discussing the corn market, mentioning 'Trade at Mark Lane on Monday had a drooping tendency...'.

CATTLE.

Text reporting on the Metropolitan Market for Monday, detailing prices for various types of cattle.

HAY.

Text reporting on the Whitechapel market for Tuesday, mentioning prices for different grades of hay.

Cheap Bedding Geraniums

Advertisement for Alfred Fryke's bedding geraniums, listing various varieties and their prices.



TO OBTAIN THE

Best Garden Lawns and Croquet Grounds

SO

SUTTON'S LAWN GRASS MIXTURE.



Text describing the lawn grass mixture, its benefits, and how to use it.

Text mentioning 'For improving those already in turf, 20 pounds should be sown per acre.'

Text mentioning 'March, April and May are the best months for sowing.'

Text providing price information: 'Price 12 sds. per lb., 22s. 6d. per bushel, carriage free.'

Text mentioning 'From Mr. J. MERRICK, Gardener to S. Foxter, Esq., Le Court.'

Text mentioning 'The Seed you sent me last year turned out uncommonly well...'.

Text stating 'that it was only sown in May. In August it was as fine and thick as I have seen any lawns that had been laid down for three years.'

Section header: 'Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds. Gratis and post-free.'

Superbious

THE QUEEN'S SEEDSMEN, READING



Text listing various seed varieties and their prices, including Pine-Apple Nursery, Maidenhead, and others.

STRONG WATER LILIES.

Text mentioning 'A few Dozen of the above for Sale. Price on application to ROBERT F. DARBY, THE CIRENCESTER NURSERIES, CIRENCESTER.'

New Bedding Tropaeolum. "Hunter."

Text describing the 'Hunter' bedding tropaeolum, mentioning its origin and availability.

Section header: 'FIFTY THOUSAND MAGNIFICENT DWARF ROSES, IN POTS. ROSES FOR BEDDING, at 12s. to 18s. per dozen, 100s. per 1000.'

Text mentioning 'DANIELS BROS., Seed Growers and Nurserymen, Norwich.'

Cheerance Sale.

Text describing a 'CHOICE AMERICAN and OTHER POTATOES' sale, listing various varieties.

Text mentioning 'DANIELS BROS., Seed Growers and Nurserymen, Norwich.'

Section header: 'QUANTITY and QUALITY. NEW ROSES, IN POTS. TEA and NOISETTE ROSES, IN POTS.'

Text mentioning 'DANIELS BROS., Seed Growers and Nurserymen, Norwich.'

Section header: 'ORCHARD-WOOD TREES, IN POTS. VINES, IN POTS.'

Text mentioning 'Also, by far the largest and most carefully grown Outdoor NURSERY STOCK in this part of England.'

LISTS FREE.

Section header: 'EWING & COMPANY. THE ROYAL NORFOLK NURSERIES, EATON, NEAR NORWICH.'

Section header: 'COCO-NUT FIBRE REFUSE may be had at 12. per 4-bushel bag, bag included; a truck, 200 bushels, £1 5s.; one-horse load may be had at the rate of 1s. 6d. per bushel.'

Section header: 'COCO-NUT FIBRE REFUSE may be had, at 3s. per one-horse load, of M. GAREY, 57, Old Montague Street, Whitechapel, E.'

Section header: 'COCO-NUT FIBRE REFUSE is available for Gardening purposes. One thousand testimonials. Four-bushel bag, 12. bag included; truck-load, 100s. per truck-load. POTTER OYLER, Spitalfields, Market, N.E.'

Section header: 'COCO-NUT FIBRE REFUSE, newly made - Reduced price, 20s. bushels, 6s. 6d.; 100, 2s.; or truck-load, 15s. Delivered free to any mill in London. J. STEVENS AND CO., Fibre Works, Greenhough Yard, 134, High Street, BATTERSEA, S.W.'

Section header: 'Fibrous Peat for Orchids, &c. BROWN FIBROUS PEAT, best quality for Orchids, Stone Plants, &c., 46 6s. per truck. BLACK FIBROUS PEAT, for Rhododendrons, Anemones, Heaths, American Plant Beds, &c., 12s. per ton, 5s. 6d. per bushel. Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load, 100s. per truck-load. Fresh SPHAGNUM, 10s. 6d. per sack. WALKER AND CO., Farnborough Station, Hants.'

Section header: 'MILLER AND JOHNSON (ESTABLISHED 1855) Manufacturers of ARTIFICIAL MANURES - 35, MARK LANE, LONDON, E.C.'

Section header: 'ODAMS' MANURES, FOR ALL CROPS. Manufactured by the NITRO-PHOSPHATE and ODAMS' CHEMICAL MANURE COMPANY (Limited), consisting of Tenant-Farmers occupying upwards of 100,000 acres of Land. Chairman - ROBERT LEWIS, Keswick Old Hall, Norwich. Managing Director - JAMES ODAMS, 55, Water Lane, London, E.C. Secretary - C. T. MACADAM, Cuckfield, Sussex. Farnborough Station, London, E.C. Particulars will be forwarded on application to the Secretary, or to the Agents, the Local Agents.'

Section header: 'SCOTT'S WASP DESTROYER. - The only preparation made for thoroughly destroying Wasps, large Flies, &c. Sold in bottles, at 2s. 6d., 5s., and 10s. each. The same is also sold in boxes. May be obtained through any Seedman, or direct from JOHN SCOTT, The Royal Seed Stores, Yeovil.'

Section header: 'SIMPSON'S RED SPIDER, THRIPS, &c., ASPIDOTE. Testimonials of the highest order on application. For quart, condensed, 6s.; per pint, 3s. 6d. Supplied to Seedsmen and Chemists. Strongly recommended in the Gardening and Horticultural Journals. Prepared by JOHN KILNER, Wortley, near Sheffield.'

GISHURST COMPOUND.
Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, its solutions of from 1 to 2 ounces to the gallon of soft water and of from 4 to 20 ounces as a winter dressing for Vines and Fruit Trees. Has outwitted many preparations intended to supersede it. Sold Retail by Seedsmen in 1s., 2s., and ret. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

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STEAM PLOUGHING MACHINERY,
ROAD LOCOMOTIVES, TRAMWAY LOCOMOTIVES,
STEAM ROAD ROLLERS.

For Prices, Description, and Reports of Working, apply to the Manufacturers.

AVELING & PORTER,
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During the Great Boiler Contest at Birmingham, in 1875, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 1,000 feet of 4-inch pipes, and yet had more than a bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners, this is THE CHAMPION, Deards' Patent Close-Coil Boiler, for Drawings and Prices of which send two stamps to

Messrs. DEARDS, Boiler Works, Harlow, who now have their Boilers at work in every county of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.

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STEVENS' IMPROVED TRENTHAM WROUGHT IRON HORTICULTURAL BOILER,
6 feet long by 3 feet diameter, fitted with Inlet and two Outlet Pipes, Firebrick, and Grate complete. For price and particulars apply to
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W. G. SMITH & CO., HORTICULTURAL ENGINEERS,
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SOLE MANUFACTURERS OF BEARD'S PATENT METALLIC NON-CONDUCTING GLASS-HOUSES—The Glass is fixed between two layers of prepared felt. The Ventilators are worked by a simple mechanical contrivance, and the whole structure is screwed together, so as to render it quite portable. **HEATING APPARATUS IN ALL ITS BRANCHES.**—ORNAMENTAL CONSERVATORIES and HORTICULTURAL BUILDINGS OF EVERY DESCRIPTION.—For lightness, elegance and durability, these Houses cannot be surpassed. The best materials only are used in their construction. Great improvements have recently been made, to obviate the objections to iron houses. Very extensive works on this principle have been satisfactorily executed.

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They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

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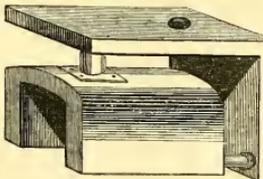
Grand Diploma of Honourable Mention, Vienna, 1873.
Silver Medal, Vienna, 1875.
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These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought iron are not liable to crack. They are made of the following sizes:—

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High.	Wide.	Long.	Feet.	£ s. d.	
30 in.	18 "	18 "	400	0	0
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24 "	24 "	32 "	850	14	0
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Larger sizes if required.

From Mr. CHARLES YOUNG, Nurseries, Batham Hill, S.W., May 29, 1877.

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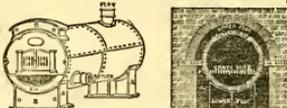
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Our Boilers are the only ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

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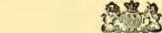


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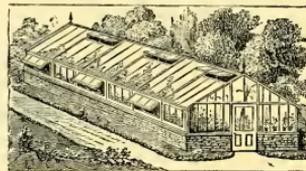
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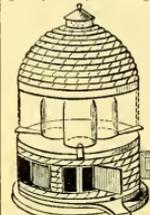
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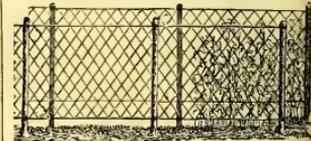


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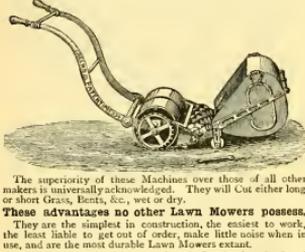
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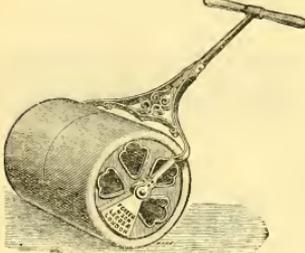
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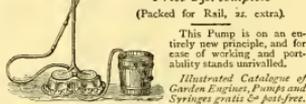
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as satisfactorily to the Public, as formerly, assisted by a new
first son, who, since I first commenced business in Leadenhall
Street, and what changes have taken place. Then everybody
thought that I had retired from the pen-and-ink trade and
moustache and beard are the order of the day, and the razor
and strap trade is comparatively defunct. Then there were no
razors, no people who shaved, and used wooden shaving
cases; no everybody travels by rail, and we have dressing-
bags, and all other conveniences of fifty years ago; the poor
cases supplied our pens, and many a now rich merchant in the
City will remember the quality of Mech's shilling pen-knives;
and I have seen the same quality of pen-knives in the
penknapping machines, and the geese are in peace, except at
Machines. In fact, steam has altered, and, I may safely
say, improved everything, and has made us all, as travellers
both by land and sea. I wonder how much time is now
occupied in reading the steam-worked press? and how much
less time is occupied in sipping port wine, as we used to do
fifty years ago, when we could not travel? Steam will make
us 4s. longer cheaper some day, just as it has converted calico
from 4s. 6d. to 6s. or less per yard. Then, again, a letter
which used to cost 6d. to Cork is now carried for 1s.
Sir Rowland Hill really deserves a monument. But to return
to business; fifty years ago, when I first commenced on a small
scale, I used to put an ad. which should be good
and useful, and I believe thousands who used the strap and paste,
which I personally used, and which they could not do
without, sometimes complained of that I stamped on my razors.
"Exchanged if not approved." I have never, and shall never
so long as I live, do away from that principle, because it is the true
means to retain and increase one's connection. I devoted my
attention especially to the quality and convenience of arrange-
ments in the dressing and shaving case, and to the
in the tasteful selection of articles suitable for presentation, as well
as in the choice of the material, and in the quality of the work.
Although both razors and penknives have "gone out," our sportsmen
remain, and "sporting knives" form one of our special depart-
ments. I firmly convinced that that principle, and the
departure of knives and forks, or dinners, so we make this an
important department in quality and price. In conclusion, I ask
no more of you, but simply to compare the quality and price of my wares with those of other
dependable establishments, and form their own conclusions.
Most of my worthy assistants and workmen have been nearly
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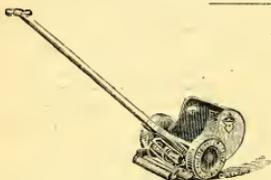
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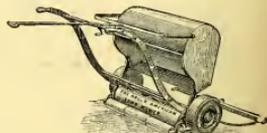
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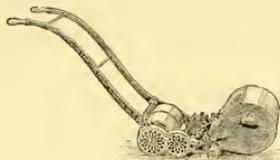
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Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County—SATURDAY, May 19, 1877.
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Established 1841.

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No. 178.—VOL. VII. { NEW SERIES }

SATURDAY, MAY 26, 1877.

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THE GREAT SUMMER SHOW will be held at South Kensington, on TUESDAY, June 19, under the Great Exhibition of 1877. The programme of the Royal Horticultural Society's Exhibitions is now ready, and will be forwarded on application to
ALEXANDER, Royal Horticultural Society, South Kensington, S.W.

ALEXANDRA PALACE.—THE GREAT ROSE SHOW will be held on SATURDAY, June 30, LAST DAY OF ENTRY, June 23. Schedules and particulars may be obtained on application to
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P. APPLEBY, Secretary.

TUNBRIDGE WELLS HORTICULTURAL SOCIETY.
THE ANNUAL GARDEN EXHIBITION OF FLOWERS, PLANTS, and FRUIT, will be held on FRIDAY, July 6, in the Grounds adjoining the Calverley Hotel. Prizes open to all England. Schedules may be obtained of, and subscriptions paid to
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TEA-SCENTED ROSES, superb, established in 6-in. pots, at 12s. to 18s. per dozen, or conservatory, 2s. per dozen, 100s. per 1000. Descriptive CATALOGUES on application.
WILLIAM WOOD AND SON, The Nurseries, Maresfield, Uckfield, Sussex.

New Bedding Tropæolum, "Hunters."
DOWNIE AND LAIRD have much pleasure in offering for Spring delivery the above, an excellent Bedding Tropæolum, comprising a large quantity of a dwarf but in it they can with perfect confidence recommend it. Price, 6s. per dozen plants, 12s. each, 16s. 6d. Usual discount to the Trade.
 West Coast Nursery, Edinburgh.

Chrysanthemums, Dwarf Summer-dwelling VARIETIES.
ROBERT PARKER begs to announce that he can supply the above named in twelve distinct varieties, by the dozen, 12s. or 100s. price, 9s. per dozen; 50s. per 100. Special quotations for larger quantities. For lines, masses, or groups, and for bedding borders, these take a first rank among flowering plants.
 Exotic Nursery, Tooting, Surrey, S.W.

SPECIMEN MYRTLES.—For Sale. Three magnificent Myrtles in Ornamental Tubs, measuring 4 feet 6 inches high by 5 feet 3 inches in diameter; 2 dozen fine Myrtles, also in tubs, and some good flowering **DOUGLAS** and **LAUREL**, in large quantities of **BEDDING PLANTS**, and some well grown **INDIARUBBER TREES**. Apply at once.
GARDNER, S., Wandsworth Road, Vauxhall, S.W.

BEDDING-OUT PLANTS of all kinds, the Cheapest in the Trade.
 All kinds of Bedding Plants, from 5s. per 100, packed and sent by any station free of charge.
 T. C. PAUL'S BEST FERNS, at 4s. per 100, comprising the best selection of **Bedding Ferns**, in the Royal Flowering Ferns—also the best selection in the trade.
 T. C. PAUL, Covent Garden Market, W.C., opposite the Church.

THE NEW SEEDLING ROSE, "QUEEN OF BEDDERS" (NOBLE).
See Coloured Plate (after Mrs. Duffield), "Gardeners' Chronicle," May 5, 1877.

Perhaps the finest of all the English Seedling Roses of recent introduction. It is *per excellence* a really Bedding Rose, in every sense of the word—requires no pegging down, support, or training of any kind, and is a continuous early and late bloomer.
 First-class Certificate Royal Horticultural Society, August 4, 1876.
 Its influence may be imagined when it is stated that a plant 18 inches high had eight-four buds and expanded flowers upon it on September 6, 1876.
 A constant supply of buds was obtained from early June to November of that year—over five months.
 Good Plants are now being sent out in strict rotation at 10s. 6d. each.
 Coloured Plates 2s. each.

CHARLES NOBLE, BAGSHOT.

TO OBTAIN THE

Best Garden Lawns and Croquet Grounds

SUTTON'S LAWN GRASS MIXTURE

Which forms a close velvety turf in a very short time. For making New Lawns or Croquet Grounds 3 bushels or 6 pounds is required per acre, or 1 gallon to every 6 rods (or perches) of ground.
 For improving those already in turf, 20 pounds should be sown per acre.
 March, April and May are the best months for sowing.
 Price 3s. 6d. per lb., 25s. 6d. per bushel, carriage free.



From Mr. J. Mansueti, Gardener to S. Foster, Esq., Le Court.
 "The Seed you sent me last year turned out uncommonly well. Several gentlemen who came to Le Court could scarcely credit, from the appearance of the lawn, in August it was as fine and thick as it never seen some lawns that had been laid down for three years."

Instructions on the Formation and Improvement of Garden Lawns and Croquet Grounds Gratis and post-free.

Lutton's Sons

THE QUEEN'S SEEDSMEN, READING QUANTITY AND QUALITY.

NEW ROSES, IN POTS.
TEA AND NOISSETTE ROSES, IN POTS.
CLEMATIS, IN POTS, of best New and Old Sorts.
ORCHARD-HOUSE TREES, IN POTS.
VINES, IN POTS.

Also, by far the largest and most carefully grown Outdoor NURSERY STOCK in this part of England.

LISTS FREE.
EWING & COMPANY,
 THE ROYAL NORFOLK NURSERIES, EAST, NEAR NORWICH.

IRELAND AND THOMSON have pleasure in intimating that their CATALOGUE of STOVE and GREENHOUSE PLANTS, FERNS, PALMS, ARCHES, &c., is now ready, and will be forwarded post-free on application.
ADANTUM FLEMINGII—A sport from A. Concinum, and is in every respect much superior to the species that produced it. Its leaves, compact, somewhat like those with the dark green colour of the fronds, which in their young state are of a beautiful brownish purple tint, constitute it a most desirable acquisition for exhibition purposes, and is almost without an equal as a table Fern. Price 10s. 6d. and 21s. each.

NEW BEDDING PLANTS for 1877.
 I. & T. Desire to call attention to the following splendid novelties:—
LOBELIA, St. Martin's Elbow, new bronzed-leaved, price 12s. per dozen, 4s. per doz.
LOBELIA, Queen of the Coast, splendid new bedding price 12s. per dozen, 4s. per doz.
GERANIUM, Marchioness of Huntley, new bronze, price 18s. per dozen.
 For detailed descriptions see *Gardeners' Chronicle*.
 I. & T. are now sending out the above. Orders will be executed in rotation.
 Craykeleigh Nursery, Comely Bank; Seed Warehouse, 29, Waterloo Place, Edinburgh.

DAHLIAS, DAHLIAS, DAHLIAS, 2000 of the finest varieties, 6s. and 12s. per dozen.
PERLARGONIUMS, 2000, Show, Fancy, and French, 6s. 9s. and 12s. per dozen.
ROSES, 200, 10s. per doz., well established, 15s., 18s., and 24s. per dozen.
GERANIUM, Wonderful (Smith's), 9s. per dozen, strong plants.
 An immense stock of STOVE and GREENHOUSE PLANTS of all leading varieties. CATALOGUES on application.
HENRY WALTON, Edge Hill Nursery, near Burnley.

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WILLIAM BARNARD offers the following cheap Plants:—
VERBENAS, Purple, White, Scarlet, Rose, Crisum, from single pots, 6s. per 100; well rooted; 12s. per 100.
CALCEOLARIA, Golden Gem and aurea floribunda, good plants from single pots, 10s. per 100, 12s. 6d. per 100.
LOBELIA, speciosa, blinensis, panic grandiflora, good strong plants from thumb pots, 10s. per 100, 11s. 6d. per dozen; from store pots, 15s. per 100, 20s. per 100. Imperator William Loebelia, good plants, 12s. per 100; rooted cuttings, 5s. per 100.
PERLARGONIUMS, Vesuvius, finest scarlet, from stores, 5s. per 100, 7s. per 100; Jean Suley, 10s. per 100; Madame Vaucher, fine white, 10s. per 100; Master Christine, 12s. per 100; Mrs. W. Paul and Mrs. Blanche, fine, 10s. per 100; all from single pots, 10s. and 11s. 6d. per dozen.
TRICOLOR PELARGONIUMS, Mrs. Paul, 10s. per 100, 12s. 6d. per dozen; Mrs. W. Paul, 10s. per 100, 12s. 6d. per dozen.
GOLDEN LEAF PELARGONIUMS, Crystal Palace Gem, from single pots, 12s. per 100, 2s. per dozen; May Queen (Turner's), fine silver variegated, 12s. per 100, 2s. per dozen.

CRIMSON PELARGONIUM, Waltham Seedling, good plants, 10s. per 100, 12s. 6d. per dozen.
HELIOTROPE, fencet darts, good plants, 10s. per 100, 12s. 6d. per dozen; rooted cuttings, 6s. per 100.
AGRATUM, Imperial Dwarf, fine bedding plants, from single pots, 10s. per 100, 12s. 6d. per dozen; rooted cuttings, 6s. per 100.
IRISINE LINDLEY, first crimson-leaf bedding plant, strong stuff, 12s. per 100, 12s. 6d. per dozen; from stores, 6s. p. 100.
CENTAUZIA CANDIDISSIMA, fine silver-leaf, 13s. per dozen, 20s. per 100.
 Package included. Terms cash.
 Cemetery Nursery, Gravesend, S.E.

A. VAN GEERT, NURSERYMAN, Ghent, begs to offer the following **MISCELLANEOUS PLANTS**, of which a good stock is now on hand, viz.:

- 50 Acaecia, in 3s. sorts for 40s.
- 10 Adiantum fureleyense, 21s.
- 12 " macrophyllum, 12s.
- 10 " gratichium, strong, 21s.
- 12 " crispatum, 9s.
- 12 " of sorts, 10s. per doz.
- 12 Asplenium nidus, 7s.
- 12 Asplenium Veitchii, 21s. and 44s.
- 12 Arca monostachya 24s.
- 12 " 22s.
- 6 Aralia Veitchii, 30s.
- 3 " elegantiissima, 21s.
- 12 Agave and Imperial Dwarf, 21s.
- 12 Begonia (tuberosa), 21s.
- 100 Heliconia Van Houttei, 24s.
- 6 " macrantha, 18s.
- 12 Chamaerops Fortunei, 18s., 30s. and 42s.
- 10 " humilis, 18s., 30s., and 42s.
- 12 Coffea arabica, 40s.
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- 12 Croton, choice varities, 15s.
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- 12 Cyrtomium atratum, 15s.
- 12 Cyathus dealbata, 18s.
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- 12 Eurya latifolia, 30s.
- 12 choice Ferns, own selection, 21s., 42s. and 63s.
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- 25 Gemma macrantha, strong bulbs, 20s.
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- 12 " Obovata, splendid varities, 18s.
- 12 Grevillea robusta, 15s.
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- 12 Higginsoni, of sorts, 18s.
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- 12 Pandanus utraque, cuttings, in stores, 30s.
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- 12 Passiflora, of sorts, 12s. to 40s.
- 12 choice Stove Plants, middle size, 24s. to 40s.
- 12 choice Stove Plants, 18s. and 30s.
- 12 choice Orchids, 63s.
- 12 Succulent plants, 18s. per dozen, strong growing plants, 12s. to 40s.
- 10 " 10s. 6d. 20s.
- 10 " 10s. 6d. 20s.
- 12 choice Staghorn, 18s. and 30s.
- 12 Sarcocolla ligata, 9s.
- 12 Soliya sagittata, 9s.

The finest stock of growing plants in Europe, especially specimens, with fine regular heads of fronds, from 1/2s. to 1/2s. 1/2s. and 4/2s.

Verbenas for the Millon.

SIDE can now supply, for cash, strong, healthy, spring-stuck Verbenas, free from disease of any kind, at 6s. per 100; well-hardened, extra good plants, 2s. per 100, including Purple, Scarlet, White, Pink, and many other shades of colour. All true to name, and package free.

CALCEOLARIAS, aurea floribunda, and other varieties, good strong plants, 6s. per 100, 6s. per 100.
HELIOTOPES, light and dark, 6s. per 100.
COLEUS VERBENA, 12s. per 100.
IRISINE LINDENI, 2s. per 100.
GERANIUMS, Crystal Palace Gem, good plants, established in single pots, 12s. per 100. Cash with order to S. BIDE, Alma Nursery, Farnham, Surrey.

Bedding Plants, Bedding Plants.

JOHN SOLOMON offers **VERBENAS**, White, Scarlet, Purple, and Pink; **LOBELIAS**, pumila grandiflora, bluestem, and summa magnifica; **CALCEOLARIAS**, Golden Gem; **HELIOTOPES**; **AGERATUMS**, Imperial Dwarf and Goddess of State; **FUCHSIAS**, in all the best bedding sorts; all the above at 12s. per 100. **GERANIUMS**, Veuvine, Christine, and Flower of Spring, at 4s. per 100. All the above are good, strong, well-hardened, and established in single pots. Cash to accompany all orders. Islington Nursery, Park Street, Islington, N.

BEDDING PLANTS, BEDDING PLANTS.

PLANTS.—Zonal and Nozary **GERANIUMS**, 2s. 6d. and 3s. per dozen, 2s. 6d. and 3s. per 100. **Bicolors**, 8s. 3d. and 1s. 6d. per dozen, 2s. and 2s. 6d. per 100. **Silver-edged** do., 3s. and 3s. 6d. per dozen, 2s. and 2s. 6d. per 100. **CALCEOLARIAS**, 2s. and 2s. 6d. per dozen, 2s. and 2s. 6d. per 100. **AGERATUMS**, **LOBELIAS**, **VERBENAS**, **IRISINES**, **HELIOTOPES**, **FUCHSIAS**, **VIOLAS**, **HELVETIANS**, **HELMUMS**, **DEL.** var., **Bedding FANSIES**, **VIOLAS**, **SALVIAS**, 1s. 6d. and 2s. per dozen, 1s. 6d. and 2s. per 100, according to size. **DAHLIAS**, 1s. 6d. per dozen, 2s. per 100. **FUCHSIAS**, **CHRYSANTHEMUMS**, and **COLEUS**, 3s. per dozen, 2s. per 100. **HELVETIANS** and best **SEDDUMS**, for carpet bedding, 1s. per dozen, 6s. per 100. **Tuberous BEGONIAS**, boliviensis, Sederal Victoria, and magnifica, for bedding, 1s. per dozen, 6s. per 100.

CATALOGUES on application.

WILLIAM CLIBRAN AND SON, The Oldfield Nurseries, Altrincham.

TEA SCENTED ROSES.**SPECIAL CULTURE.**

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15s. to 18s. per dozen.

„ extra size, in 6-inch pots, for Greenhouse, set with buds, 24s. per dozen.

„ extra size, in 8-inch pots, for Greenhouse, set with buds, 30s. to 36s. per dozen.

„ Half Specimens, 5s. to 7s. 6d. each.

NEW FRENCH ROSES of 1877, 30s. per dozen.

HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36s. to 42s. per dozen.

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

Address—**CRANSTON & CO.**

BLOOMING RHODODENDRONS.

Two Hundred Thousand good healthy plants, having not less than five up to ten and fifteen buds each, of the finest named hardy kinds, will be supplied at from 4s. to 12s. per 100, and 18s. to 30s. per dozen.

Samples, with lists of the sorts, will be forwarded on application.

KALMIA LATIFOLIA.

Well furnished and healthy and covered with bloom-buds, 15 to 18 in., at 12s. and 18s. per doz., or 45s. per 100.

HARDY AZALEAS.

The finest English and Ghent varieties, splendidly budded, 4s. to 7s. 10s. per 100, or 18s. per dozen.

ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

ZONAL GERANIUM.**With the New Dahlias,****JOHN KEYNES**

is now prepared to offer one of the finest ZONAL GERANIUMS ever yet before the Public.

J. K. trusts his long experience and care will be sufficient guarantee for the quality and character of this splendid variety. It was raised by Mr. Wm. Dodds. A great truss of flowers, splendidly bedded, lively majestic colour, quite a new shade from any other. Has been the admiration of all in the beds at Salisbury.

"JENNIE DODDS,"

Price 18s. 6s. dozen. One-third of where twelve or more are ordered.

SALISBURY.—April 22, 1877.

Highly Important Sale of New Crotons, Dracænas, &c.

MR. J. C. STEVENS will **SELL** by **AUCTION**, at his Great

Rooms, 38, King Street, Covent Garden, W.C., on **THURSDAY**, May 31, a

quantity of **CROTONS**, **DRACÆNAS**, &c., just arrived from New Guinea, South Sea

Islands, New Britain, &c., in splendid condition. Many of the Plants now offered are quite

new, and are not in commerce.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

WILLS' NEW HYBRID DRACÆNAS.

MR. J. C. STEVENS has received instructions from **MR. WILLS**, to **SELL** by **AUCTION**, at his Great Rooms, 38, King Street, Covent Garden, W.C., on **TUESDAY**, June 26, at half-past 12 o'Clock precisely, the entire Stock of about Twenty-four of the very finest of the above magnificent

HYBRID DRACÆNAS,

raised by **MR. F. BAUSÉ**, at the Melbourne Nursery, Anerley. **Mr. Wills** has determined to give the Trade an opportunity of purchasing the above magnificent plants.

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AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

**TREE FERNS.**

THE LARGEST AND BEST STOCK IN EUROPE.

**WILLIAM BULL, FLS.,**

Respectfully invites the Nobility and Gentry to an inspection of the above; also of his

MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

NEW DOUBLE WHITE VIOLET, "BELLE DE CHATENAY."

Awarded a First-class Certificate by the Horticultural Society of France.

We offer this magnificent Viola for the first time. The flowers are pure white, most delicately perfumed, of immense size, and very double; in fact, almost equalling in size the well-known white Aquilegia.

It is pronounced by French horticulturists to be the very best double white Violet in cultivation.

Trade price on application.



The raiser says: "This new Violet will be appreciated as a Market Gardener's and Florist's plant, as it blooms most freely and continuously."

The illustration is from some specimen flowers, which are of natural size. We can strongly recommend this Viola as a charming addition to the popular group of flowers.

Trade price on application.

Retail Price—Strong Plants, 4s. 6d. (Post-free 5s.)

THE QUEEN'S
SEEDSMEN,

Carters

HIGH HOLBORN,
LONDON, W.C.

ODONTOGLOSSUM VEXILLARIUM.

MR. WILLIAM BULL

Intimates that at present he has about 150 plants of ODONTOGLOSSUM VEXILLARIUM in bud and flower, presenting a *coup d'œil* of this magnificent plant never before seen in Europe, and he will be happy to show the group to any one favouring him with a visit.

ESTABLISHMENT FOR NEW & RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

"ARCHIMEDEAN" AMERICAN LAWN MOWERS,

Will Cut Long and Wet Grass (as well as Dry and Short) without Clogging.

They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

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Grand Diploma of Honourable Mention, Vienna, 1873.
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HER GRACIOUS MAJESTY THE QUEEN,
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And many of the Nobility and Gentry of Great Britain.



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"Far superior to any of ours."—*Vide the Field*.
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"We feel bound to recommend it to our readers as one of the best mowers; we have as yet made acquaintance with."—*Vide the Field*.

PRICES FROM TWENTY-FIVE SHILLINGS.

Warranted to give satisfaction.

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A COLOURED PLATE

OF A BEAUTIFUL NEW VARIETY OF

CYCLAMEN PERSICUM

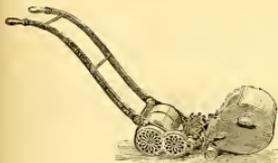
WILL BE PRESENTED (GRATIS) with the *GARDENERS' CHRONICLE* for JUNE 9.

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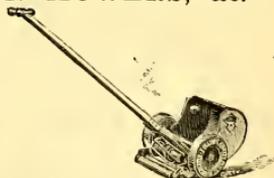
FOLLOWS & BATE'S NEW PATENT LAWN MOWERS, &c.



New Patent "Roller" Lawn Mower.



New Patent Lawn-Edge Cutter.



Royal Prize Medal Patent "Anglo" American Lawn Mower.

Upwards of 37,000 of these celebrated Machines have been sold during the past few years. Patronised by Her Most Gracious Majesty the Queen; His Royal Highness the Prince of Wales; His Imperial Majesty the Emperor of Germany; His Imperial Majesty the Emperor of Austria; The Imperial Russian Government (for the Agricultural Museum at St. Petersburg); and numbers of the Nobility and Gentry of Great Britain.

Awarded Medal for Merit, Vienna, 1873 (the only Medal given for Lawn Mowers); Large Silver Medal (the First Prize) at the Meeting of the Royal Horticultural Society, Birmingham, 1872, and in addition, every First Prize wherever these Machines have been brought into competition in actual trial with other makes. Follows and Bate here abstain from enumerating in detail the various good points "claimed" for other Machines, and content themselves with saying that their Lawn Mowers possess them all, and more also; they therefore solicit the favour of an application for one of their CATALOGUES, with Testimonials, before purchasing.

To be had from all respectable Ironmongers and Seedsmen in the United Kingdom, or from the Patentees and Manufacturers, FOLLOWS & BATE, Manchester.

F. & B. are the sole makers of the well-known Patent "CLIMAX" LAWN MOWER, with Back Delivery, from 25s. each; NEW PATENT LAWN-EDGE CUTTER, which entirely supersedes the Shears; PATENT GARDEN PLOUGH, &c.

Machines of any make Repaired or allowed for in Exchange.



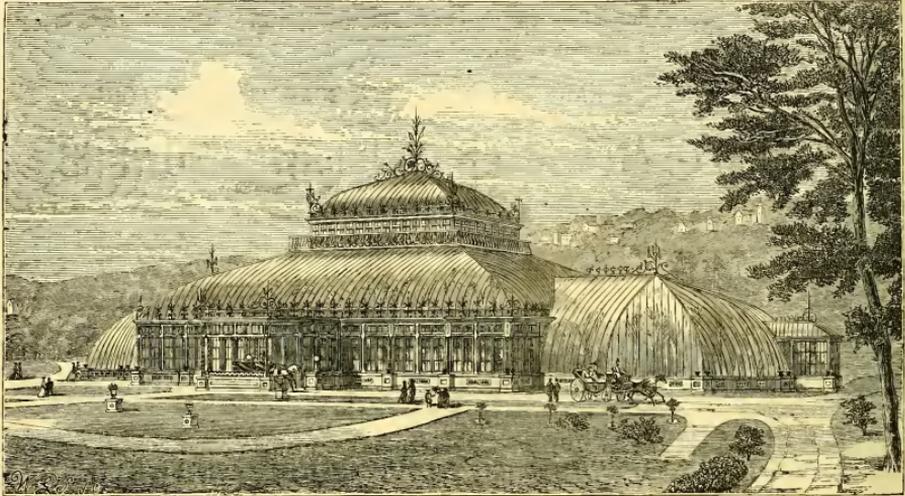
LONDON, 1873.



VIENNA, 1873.



GOLD MEDAL, 1873.



THE NEW WINTER GARDEN AT BOURNEMOUTH,

ERECTED BY

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13A, GREAT GEORGE STREET, WESTMINSTER, S.W.,

HORTICULTURAL BUILDERS AND HOT-WATER ENGINEERS,

SOLE MANUFACTURERS OF

CONSERVATORIES, VINERIES, &c., &c., in WOOD and IRON,

CONSTRUCTED ON

THE PATENT TUBULAR RIB SYSTEM,

By which means the Carvilinear Form is obtained without the use of Bent Glass, and for which they have been awarded the GOLD MEDAL at the ROYAL HORTICULTURAL SHOW, 1872, also at London and Vienna.

GOLD MEDAL AND EVERY DESCRIPTION OF BOILER.

HOT-WATER APPARATUS FIXED COMPLETE.

ALSO

TAYLOR'S PATENT VENTILATING AND VAPORISING PIPES,

By which Purity of Atmosphere and Economy of Fuel are effected.

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CHOICE FLOWER SEEDS FOR 1877.

Table listing various flower seeds such as Balsam, Begonia, and Cyclamen, with prices per packet and per dozen.

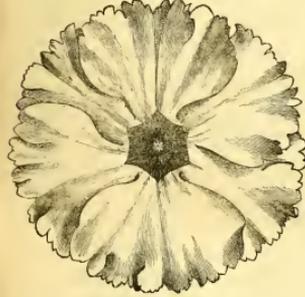


Table listing more flower seeds including Primula, Solanum, and Wallflowers, with prices per packet and per dozen.

Advertisement for Victoria & B. Paradise Nurseries, Upper Holloway, London, N.

CHOICE FLOWER SEEDS For Present Sowing.

Table listing various flower seeds such as Auricula, Calceolaria, and Sweet William, with prices per packet and per dozen.

DANIELS BROS., ROYAL NORFOLK SEED ESTABLISHMENT, Norwich.

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

By Her Majesty's Royal Letters Patent

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

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

"The 'Boiler of the Future.' I have no doubt about this." - Wm. Thomson, F.R.S.E., F.R.S.

From the "Gardener," March, 1877.

WRIGHT'S PATENT ENDLESS-FLAME IMPACT BOILER.

"This boiler is attracting a great deal of attention in the horticultural world at the present time; and as I have just had one of their largest-sized ones fitted up here, and have now got it well tested, perhaps a few lines from me upon its merits may not be without some advantage to some of your numerous readers who are anxious to express some opinion upon it. It is an extra labour caused by badly-constructed boilers, and any improvement effected in those to save labour and fuel demands the attention of all interested parties.

To give your readers a better idea of the work this boiler has to do, I may begin by stating that our handsome compact range having a length of 120 feet, a ridge- and furrowed green-house being in the centre, two lean-to Vineries on each side, with Cane-house and general glass-house on each end; on opposite side of wall we have a Fern-house, partly lean-to and partly span, 50 feet in length, varying in width from 10 to 20 feet. Attached to end of boiler-house is our laundry with a drying chamber fitted up with about 250 feet of 4-inch piping.

The whole of the above houses are heated with hot water, and have a total of about 2000 feet of 4-inch piping. We had formerly two oval fire boilers, one being 4 feet in diameter, the other 4 feet long. With these two boilers kept had fired we always found great difficulty in keeping up the temperature during the winter, and had frequently to lose a night's sleep attending to the fires. On the last day of last year the larger boiler came to grief, the water in it dropped on the fire; and in taking down some of the brickwork it was found to have cracked beyond repair. To be thus left in the middle of winter with only the smaller boiler was no joke. I had to look for another without delay. I have given a good deal of attention to the construction of water boilers, and I must confess I had never seen one that came up to my idea of what a boiler should be until some time ago my attention was called to a drawing of Wright & Co.'s Boiler which appeared in the 'Gardener.'

"After talking the matter over with my employer, W. S. Thomson, Esq., he at once granted permission for me to get the boiler I had formed such an opinion of. I at once put the order into the hands of Messrs. Mickle & Phipp, horticultural builders and hot-water engineers, Tottenham Street. They have fitted it up and attached the piping in the most complete manner. I also got additional material valves attached to the boiler. If anything broke at any time go wrong it can be attended to without disturbing the piping.

"As formerly stated, I had considerable difficulty in keeping up the heat with the two oval fire boilers kept hard at work. I now find that with the remaining oval fire boiler still in use, and the whole of the houses and the laundry to a degree they never were heated before, I can burn much less coal than it took to keep the two oval fire boilers.

"One chimney consists of a 75 ft long, led horizontally through centre of back wall, with 15 feet of a perpendicular stalk. Some doubt was expressed that, as we required a chimney pipe attached to boiler about 5 feet long, there would be the deficiency of draught; but we have found the opposite to be the case. I attached a 6-foot length of 8-inch stove pipe, with elbow at right angles down to the angle, and I found the draught very strong I got a throttle-valve damper fitted into the bend of the stove pipe, and am able to regulate the fire to a great extent; and by banking up the fire at 10 to 12 ft. from the damper fully half round, I can leave it to its work with the greatest confidence for an unusual time. I have tried the following: instead of, and instead of, as formerly, having to sit up firing the half of the night at times, and sometimes whole ones, we can retire to rest at a reasonable hour, confident of sleeping undisturbed by unpleasant dreams of plants and fruits going to ruin. In concluding my remarks I may say that the less of the good qualities of this boiler is its portability. We had not the slightest difficulty in putting it down in our contracted stable, through a trap-door 4 feet wide by 6 feet long, and fitting it up in a recess 4 feet square, and I am confident that with the assistance of two men I could take the whole to pieces and have it again in full working order in two hours. I have no hesitation in saying that for rapidity of circulation, economy of fuel, simplicity of construction, and that it has no rival, and have no doubt this boiler will win way; and when coals are high in price it will effect a considerable saving in the cost of a good fire space in a house, or a capital boiler for burning wood and other fuel." - J. CLARK, The Gardener, Farnley Green, East Leeds.

"I think yours the most perfect 'Heat Trap' yet invented." - DAVID THOMSON, Drumsdunrig Gardens.

For details and particulars as to the various sizes, mode, and cost of our complete, entitled 'Heat Trap' and 'HEATING,' which will be handed to all applicants, post-free.

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

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



SATURDAY, MAY 26, 1877.

ATHOLIA.

THERE is not an estate in Britain more affluent in waterfalls than the Duke of Athole's, extending as it does over the cloud-compelling peaks of the Grampians, and over a country of mountain burns, the feeders of the Garry and the Tay.

The principal source of the fountains of Athole is situated 17 miles from the Castle and 1450 feet above the level of the sea, in the Pass of Drumochter, between the Boar of Badenoch and the Athole Sow. Just here the streamlets are small, and at the point where they are balanced, so to speak, upon the ridge of the watershed, some run to the Garry, some to the Spey. Mr. Geikie, writing of the courses of the glaciers, tells us that, "the glacier of Loch Garry split upon the watershed and sent one branch into Glen Garry and the other into Glen Truim," and so to the Spey. Above where the ice parted in the ice age, the waters now part—a pebble might sometimes turn them either way; and near here, at the Inn of Dalwhinnie, in 1861, the Queen, travelling adventurously through the country, stopped to dine and sleep. The story is told in the 'Journal of Our Life in the Highlands.'

The Royal party in that last expedition round about the Grampians from Balmoral reached the forlorn and elevated inn at nightfall on October 9, without bringing food. Two lean fowls snatched from the perch lost their lives in consequence, and were placed on the parlour table with tea, the only beverage. The frightened maids refused to wait at table. "Mary and Maxted, Grant, Brown and Stewart," were engaged drying their clothes in the commercial room; they afterwards dined on meagre fare, and nothing to drink but tea. We are told that on this cheerless night there was "no pudding and no fun." It rained, and the little rill before the door was very instant rising; and 50 miles distant at Perth there is often as sudden a rising of the river from the swelling of all the streams from Dalwhinnie to Perth Bridge.

Next day the party passed Loch Garry, lying darkly as in a den among the mountains. It had been a good night for the Duke of Athole's waterfalls; and as they rode along they presently met the Duke on a chestnut pony, "in his kilt and shooting jacket as usual," coming out to attend the Queen. Some more heavy showers fell, early autumn showers, interrupted by a glorious sun breaking through the clouds. The Garry is described in this attractive narrative as rolling along by the roadside, "over large stones, and forming perpetual falls, with Birch and Mountain Ash growing down to the water's edge."

Soon the travellers see in the distance Ben-y-Ghlo, the source of the Feudar and the Tilt, which tumble through Irlair Athole park. Then they passed the Falls of Bruar, a stream which commences at a spot where Aberdeenshire, Inverness-shire, and Perthshire meet upon the heather and the high ground of Athole Forest, and which crosses twenty-two miles of wild moor, and flows into the Garry three miles above Irlair.

The finish of the Bruar is beautiful. For half a mile at the end of its course the stream dashes and tumbles through a narrow glen, and sometimes passes through deep, long chasms,

which are spanned at salient points by bridges, reached from above by winding paths. The deepest fall is 60 feet perpendicular. An ornate shelter hut commands it from the edge of a convenient precipice, where you may observe the animating noise and flow of the water, and the ingenuity of the Duke in planting several of the ledges and steps above the stream. Burns had spoken to the Duke on the subject of the bare sides of this glen, and Bruar Water had been made to apostrophise his Grace in these and other charming verses:—

"Would thou my noble master please
To grant my highest wishes,
He'll shade my banks w' thowering trees
And bonnie spreading bushes."

The difficult places were planted by letting boys down in baskets, with their pockets full of Fir plants and young bushes, which they set in the crevices, and covered with earth led down for that purpose.

Since the Duke brought his Royal guest past this spot a railway has been laid up the valley, and thousands of acres of the slopes above have been covered with Scotch Fir; and 2 miles from the Castle there is now a baronial lodge. It was at this point that the party entered the park. They were afterwards driven forwards on their journey in a carriage specially constructed for fugal districts and precautionary, like Noah's Ark. The journal we quote from describes it as a "boat—a mere boat," put on four wheels.

It is the same lower down the valley, and as far as the Gramplains extend—the pebble reefs in the rivers Garry and Tay everywhere bespeak streams well fed in the rainy season; and the high flood-marks on Perth Bridge, dated 1814 and October, 1847, with the lowest water-mark of that dry summer, 1859, tell the same story as the pebbles, of varying water supply.

Walking from Birnam past Lady Well and along the main road, the Bruar runs, unseen for the most part, but not unheard, parallel with the road, and many feet below it. We remember capercalzie getting up into the Fir trees to roost, and sometimes getting down again alarmed as we passed. The river became more and more noisy among the trees, recent rains having increased its flood. For a mile there was a perpetual sound of tumbling waters on the right, and presently there came from Rumbling Bridge the roar of one of the Duke's best waterfalls; and in a sort of shanty looking down the foaming stream towards the bridge, was an artist of a world-wide fame studying the effects of moonlight on the rushing water. We must leave the task of describing rapids, torrents, and cascades, to him and to the poets. Immediately around Blair Athole there is much movement of the mobile element in the various glens, each with its stream issuing from some parent loch among the mountains.

Walking along Tiltside, the Feudar is seen not far from the Castle, falling from a high rock into the larger stream below. An arched grotto has here been erected in the steep bank opposite, in which the reverberation is heard with curious effect, and a Tulip tree stands upon the bank above. You may reach it by a steep ascent through Hazel and other underwood, and you will observe that the timber of Tiltside and the grass upon its banks have been enriched by a bed of limestone which crosses the forest from Braemar, improves the pasture of the park, and then passes southwards through the country—a superior seam, excellent everywhere for the dairy or for sheep. Presently the glen begins to wind, its deep channel takes a wider sweep, and upon the steep ledges of the river banks all sorts of Fir stand, spiral and beautiful. Gilpin, who absented the Beech and Bramble, described the Scotch Fir as a dark spot upon the landscape, especially when young. It is so sometimes, but not always, and all old fellows ought ways to praise youth in its best aspects, and

to respect and admire it. It is unbecoming to have youth decry by age. The Scotch Fir is dark on sunless days, and in ascending Glen Tilt in bright weather we found its trunks red in the sunlight, and its exquisite green foliage deeply tinged with blue.

Beyond the Tulip tree a bridge crosses the Tilt, and from that point you follow its swinging course, with water music on your left and echo on your right. The slopes are about as steep as those of a Gothic roof, and this is not an uncommon style of hill architecture among the wider glens. In ascending higher the trees are gradually left behind, till the Sloe with purple fruit, the Rowan with drooping berries, and the Hazel with changing leaf, struggling against the breath of autumn, keep company together. A Birch leaft follows, and a little forest with leaves brown, yellow, and ochreous, dead but lovely, and awaiting the first wind that will sweep the hillsides with its gay, decaying leaves, and red fruit. A little higher the Alder still stood robust and green, resisting the season of change—a gloomy tree nearer home, but not uncheerful in so wild a scene.

Beyond this tree limit is the Marble Lodge, in which a keeper lives. At Forest Lodge, 8 miles from Blair, the road for carriages ends, and bare steeply bound the glen on either side.

A high bank at Dalcroneach overhangs the Tilt, and looks up a glen towards Loch Loch, where one of the Comyns of Badenoch rests under a cairn. Near this spot are "the Pudding Burn," *Alt na marag*, and "the Brook of the Nose," *Alt na sròin*, illustrating the richness of the Celtic language in nomenclature. These streams were named from the following incidents: Comyn had seized the castle of Macintosh of Tirin, murdered his family all but one, and seized his lands. The one child who was saved, on attaining manhood, attacked Comyn at Blair, drove him up Glen Tilt, and shot him near Loch Loch; and at *Alt na sròin*, during the rout, a nose fell into the stream, and at *Alt na marag* another person received a gash, and the stream was named "the Pudding Burn." The view here is very fine, and here the party we left in the boat upon wheels took luncheon, attended by the pipers and the people and by Sandy McAra, the head keeper, "old and grey," the wild strains of the pibroch sounding softly amid the hills, and Glen Tilt looking like a long, straight furrow drawn down the mountain side.

The cavalcade set off again and crossed the celebrated ford of the Tariff—Poll Tariff it is called—the Duke leading the Queen's pony on one side, a trusty servant leading on the other, Sandy McAra, the guide and the pipers, playing all the time, marching in advance. In the middle of the stream the current proved sufficiently strong and deep, but all waded through in safety, and soon after the road became precipitous. From this point the Tilt becomes narrower and narrower to the spot where the travellers emerged from the pass upon an open valley. And here, where the waters part and the Bainoch runs towards the Dee, the Duke of Athole finds a boundary. Along the ridge his forest meets those of Mar and Badenoch, his armies of deer unite with those of neighbours, and all troop over the hills together.

At the "county march," where Perth and Aberdeen meet, the cavalcade halted. The Duke produced some whiskey and a silver flask, and proposed a toast, and rather than rob the waterfalls of Dee he took his whiskey neat; and then there was a great cheering, a little starting on the part of "my pony, good Inchroy," and then the parting.

Dr. John Macculloch examined the flora of Ben-y-Ghlo in 1824. He says:—"On this mountain is found, in abundance, one of our rarest and most elegant of alpine plants, the

Azalea procumbens, as it also is on the range of hills opposite. The neighbourhood of Blair is, indeed, a tempting field for the botanist. Near the dense and trailing cushions of this delicate shrub, and even among its bright crimson flowers, it is not unusual to find the rare *Rubus arcticus*, with its elegant berry, and the still rarer *Cornus suecica*. The *Rubus Chamæmoris* and the more ordinary alpine plants are found in profusion, and in one place there is a miniature forest of the *Betula nana*, a plant almost limited to this spot.

"The rare Lichen (*Platyisma*) *nivale* occurs all over Ben-y-Ghlo, the Lichen (*Cetraria*) *islandica* almost covers the ground in some places. On the calcareous skirts of Glen Tilt, the *Dryas*, with the *Satyrion viride* and some other rare Orchidaceæ, are seen everywhere; and here, even in the bed of the stream, at a lower elevation than I have ever elsewhere seen it, the rocks are covered with the long trailing stems and brilliant crimson flowers of *Saxifraga oppositifolia*. Here also the cushioned *Silene acaulis* grows at a low level, while there are few of the alpine *Saxifragæ* which are not found somewhere; the golden flowers of the autumnalis decorating every rill and cascade. In the wet ground above the Anthericum calycatum occurs in profusion, as does the *Trollius*, a plant far from common in Scotland. About Blair the delicate starry flower of the *Trientalis* is the Daisy of the heaths and woods, as the two commoner *Pyrola* emulate the Lily of the Valley in profusion as they do in odour. In the Fir woods also the very rare *Prunella secundiflora* is abundant, and near the Feudar I found the most rare of our plants, the *Convallaria* (*Polygonatum*) *verticillata*, only known as yet in one other place (in Scotland), near Dunkeld. Of the fungi, the park and woods of Blair are a perfect magazine, containing almost every *Agaricus* that exists, together with a great number of species in all the other genera." *H. Evershed.*

New Garden Plants.

*HESPERANTHA LONGITUBA, Baker.**

This pretty Arix-like Irid has just been introduced into cultivation by Max Leichtlin, Esq. It is widely spread through the eastern provinces of Persia, extending northward through Kaffaria to Natal. It is a new neighbour of the old *Hesperantha falcata*, *Ker* (*Ixia falcata*, *Bot. Mag.*, tab. 566), with which it agrees in its flowers being fragrant and expanding in the evening. It differs by its longer and more grass-like leaves and larger flowers, with a longer perianth-tube and much larger spathe.

Bulb small, ovoid, with firm membranous dark brown tunic. Leaves two or three in a distichous nearly basal rosette, the base more redly clasping the scape below the middle, bright green, glabrous, grass-like in texture, the fully-developed ones reaching a length of 6 or 9 inches, and a breadth of 3 or 4 lines. Flowering-stem reaching a height of 1 foot, with 5 or 6 large erect spike of from three to eight flowers. Spathe-valves entire, green tinged with red at the flowering time, the outer one lanceolate-oblong, varying from 1 inch long in the lower part of the spike to $\frac{3}{4}$ inch at the upper, clasping round and hiding the stamens and inner valve of the spathe. Perianth-tube cylindrical, usually protruded from the spathe; segments of the limb oblong, $\frac{1}{2}$ — $\frac{3}{4}$ inch long, the inner ones white, the outer much tinged with reddish-brown. Filaments $\frac{1}{2}$ inch long; anthers linear, sagittate at the base $\frac{1}{2}$ inch long. Entire portion of the style not protruded from the tube of the perianth, its three falcate subulate branches as long as the anthers. *J. G. Baker.*

ANTHURUM SPATHOPHYLLUM, N. E. Br.

Whole plant quite glabrous and smooth. Stems (in the new plant, but perhaps forming a stem with age); petiole 3—6 inches long, 2—2½ lines thick,

* *Hesperantha longituba*, Baker.—Bulbo parvo ovoides, tunica brunnea membranacea; foliis prostratis basialibus 2—3 linearibus glabris scapo brevioribus; scapo gracili folio unico reducto etiam tubo cylindrico limbo longiori, segmentis oblongis, interioribus albidis, exterioribus rubris suffusis; filamentis sagittatis at base $\frac{1}{2}$ lin. longis. Entire portion of the style not protruded from the tube of the perianth, its three falcate subulate branches as long as the anthers. *J. G. Baker.*

trigonus, flat on the face, the three edges narrowly membranous margined, green; geniculus 3-4 lines long, tumid, trigonus, green, and margined as in petiole; blade 16-24 inches long, 1 1/2-2 1/2 inches wide, narrow lanceolate, attenuate-cuneate in a straight line from middle to base, apex acuminate, texture about like that of thick paper, bright green above, pale greyish green beneath, impunctate; midrib prominent, rounded or obtusely triangular above, more prominent beneath and acutely triangular, with a membranous dorsal keel (continued up from the petiole); lateral veins 16-30 on each side of midrib, varying according to length of leaf, impressed above, prominent beneath, rather distant, erecto-patent, curved, all forming a continuous pseudo-nerve 2 1/2-3 lines distant from the margin, or those in the basal part running into the margin or forming short pseudo-nerve of 2-3 anastomosing veins, and then excurrent to the margin. Petiole 7-10 inches long, 1-1 1/2 line thick, trigonus, slightly compressed, the edges membranous margined, sometimes with a fourth edge or keel on one side in the upper part, pale green. Spathe about 1 1/2 inch long, 1-1 1/2 inch broad, erect, deeply concave-hooded or boat-shaped, broadly ovate, apex shortly acuminate, sub-obtusely with a short mucro, base amplexicaul, very shortly

repal on a narrow line over the lateral sepals. The broad lateral sepals forming part of the tube are very concave of course, and at once most apparently rounded on their upper margin. Now, if they are artificially expanded, they form a very broad body over the entire tube, and this suggested the name "lata." My first knowledge of this plant was due to Messrs. Veitch, who introduced the plant I think at the same time with *M. attenuata*, Rehb. f. I obtained fresh flowers in September last from Mr. Day, and I saw the plant with its metallic shining flowers at this gentleman's Orchidic Eldorado a few weeks ago, before the days of Amsterdam, and carried home with me the beloved lady of a two-flowered peduncle. *H. G. Rehb. f.*

DENDROBIUM THYSIFLORUM.

THE accompanying illustration (fig. 105) of this showy Orchid was prepared from a photograph of a plant which produced ten spikes of flowers, in the collection belonging to Sir William Marriott, Downs House, Blandford. *D. thysiflorum* is an introduction from Moulmein, whence it was introduced into

remarkable for the length of time it continues to produce a succession of flower than for opening them simultaneously, as in the case of most plants the blooming of which is of shorter duration; for this reason it is more suitable for general decorative purposes than for the exhibition stage. It is of comparatively easy growth, and succeeds well in moderately close pent, containing a fair amount of fibre with a good sprinkling of sand. It is a tolerably quick grower when well managed, soon acquiring a useful size and flowering freely in even a small state.

Those commencing its cultivation will find it the best to procure plants in the autumn, after the summer's growth is completed. Select the usual nursery size, such as are young and free in growth, and have been stopped so as to cause them to have plenty of shoots, bushy, and not long or straggling. Keep them for the winter in an ordinary greenhouse temperature, where they will receive a fair amount of light; as at the latter end of March they should be moved into pots a couple of inches larger than those they have hitherto occupied. This is a strong-rooted plant, and will bear the soil using in a moderately lumpy state, mixing the sand well with it previously to use. Put an inch of crocks for drainage, and ram the soil pretty firm. Cut back the shoots to an uniform length of 6 or 8 inches from where they were last stopped to, and tie them well out. The wood is of a somewhat weak character, consequently will require a moderate number of sticks for support. Be sparing of water until the roots are at work in the new soil, and keep the atmosphere a little close till the young growth begins to push, after which admit more air in the early part of the day. As the weather gets warm close the house with sun-heat, and damp overhead with the syringe, at the same time keep the material on which they stand moist. Shade will not be required, as the plant will bear any amount of sun.

As already stated, it is a free-flowerer, producing its blooms from the current season's shoots, yet the first season's growth will rather be to get the plants on in size than the production of flowers; consequently, about midsummer all the strongest should be stopped, so as to cause them to break back. Continue to keep the branches well tied out, and also the use of the syringe until the middle of August, when give more air night and day, so as to ripen up the growth, at the same time discontinue syringing and maintain a drier atmosphere; keep on this treatment through the autumn, merely guarding against too low a temperature on cold nights. Through the winter a temperature of about 40° in the night should be kept up, giving no more water at the roots than necessary to preserve the soil in a healthy condition. Again about the end of March report, giving a 3 inch shift, in soil similar to that which was advised the preceding season, stopping and tying-out the shoots as before. Let the treatment during the spring be in every way as recommended last year. By the end of July they will most likely begin to show flower; as soon as these make their appearance discontinue the use of the syringe, and give plenty of air and light. When the bloom commences to open the plants, if required, may be placed in the conservatory, where they will keep on flowering for many weeks; after which they can be removed to the greenhouse, and wintered as previously. It will be advisable in this time to go over them and shorten their shoots back, as this will be better done now, when the plants have attained some size, than in the spring as heretofore. Give them another shift about the time advised the preceding seasons; they should again have pots 3 inches larger, and be treated in every way as hitherto recommended as to potting, syringing overhead, and water at the roots; by the time of flowering they will have got to a useful size, and be found attractive.

This *Mitrasia*, from the free but somewhat weak habit of the shoots, requires cutting back after flowering to within 6 or 8 inches of the point from whence the season's growth has commenced. Twelve or 14-inch pots are large enough to grow even the largest plants in, as after they get into that size they may be kept in the free but healthy condition by the use of manure-water during the growing season.

Insects.—The plant is sometimes affected with red-spider, but if the syringing advised whilst in active growth is attended to, it will be kept in check. Should black fly or mealy bugs appear, fumigate with tobacco, or syringe freely overhead with tobacco-water. *T. Baines*.



FIG. 105.—DENDROBIUM THYSIFLORUM.

decurrent; pale green inside and out. Spadix 10-12 lines long, 3-3 1/2 lines thick, slightly clavate, very obtuse, quite sessile, projecting forwards, pale yellow. Ovary 6-celled, cells 1-ovulate.

The dimensions given in the above agree with the *Kew* specimen, but as I fancy that it is rather a young plant, they may possibly be considerably increased in a more adult state, as is usually the case with *Andurium*. I know nothing of its native country, no record of it having been kept. *N. E. Brown*.

MASDEVALLIA LATA, Rehb. f.*

Among the plants of the late Mr. Zahn, one of the recent botanical martyrs (drowned in a stream) from Central America to Messrs. Veitch, was a curious *Masdevallia*, much in the way of *M. bicolor*, Pöpp., Eadl., and *aurorapurca*, Rehb. f., yet with some extra quality. It produces two flowers at once, and whether it may hereafter develop more such organs, who knows? To judge from the very thin peduncle one would, however, scarcely expect it. The flowers are dark reddish brown, with ochre-coloured tints, and such is too the colour of the upper

of this country by Messrs. James Veitch & Sons, who obtained a First-class Certificate for it from the Floral Committee on April 6, 1870. It has the habit of *D. densiflorum*, but is a stronger grower, and produces splendid spikes of flowers, the sepals and petals of which are white, and the lip a rich golden yellow.

GREENHOUSE PLANTS.

THEIR CULTURE AND MANAGEMENT.

MITRASIA COCCINEA.—This is a dense-growing evergreen plant that produces freely its handsome mitre-shaped scarlet flowers during the summer and autumn, at which time it forms a conspicuous object in the greenhouse or conservatory. It was introduced about the middle of the present century from San Carl de Chiloe, and is another of the number of handsome species comparatively neglected. It is more

omnibus perigonum suo caudale bene superantibus (prope his longioribus); sepalis a cuneata basi puzduratis apice lidenatis; media unilamelis; labelli lamina ligulata apice utriusque angulata, angulis in laminam anticam, semioblongam denticulatam descendentes, superficie disci superioris denticulata; columna apice trifida, laciniis lateralibus obtusis, laciniis medianis acuta. —America Centrali; Zahn!

* *Masdevallia lata*, Rehb. f.—*Afinis M. aurorapurca*, Rehb. f. foliis cuneato-oblongoangulatis acutis; pedunculo obliquato (uni-bifloro), mento angulato, tubo brevi inferius amenti angulum deinceps angulato; sepalis impari pro parte herbis brevius angulatis in caudam longam extensis; sepalis inferioribus lobis semicirculari expansis longe caudatis; caudis

THE SPECIES OF PRIVET.

To the last number of the *Flore des Serres* M. Decaisne contributes a revised list of the cultivated species of Privet, Ligustrum. The following species are enumerated:—

1. L. VULGARE, Linn., common Privet; Europe.
Var. α . *f. foliosa*,
 β . *buxifolia*.
2. L. OVALIFOLIUM, Hance, oval-leaved Privet;
Japan. Syn., *L. reticulatum* and *L. californicum*.
3. L. IBOYA, Sieb., Iboya Privet; Japan. Syn.,
L. ciliatum, *Sieb.*, *L. amurense*, Carrière, not of Maximowicz; *L. Roxburghii*, Hort.; and
L. zinnieri, Hort.
4. L. QUINTOU, Carrière, Qaihou's Privet; Japan.
(M. Qaihou is the garden superintendent at the Jardin d'Acclimatation, of Paris.)
5. L. MASSALONGIANUM, Visiani, Massalonghi Privet; Khasia and Neilgherri Mountains. Syn., *L. myrtifolium*, Hort.; *L. spicatum*, Hort., non Don; *L. longifolium*, Hort.
6. L. LUCIDUM, of Acton, shining Privet; China. Syn., *L. Roxburghii*, of Blaine; *Olea clavata*, Wight, Icon, 763; *Phyllrea paniculata*, of Roxburgh; *L. japonicum*, Hort., not of Thunberg; *Lucidum* var. *macrophyllum*, Hort.; *magnoliifolium*, Hort.
Var. α . *c. coriaceum*, Revue Hort. 1874, p. 418, fig. 56.
 β . *L. japonicum variegatum*, Hort. (Produces vegetable wax.)
7. L. JAPONICUM, of Thunberg; Japan. Syn., *L. Kellermanii*, *L. spicatum*, *L. springerianum*, *L. lucidum*, Hort. (not of Aiton); *L. macrophyllum*, Hort.; *L. Kellermanii*, Van Houtte, Cat. γ . *Sieboldi*, Hort. γ . *L. coriaceum*, Hort.; *L. glaberrimum*, Hort.; *L. ovalifolium*, Hort. (not of Hasskarl).
Var. α . *variegatum*, Syn., *Ligustridium japonicum*, Spach.
8. L. INSULENSE, Decaisne (China?). Syn., *L. Stanoutii*, Hort. (not of D.C.).
9. L. COMPACTUM, Hook. and Thoms.; Himalaya. Syn., *L. oblongifolium*, Hort.; *L. longifolium*, Carrière; *L. lanceifolium*, Carrière; *L. Simonii*, Carrière.
10. L. ROBUSTUM, Hook. et Thoms.; Himalaya. Syn., *L. nepalense*, Hort., not of Wallich; *Phyllirea robusta*, Roxburgh; *Visiania robusta*, D.C.
11. L. NEPALENSE, Wall. Nepal. Syn., *L. spicatum*, Don; *L. vertutum*, Hort.
12. L. HOOKERI, Decaisne; Nepal. Syn., *L. nepalense*, var., Hook. Bot. Mag. 2911; *L. Wallichii*, Visiani, not of Blume.
13. L. SINENSE, Loureiro; China. Syn., *L. willowum*, Rev. Hort. 1875, p. 299; *L. Iboya villosum*, Hort.
14. L. STANTONI, D.C.; China. Syn., *L. chinense*, Carrière; *L. chinense nanum*, Hort.; *Phylarodora leucantha*, L. Mar. Moore, in Trimen, Journ. Bot. 1875, p. 229.

Excluded Species.

L. carolinum, Desfontain—Lippia species; *L. spicatum*, Jacques—*L. multiflorum*, Hort.; *L. amurense*, Hort. Sbatat—*Lippia ligustrifolia*, G. Thuret; *L. cotinifolium*, Jacq.—*L. Linociera cotinifolia*.

MARÉCHAL NIEL ROSE.

SOME brief notices in recent numbers of the *Gardeners' Chronicle* on this kind of yellow Roses suggest the desirability of a few remarks on its management, inasmuch as not a few are unable to meet with success. Of course at present the plants coming into bloom are those cultivated under glass, where the treatment is comparatively easy, where appliances are at hand not to be met with out-of-doors. Indeed, except in specially favorable localities, the Maréchal is only fit for the Rose-house. It is so easily excited into growth that its early development suffers from the ungenial springtide which of late years, at least, appears to have become a characteristic of our climate. To those whose plants are under glass it will be sufficient to remark that the use of the syringe and abundance of liquid manure are the chief cultural points that require attention now. In case long rods of the season of 1876

have been made, showing much succulence and little promise of bloom, the top of such must be nipped out and the branches bent down, which will cause them to throw out laterals which will flower later on. This latter mode of treatment may also be pursued with plants on walls or trellises, and, where specimen flowers are required, it will be well to condescend to dibbling in time. But it is to the trees in the open ground we wish to direct special attention, because, being an early Rose, as we have hinted above, they will require additional care. These likewise must have frequent applications of liquid manure, the best way of administering which has been found to be as follows:—

In a circle round the plant, at such a distance from the collar as the roots are judged to extend to, let several holes, from 10 to 12 inches deep, be dibbled, into which let the stimulating fluid be poured, and immediately cover the surface with a mat of straw to the reach of the spongioles, which will greedily suck it up for assimilation by the organs of nutrition. This is a most important point in giving manure in this form, because that which only comes into contact with the more solid roots is little better than waste. Another way is to dig a trench a few inches deep round the tree, to be kept filled till the adjoining soil has been thoroughly saturated therewith. It will be as well to add that pot plants are best watered by immersion, and especially so in the case of those which are in flower. Both these methods are far more immediately effective than any mulching. Guano, drainings from the stable or cowhouse, a decoction of sheep droppings, or a solution of fowl-house scrapings, all make excellent liquid manures.

One secret of success with Maréchal Niel is patience. The plants must be well established—young or fresh ones can never be expected to afford much display; indeed for the first two or three seasons it would be advantageous to the future welfare of the trees if they were not allowed to flower at all. Such self-denial, it must be admitted, is difficult to practise, but the benefit is undeniable.

Plants now obtained are necessarily those in pots, and purchasers cannot be too urgently recommended to have only specimens on their own roots, and large in preference to small, even at enhanced cost—they are cheaper in the end, as time and nursing are thereby saved, and risk of failure at the period for turning them out is reduced to the minimum. As to "worked" plants, it is well ascertained fact that Maréchal Niel will not do on the Manetti. Many stocks have been tried for it, such as Gloire de Dijon, Climbing Devoniensis, and others. Mr. Harrison, of Darlington, states he has a stock called the "Napoleon" which does it well, and is admirably fitted for the purpose to suggest that as this variety is really a Noisette, some of the older strong growing kinds of budding habit should be experimented upon when the following season arrives. The Rose is so superb, and plants upon their own roots take so long in reaching a productive size, that it is worth any amount of trouble and experience to discover a certain mode of propagating it. Lastly, we have to refer to the Briar, upon which sometimes the variety succeeds and makes fine plants, and very often not. There is a peculiarity of this Rose when worked upon the tree which the writer has never seen discussed in print, but has often remarked at the great Rose nurseries, the buds take and appear to grow freely for a time, then they stop. Next they turn sickly looking and yellow, and finally snap off at the neck with a puff of wind, or even with a touch. Upon examining the base it will be perceived that a hard callus has formed, in appearance much resembling a "callus" before roots are emitted. We have seen on many as fifty plants of this kind, and of a couple of nursery rows of 200, some with four or five branches from the stem of the original bud. The cause of this singular phenomenon is a topic too extensive and abstruse for discussion in the present paper. We have alluded to it to emphasise the advice as to "own root" plants, and as a suggestion for opening up—it may be—an interesting discussion in the pages of the *Gardeners' Chronicle* further on.

W. D. PRIOR.

SEAKALE AND ITS CULTURE.

AMONGST the various plants adapted to culinary purposes which are only used in a blanched or whitened condition, induced by the exclusion of solar light, such as Celery, Endive, &c., the Cramble maritima, or Seakale, stands pre-eminent, and its season of usefulness usually extends from Christmas until about the end of April.

The plant is perfectly hardy, being indigenous to Britain, and is found in a wild state in various places on the sea coast growing in light sandy or stony soil.

It belongs to the great natural order Cruciferae, which order comprises a large number of plants most valuable for culinary purposes, and they are considered to possess a greater proportion of azote than any other tribe of plants; many of them are also possessed of considerable antiscorbatic properties, the result of acrid volatile principle very conspicuous in the Herbs Raddish and the Turnip; but in the case of the Seakale this is entirely dissipated by the process of blanching, which does not, however, diminish its diuretic and diaphoretic properties; the plant is, consequently, never used for culinary purposes unless when in a thoroughly blanched condition, and has in that state been long esteemed as a wholesome and delicious vegetable, and is said to have been known and used in this country at a period so remote as to give rise to the supposition that it was first produced from seed, and the plants very little, at all, from the original type; so that there is, I believe, only one variety in cultivation, and this is of course improved by culture. The plant is grown and blanched in various ways, and submits very readily to forcing at almost any period of the year.

In some localities on the southern coast of England the root of the plants growing in a wild state are during the winter, or as soon as the leaves have decayed, covered to the depth of a foot or more with sand, and a shingle or brickwork covering, which is excellent and thoroughly blanched but in the middle or end of March. In gardens a similar result is secured by growing the plants in lines at a distance of 4 feet, more or less, from each other, covering the roots in early spring with a depth of 6 or 8 inches of finely sifted cinder ashes or sand, and this may be covered with a portion of soil obtained by digging out a trench between the lines of plants; while to accelerate the production of Kale the trench should be filled with warm fermenting stable manure, which should be frequently turned and fresh material occasionally introduced in order to communicate a genial warmth to the soil, which will have the effect of exciting the plants into earlier growth. Where the natural soil is of a light dry character, the covering of sand or ashes may be dispensed with.

It has been said that the season of this excellent extends from Christmas to the end of April. Attempts, however, are frequently made to have it in at an earlier period than that just named, but this is accomplished at a considerable sacrifice, as it necessitates the commencement of forcing at a time when the crops are still in blossom, and the leaves of plants still green, so that such production is generally weak and of inferior quality. In order to have Kale fit for use at Christmas the plants should be introduced to heat about the last week of November, or not later than the first of the following month.

Various methods of forcing are resorted to, most of them being attended with similar success—such as filling pits in which Cucumbers or Melons have been grown during the summer with fresh manure, which should be well trodden down, and allowed to settle for a week at least, when 9 or 10 inches of any light common garden soil should be placed upon it, in which the roots should be planted as closely together as possible, and the temperature of the structure should be about 65°. In order to entirely exclude light, the roof should be covered with mats or Prigi Domino, and over which should be spread an additional covering of dry litter; or a hotbed may be formed of stable-yard manure in the usual manner, upon which soil should be placed as has been recommended, and the plants, after being carefully taken up, should be planted in this, and after being well watered to settle the soil about the roots, each plant or group of plants should be covered with an ordinary Seakale-pot or box, when all should be well covered up with light dry littery manure, taking the necessary care to prevent the heat produced from becoming too intense.

Seakale of good quality may also be expeditiously produced by potting the plants and placing them in a Mushroom-house, a propagating-pit, or in any similar structure where heat and moisture can be furnished and withheld. One of the best methods, however, of producing this esteemed vegetable in the greatest possible perfection at either an early or a late period of the year is to grow the plants in pits prepared expressly for the purpose. These pits should be about 6 feet in width and of any desired length. The walls should be formed of 9-inch brickwork, and several of the lower courses should be pigeon-holed, if forcing is intended to be accomplished by the use of fermenting materials, such as stable manure, tan, or

tree leaves. But much labour may be saved by using for this purpose hot-water pipes. The back wall of the pit should be about a foot higher than that of the front, and the aspect should be south or south-east. The walls should be protected by a plate of wood, and fixed in the plate of the back wall should be hooks or staples of iron, on which light but strong wood shutters should be hung when the process of forcing commences. The shutters will have the desired effect of entirely excluding light, and in order to more fully secure this condition they should be kept covered with straw or any littery material, so that the Kale is produced perfectly blanched, as well as being quite clean, without being in contact with any decaying or fermenting substance.

The pit may be more or less sunk in the ground, as may be desired, or as circumstances will permit, for should there be reason to apprehend the rise of water, great depth had better be avoided; it should, however, be constructed to contain at least 2 or 2½ feet of good light rich soil in which to plant the Kale, and under this, say 1½ foot of bricks or flints to surround and cover the hot-water pipes; and in order to have sufficient command of heat for a pit 6 feet wide, not less than three lengths of 4-inch pipes will be required: two lengths have been found to be insufficient for the purpose.

At a distance of 6 feet from each other, 4-inch cast-iron pipes should be placed vertically, the lower end resting upon the stratum of flints or bricks and over the hot-water pipes, and this will be found to give sufficient surface-heat, as 1 foot of space between the surface of the soil and the wood shutters will be enough.

A pit so constructed should have the shutters removed as soon as forcing is over, if the weather be sufficiently mild. The plants should have proper attention as regards watering when necessary, manuring, keeping clean, &c., when they will submit to moderate forcing for many years, and continue to have a good supply of Kale, and they can be readily replaced by young plants when this is found necessary.

Where Seakale is extensively grown for market purposes, and where land is of great value, it is, I believe, seldom forced in the soil where it grows. But in private establishments, where a moderate but continuous demand has to be met, this is the most universally adopted method; and it is only for an early supply that a portion of plants are taken up and forced in various structures, as has been already alluded to, and old plants are generally selected for the purpose.

Seakale is generally planted in beds about 4½ or 5 feet wide, each bed containing three lines of plants; and when about to be forced the ordinary Seakale-pots with loose tops or lids are placed upon them, and all are then surrounded and covered up with warm fermenting stable manure mixed with tree leaves, and it then becomes necessary to carefully guard against the fermenting material becoming too warm, which would be not unlikely to prove fatal to the plants, although they are capable of enduring very considerable amount of heat. An excess of it is sure to produce weak and inferior Kale, so that it is always advisable to thrust a few sticks into the material, and its temperature can be ascertained by withdrawing and feeling the same with the hand. Tree leaves are generally to be preferred to stable manure, as the heat they engender is more mild, equal, and lasting.

It is also better to grow and force the plants in lines than in beds, as in the latter case the plants in the central part of the beds are very liable to get over-heated. A plantation of Seakale plants should be formed in lines running if possible north and south at a distance of 2½ or 3 feet from each other; each alternate line should be lifted for the purpose of early forcing, and those remaining will of course be at the distance of 5 or 6 feet from each other, and the plants should be 2½ feet apart, so that each may have a pot placed over it, and be well covered up with tree leaves, and should be occasionally examined to ascertain the temperature, as well as to know when the Kale is fit to be cut.

Seakale plants may be successfully raised from seed and also from cuttings. The seed should be sown thinly, early in the month of March, either in lines or in beds about 4 feet wide, with 1-foot alleys between them. The soil should, if possible, be light but rich, deeply dug or trenched, but without manure; and

when the plants are large enough to handle they should be thinned out so as not to be closer than 6 inches from each other. The soil in which they are growing should be occasionally stirred up, so as to keep them free from weeds during the ensuing summer, and so treated they will be ready to plant out by the middle of the following March in soil which should be duly prepared, and where they are intended to be grown and forced. Before planting the small straggling roots should be neatly trimmed off the plants, leaving only the straight tap-root with the crown or bud at the top. The planting may be effected with a dibble or setting-stick, and should the weather be dry the plants should have one good watering, and will generally require no further care than merely keeping the soil free from weeds.

When it is intended to raise plants from cuttings, these should be formed from pieces of the roots of plants which have just been forced, selecting for the purpose pieces about 3 or 4 inches in length, with, if possible, a bud or eye at the top, but this condition is not absolutely necessary, as nearly every portion of the roots will form buds; and to induce them to do this they should be spread out thinly on the surface of the soil in any convenient situation, and covered with about 2 inches of light soil or sand, and by the middle or end of March most of the cuttings will be found to have formed several eyes or buds, all of which, excepting the top, strongest, or best placed, should be rubbed off; and they should then be planted out where they are intended to remain, and receive in all respects treatment similar to what has been recommended for seedling plants. P. Griev.

THE VEGETABLE PRODUCTS OF ASTERABAD, PERSIA.

A VERY interesting account of the produce of Asterabad, Persia, is embodied in a recent report to the Foreign Office. The whole trade of the province of Asterabad does not amount, it seems, to more than £160,000 a year, and yet the province teems with valuable fruits and other vegetable produce. With regard to the climate we read that there is a remarkable difference between that of the southern shores of the Caspian Sea and the plateau of Persia between which rises the elevated range of the Elburz; for while the latter is dry, these provinces are noted for their dampness, and their vegetation is quite tropical. Swampy forests cover the whole surface of the lowlands lying at the foot of the Elburz on its northern face, in which every description of fruit tree grows luxuriantly; thus Walnuts, Nuts, Pomgranates, Mulberries, Plums, Grapes, Apples, Pears, Hops, and various kinds of berries grow wild in the forests; their quality is necessarily inferior, but they afford ample subsistence to the poor, who are in consequence inclined to be indolent. In summer the vegetable gardens produce every kind of Melon and Cucumber, and the vast quantities of this crude fruit consumed by the lower classes generates various sorts of fever, which prevail between the months of July and October. Owing to the great abundance of water on the surface of the soil everywhere, Rice is grown very considerably, but the culture of the Malberry tree is what absorbs the greater part of the attention of the inhabitants. The extensive plantations of this tree to be seen all over the plains. The younger the trees are, the more prized is the leaf as food for the silkworm, and old trees are usually cut down to make room for new plantations.

Near the foot of the mountains Boxwood grows in abundance, particularly in the district of Tenckabon, in the province of Mazenderan. Upwards of £27,000 worth of this wood was purchased at Rostow last year by an English firm, of Liverpool, and the great profits made by the individuals have induced many people to engage in this trade this year. Box-wood was formerly cut down in large quantities in the mountainous regions of the Caucasus, but disputes having arisen as to the rightful ownership of the forests, the Russian Government has, within the last few years, prohibited its being cut; hence it has been sought for in these provinces. It is a wood that grows very slowly, and requires much time to attain the size required for the market. It is thus probable that a very few years will see the end for a time of this branch of trade in this part of Persia. Already, in Ghilan, it has become scarce, but vast forests of it are still to be found in Mazenderan. The Governor of Ghilan, with a view to making the Persian

Government proficit by this rising industry, has thought fit to obtain the Shah's sanction to prohibit the further cutting of this wood and *loupe* without a special permission, and this measure has given rise to great dissatisfaction both amongst the owners of Box-wood forests and those engaged in cutting and exporting this timber.

In the valley of Elburz, through which the Seffudrud runs from the plateau of Persia to the Caspian Sea, the Olive tree grows freely, and Olive oil of a very fair quality might be produced if proper presses were employed; as it is, the oil, extracted by the most primitive methods, is thick and unsuited for the table; it is principally used in the manufacture of soap. Oranges, Lemons, Mandarins, and all the various descriptions of this kind of fruit are plentiful. Unfortunately the water of 1874-75 destroyed many trees; the loss accruing to the inhabitants of Ghilan alone from this calamity is estimated at not less than £200,000. Tobacco of the quality grown on the shores of the Black Sea, and known under the name of Bofra, has been tried at Kesh, and the quality produced is not inferior to the original stock. The governor, Nasir-ul-Mulk, who is both enlightened and enterprising, has, at the suggestion of the British Consul, written to Constantinople for a large supply of *ranja* and *Leitch* seeds; and should these qualities, so famous in Turkey, be suitable to this climate, the growth of this plant may attain some importance in the course of time. Owing to the great similarity of the climate of these shores with that of the foot of the Himalayas, where a fair quality of Tea is produced, it has been supposed that this plant would succeed here, and Tea seed has been applied for from that part of India to try it. Unfortunately the person who had first suggested this idea, and who had made overtures to the Persian Government for the establishment of a Tea plantation in Ghilan, has been obliged to quit the country on account of ill-health, and this notion has apparently been abandoned.

HÆMANTHUS MULTIFLORUS AND ITS ALLIES.

MR. KEIT, the present Superintendent of the Botanic Garden at Durban, in Natal, has just forwarded to Kew a dried specimen—living plant to follow—of a very fine *Hæmanthus*, allied to the well-known *H. multiflorus*, of which we have already published, and named after the lady who discovered it, Mrs. Katherine Saunders. We had flowers of the same plant from Mr. Sanderson in 1869, but nothing more, and as it is still unnamed and undescribed I have pleasure in fulfilling Mr. Keit's request. As we now know much more about this group of species than has ever found its way into print, and they are of great horticultural interest, and there are no satisfactory descriptions in existence of the species already known, I propose at the same time to pass the whole group under review, and to describe two other new species which I have been for some time intending to publish.

This group of *Hæmanti*, of which three species are already published, is marked by its large thin leaves, comparatively narrow and fugitive bracts, and by its loose globose umbels of very numerous flowers, in which the segments of the perianth spread horizontally or even become reflexed when fully expanded—thus offering a decided contrast in habit to the three other groups, of which we may take *H. panicatus*, *H. carneus*, and *H. coccineus* as the type. It will be found characterised as a genus under the name of *Nerissa* in Salisbury's *Genera Plantarum*, p. 131, with a character drawn up from *H. multiflorus*, which was the only species with which Salisbury was acquainted.

As we know the species now, they stand as follows, including the three novelties:—

1. *H. multiflorus*, Martyn, Monog. com loone; Bot. Mag., t. 961 and 1995; Andr. Bot. Rep., t. 318; Bot. Lil., t. 204; Lodd. Bot. Cab., t. 912 and 918; Fiore des Serres, t. 32.—Bulb globose, 1½–3 inches in diameter, with a tuft of cylindrical root fibres, stoloniferous. Leaves 3–4, produced on a short spotted stem, contemporary with the flowers, sheathed lower down with many deltid root-furrow leaves; blade bright green, oblong acute, nearly a foot long, 3–4 inches broad when fully developed, narrowed gradually at the base to a short broad, flattened petiole, furnished with nine or twelve indistinct vertical ribs on each side of the midrib, which are connected by obscure cross bars about a line

apart, dying down in November or December. Scape arising from the bulb on one side of the leaf-stem, about 1 foot long, much spotted with purple, produced in April or May. Bracts of the spathe linguulate, 1½–2 inches long, green, flushed with red, soon withering and withering, the dense expanded globe umbel half a foot in diameter. Pedicels 1½–2 inches long, mixed with many linear bracts. Flowers as many as a hundred in one umbel; ovary oblong, ¼ inch long; perianth deep red; tube cylindrical, ½–¾ inch long; reflexing bright red segments, 1 inch long, 1½–2 inches long. Filaments bright red, erecto-patent, 15–18 lines long; anthers linear-oblong, versatile, ¼ inch long. Style bright red, protruded nearly a couple of inches from the perianth tube. Fruit a scarlet berry.

This has been cultivated in our greenhouses for more than 250 years, and is figured by Vallet in his *Jardin du Roy Henri Quatre*, which was published in 1608. The wild specimens which I have seen have been gathered at Sierra Leone by Borone, Barter, and others, and at Fernando Po by Barter, the latter at an elevation of 5000 feet above sea-level.

2. *H. abyssinicus*, Herb. Amarnyl., p. 228; Kunth, *Ven.*, pl. p. 587; *H. delagoensis*, Herb. Amarnyl., p. 228; *H. tenax*, Herb. in Bot. Mag., p. 589; Kunth, *Enum.*, vol. v., p. 587; *H. multicaulis*, A. Rich. Fl. Abyss., vol. ii., p. 312.—Habit entirely of *H. multicaulis*, the leaves being produced upon a separate stem after the flowers expand, and the scape lateral. Fully-developed leaves not seen. Bulb of the year globose, a couple of inches in diameter, with membranous segments; the old bulb represented by a short thick tube beneath it. Scape a foot or more long, much spotted in the lower half. Umbel very dense, reaching a diameter of 3–6 inches when fully expanded. Bracts of the spathe linear or lanceolate, 1½–2 inches long, fugacious. Pedicels ½–¾ inch long. Ovary globose, ½ inch long; tube cylindrical, ½–¾ inch long; reflexing linear segments, ¼ inch long. Filaments bright red, 1 inch long; anthers oblong, ½ inch long. Style protruded from the perianth tube 1½ inch.

Spread through Tropical Africa from Mozambique and Delagoa Bay (Forbes), to Zambesi Land (Kirk, Meller, Waller), Abyssinia (Salt, Quartin-Dillon), the White Nile country (Petherick), and Guinea (Barter, E. Vogel). It is obviously very near *H. multicaulis*, but I have never seen the fully developed leaves. According to Dr. Quartin-Dillon, its Abyssinian name is *Iamboba* ambassa, or lion flower, and the natives attach the bulbs to their garments as an amulet.

3. *H. rupestris*, Baker, n. sp.—Bulb of the year 1 inch thick, with many tunicated coats, the bulb of the previous year remaining attached at its base as a short firm tuber. Leaves on a special stem, lateral as regards the scape, not fully developed till after the flowers fade. Fully developed leaf with a petiole and membranous lamina each ½ foot long, the latter oblong, spotted, rather obtuse, 3–4 inches broad, rounded at the base, with indistinct vertical and transverse veins, the central main veins 1–¾ inch, and the transverse veins under half a line apart. Style slender, lateral, 1–1½ foot long. Umbel dense, 3–4 inches in diameter, bracted by 3–4 oblong-lanceolate reflexing leaves 1–¼ inch long. Pedicels ½–1 inch long. Ovary globose, ½ inch long; tube cylindrical, 1 inch long; perianth-segments narrow, linear, 1 inch long. Filaments as long as the perianth-segments; anthers oblong, ½ inch long. Style protruded from the perianth-tube 1 inch.

A native of rocky places near Nupe, in Guinea, discovered on the Niger Expedition of 1859 by Barter. It is close ally to *H. multicaulis*, but the umbel is not more than half as large; all the parts of the flower are smaller, and the leaf has a different vein and shape, and a petiole as long as the lamina.

4. *H. Katherina*, Baker, n. sp.—General habit entirely of *H. multicaulis*. Leaf-stem reaching a length of 1 foot, bearing 3–4 produced leaves crowded together with the flowers, with a petiole 2–3 inches long, and an oblong lamina 1 foot long, 4–5 inches broad, rounded at the base, and rounded at the point to a small cusp; main veins 9–10 on each side of the distinct costa, the central ones ½ inch apart, the transverse veins half a line apart, simple or anastomosing, both veins and veinlets very much more distinct than in *H. multicaulis*. Scape above 1 foot long, lateral as regards the leaf-stem. Umbel dense, 6–7 inches in diameter when expanded, bracted by 5–6 fugitive green spathe-valves 2 inches long. Pedicels ½–¾ inch long. Ovary oblong, ½ inch long; perianth-tube cylindrical, 1 inch long; segments lanceolate, reflexing, deep red, ½–¾ inch long. Filaments erecto-patent, above 1 inch long; anthers oblong, ½ inch long. Style protruded from the perianth-tube 1½ inch.

A native of Natal, discovered by Mrs. Saunders and Mr. Sanderson, as already stated. It differs strikingly from *H. multicaulis* in the veining of the leaf and in the proportion in length which the tube of the perianth bears to its segments.

5. *H. cinnabarinus*, Decaisne, in Van Houtte's *Flore des Serres*, tab. 1195; Hook. in Bot. Mag., t. 534; *Floral Mag.*, new series, t. 245.—Rootstock of the year hardly at all bulbous, that of the year before present at its base as a globe oblong above-tuber, from the top of which issue the coalescent cylindrical root-tubers, about four in a radial rosette, from the centre of which the scape springs, fully developed at the same time as the flowers, with a channelled petiole 6–8 inches long, and an oblong, subacute membranous lamina, 6–8 inches long, with a 3 ribs broad at the middle, which is narrowed gradually to the petiole; veins moderately distinct, those of the centre of the leaf ½ inch apart, the transverse veins 1–1½ line apart. Scape slender, about 1 foot long. Umbel 20–40 flowered, 3–4 inch in diameter when fully developed, bracted by 4–5 linguulate fugacious bracts about an inch long. Pedicels ½–1 inch long. Ovary globose, ½ inch long; perianth tube ½–¾ inch long; reflexing deep red lanceolate segment ½–¾ inch long. Filaments as long as the perianth segments; anthers oblong, ½ inch long. Style protruded about an inch from the perianth-tube.

Gathered by Mann at Ambas Bay, on the banks of the Bagroo River, and at an elevation of 4000 feet on the Cameroon Mountains. Easily to be distinguished from *H. multicaulis* by its long petiole, the segments which spring direct from the rootstock and by its central scape.

6. *H. rotularis*, Baker, n. sp.—Bulb of the year little thickened, that of the previous year remaining at its base in the form of a large, hard, oblong tuber. Leaves springing direct from the top of the root-stock, fully developed at the same time as the flowers, with a channelled petiole about 4 inches long and an oblong sub-acute membranous lamina 7–8 inches long, 3–4 inches broad at the middle, narrowed gradually to the base, and veinlets both very distinct, the central veins 1–½ inch apart, and the transverse veinlets above half a line apart. Scape central, slender, under a foot long. Umbel dense, about 4 inches in diameter when expanded, bracted by about half-a-dozen lanceolate bracts 1 inch long. Pedicels ½–¾ inch long. Ovary oblong, ½ inch long; perianth-tube cylindrical, ½ inch long; segment 1 inch long, twice as long as the tube. Filaments as long as the segments; anthers oblong, ½ inch long. Style protruded from the perianth-tube 1½ inch.

A native of the forests of Yomba, in Guinea, discovered by Barter in the Niger Expedition of 1859. It is close ally to *H. cinnabarinus*, from which it differs in the bracts and leaves.

The following key may help to show the general relationship of the species:—

Subgenus *NERISSA*.—Spathe of 5–6 fugitive valves. Segments of the perianth spreading widely when expanded.

Scape lateral. Leaves produced on a special stem.

Perianth-segments twice as long as the tube.

Expanded umbel 6–7 inches in diameter.

Perianth-segments lanceolate; anthers 1 inch long.

Perianth-segments linear; anthers ½ inch long.

Expanded umbel 3–4 inches in diameter.

Perianth-segments half as long as the tube.

Scape central. Leaves produced direct from root-stock.

Bracts shorter than the umbel.

Transverse veins not very close nor distinct.

Bracts as long as the umbel.

Transverse veins very close and distinct.

I have also seen two other species of the group in a state too incomplete to describe at present.

J. G. Baker.

Notices of Books.

Theorie des Gartenbaues, von Max Kolb, Inspektor am Königlichen Botanischen Garten zu München. (Theory of Horticulture, &c.) 1 vol., 8vo, 388 pp., with woodcuts. Ulmer, Stuttgart.

This is one of a series of volumes devoted to scientific horticulture in course of publication by the firm named above; and, as reasons seem to be given for its interest for horticulturalists of all countries. In the first place it is now nearly forty years since Lindley's celebrated work on this subject first appeared, and although its high character soon gained for it the position of a standard text-book wherever horticulture was practised, and caused it to be translated into

nearly all the principal languages of Europe, it has in some respects long been out of date, nevertheless it has never been replaced by any special work, and the scattered literature of the discoveries and researches of the last forty years is practically out the reach of all those having little leisure time, even if they are so fortunate as to have access to a good library.

The want of a work embodying the results of recent researches in horticulture, and embracing all the countries which have been using Lindley's book; and our author appears to have undertaken to satisfy this want for his own country at least. How far he has succeeded can better be proved by actual use of the book than by a hasty examination of its contents. The perusal of certain passages suggests the desirability of the compiler of a work of this nature having the co-operation of colleagues in other countries, especially in those countries whose literature is little known to him, in order to enable him to refer to it thoroughly; or otherwise there is a danger of his being too highly lined with the writer's nationality to become a generally accepted standard authority on the subject on which it treats, because in many cases he has to depend upon others for his information of what has been done abroad. This may be complete and trustworthy, or it may be imperfect and distorted. We shall presently give an illustration of our meaning; but let us first describe the plan and scope of the book before us. Following a short preface is a preliminary section, which embraces the history of the primary division and chapters, and the headings of each paragraph and reference to the pages where they commence. This occupies nearly eight pages, and is so complete that it compensates to some extent for the absence of an index; but an index in a work of this description is of inestimable service. The headings of the principal sections will give some idea of the scope and plan of the work, which opens with an introduction in which the importance of combining scientific knowledge with practical experience is insisted upon. The sections comprise the following points: history of the theory of vegetable nutrition; morphology of the cell and tissues; external organs; vital processes; nutrition; metals found in the ash of plants and their importance; plant-ash and soils; absorption of the nutrient substances; course of the substances taken up; assimilation and metastasis; products of assimilation; influence of light on plant life; heat and cold in their relations to vegetation; mould and subjacent rocks and formations; origin of soils; physical properties; absorption of nutrition from the soil; rotation of cultivated plants; condensation of gases by particles of soil; temperature of the soil; observations on some of the less important properties of the soil; moisture in the soil; climate and situation; plant diseases; the theory of compensation; of manuring; manures, natural and artificial. Many of these sections are divided into a dozen or score or more chapters and paragraphs, so it will be understood that with less than 400 pages of rather large print, some of the questions are very briefly discussed. Indeed, in some cases important and serious questions are assumed. However, brevity with perspicuity is of the first importance, and if the writer has sometimes sacrificed the latter, it is perhaps to those only who know nothing of the subject at starting. Sachs' *Text-Book of Botany*, of which an English edition exists, has been, as most be expected, very largely drawn upon; and a number of the cuts illustrating morphology are derived from this work. The chemistry of plant life is pretty fully discussed, even to the descriptions of the elements; and forty pages are devoted to the products of assimilation. We do not say this is too much, but more space, in our opinion, should have been given to experimental investigation directly bearing upon a rational theory of horticulture.

Of course it would be impossible to describe in detail the mode of conducting every experiment that has led to an important discovery, or furnished some useful fact of interest to the practical cultivator of plants; but something more than an ascertained fact or a generalisation is required by the beginner to give him an interest in the subject. This brings us to the explanation of some of our reasons for saying that it has been done in foreign countries. In the chapter on the "mineral theory" the author quotes the late Baron von Liebig's distorted and perille objections to the distinctions recognised by Dr. J. B. Lawes between the artificial manures employed in his experiments, because for convenience he restricted the term mineral to the incombustible or ash-constituents. In quoting

this, and in what he says respecting the theory altogether, Kolb appears to be quite ignorant of the magnitude and importance of the experiments which have been carried on at Rothamsted by Dr. Lawes for about thirty-five years. In spite of his grand discoveries Liebig was wrong in his original theory of the nutrition of plants, and it was the experiments at Rothamsted that proved its fallacy. Liebig held that the presence of ammonia in the manures was unnecessary; this was disputed by Dr. Lawes, and his experiments, which are still being continued, conclusively prove in all cases that in the absence of ammonia from the manures the produce is very little above that of the unmanured plots. In one of his early works, Liebig maintained "that the supply of ammonia is unnecessary for most of our cultivated plants, and that it may be even superfluous, if only the soil contain a sufficient supply of the mineral food of plants, when

the inorganic manures furnished the mineral substances only. In this way the practical man Lawes endeavoured to explain the doctrine of vegetable nutrition, but Liebig, nevertheless, held fast to his views, combated this theory, and sought proofs of his own. Still he was unable to account for the failure of his manures. Liebig contended that the atmosphere was sufficiently rich in ammonia, that plants could easily obtain all they required, whilst Lawes considered the addition of ammonia as indispensable necessary. Moreover, if Lawes' theory were correct, it would be impossible to maintain the ever-decreasing fertility of a field, for in no case could ammonia have been applied in quantity at an outlay that would permit of its being employed as manure. Finally Liebig succeeded in finding the cause of the inefficiency of his artificially compounded manure. After submitting step by step all the new facts to a

he treats of the theory of manuring. In fact, in our opinion, too little is said respecting the practical application of theoretical knowledge, and the apparent contradictions which practice furnishes. Theories dogmatically set forth, without any saving clauses, and without a careful examination of the various modifying conditions to which they may be subjected, do little good, because it frequently ends in their being altogether rejected. Had our author been aware of the results of the numerous series of experiments carried on at Rothamsted, he would have perceived the necessity of giving some of them, even if he could not accept them as facts himself. Thus, for instance, it is found that field results with Barley, as well as with Wheat, grown for twenty years in succession on the same land, are entirely inconsistent with the mineral theory as first put forward by Liebig and explained by Kolb. Then with regard to the general

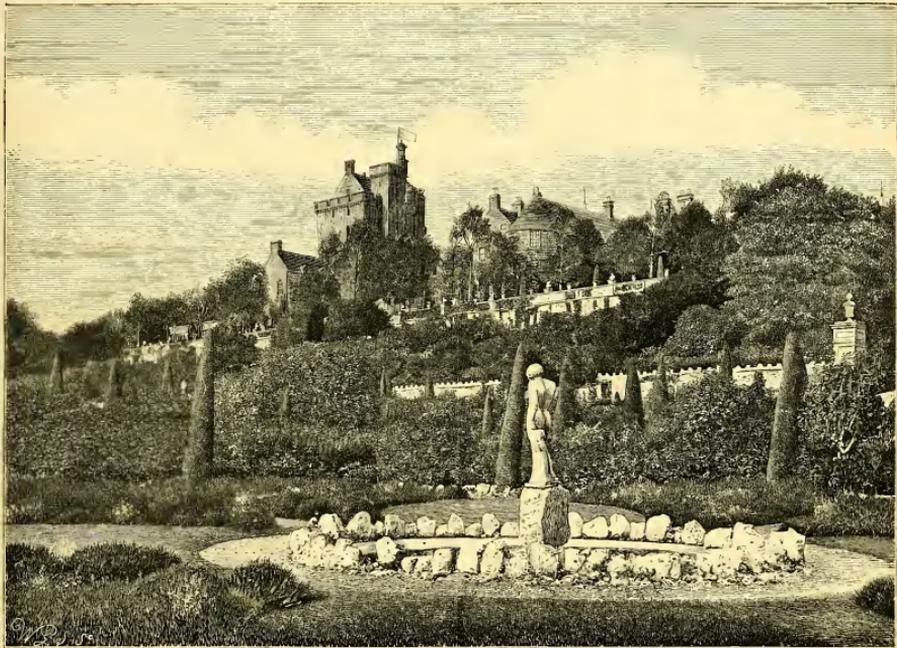


FIG. 106.—VIEW IN THE FLOWER GARDEN AT DRUMMOND CASTLE. (SEE P. 660.)

the ammonia required for their development will be furnished by the atmosphere."

Subsequently he changed his opinion on this point and sought to cover it by claiming ammonia as included as a mineral element in his mineral theory. Strictly speaking, of course, ammonia salts are mineral substances, but Baron Liebig distinguished between mineral manures and ammonia, as the above quotation shows. But all this has been so fully explained in several of the reports on their experiments, drawn up by Messrs. Lawes and Gilbert, that it is sufficient to mention it here. Here we quote Kolb:—"As Lawes' investigations and observations led him to the conclusion that ammonia and phosphates are the favourable manures, he set up a theory which culminated in the proposition that manures should be divided into two classes, organic and inorganic. The organic, to which ammonia was referred, were those which by decomposition supplied the plants with carbonic acid, water and nitrogen; whilst

careful and searching trial, he discovered the law of the power of absorption by the soil of plant nourishment. As already observed, Liebig had thought that the alkalies must be offered in an insoluble form, or they would be carried away by water into lower layers of soil out of the reach of most plants. But, on the contrary, the soil possesses the highly remarkable property of being able to fix chemically and physically all the elements requisite for vegetable nutrition. Let any one who would obtain an insight of this fact try the simple experiment of allowing water mixed with a nutrient solution to percolate through a layer of earth, and the water which has passed through will be almost pure, whilst the nutrient substances will be held fast by the particles of soil." From the foregoing extract it will be seen that the author is imperfectly acquainted with the present position of the theory of vegetable nutrition, not only in this country, but also as embodied in the later views of his eminent countryman. This appears again further on, where

statement that land manured with farmyard dung only will gradually deteriorate and finally become exhausted. At Rothamsted the average annual crop of Barley for twenty years on the same land, manured with farmyard dung, at the rate of 14 tons per acre, is not far short of 50 bushels of grain (or more if reckoned at only 52 lb. per bushel) and 30 cwt. of straw. It is a noteworthy fact, too, that with this kind of manuring there has been the greatest increase of produce, and especially of corn, over the second, as compared with the first ten years. It is true that mineral and nitrogenous manures together, gave for twenty years in succession on the same land, rather more of both corn and straw than farmyard manure. On the other hand, mineral manures alone gave very poor crops, and the quantity fell off considerably during the later years, whereas with nitrogenous manures alone there was a much higher yield, less decline in the later years, and, fair, though not full, crops were obtained

for twenty years in succession. Finally, with regard to the particles of soil fixing the elements required as food by plants, this statement needs qualifying, as we are taught by an examination of the analyses of the drainage water collected at Rothamsted. Now, although we have considered it our duty to expose what we look upon as the weak point in this new *Theory of Horticulture*, we have much pleasure in saying that in most other respects we believe it will be found to meet the requirements of practical men. *W. B. Hensley.*

Apiary.

LIGURIAN, OR ITALIAN BEES.—One great obstacle in keeping these bees is the difficulty of preserving them pure. I prefer either to have pure black or pure Italian stocks; hybrids, if my limited experience is worth anything, are exceedingly irascible insects, but the pure-bred bees I consider very peaceable. The only method to keep the breed select is to have the apiary at least 3 miles away from the black bees; and there are many districts where this could be done with ease.

I have seen it stated on good authority that the Ligurians are longer lived than the common bees; if this be so, it will not only account for the stronger stocks, but for their excellent swarming properties. It is generally admitted that as a rule they swarm earlier and later than the black stocks. A friend assures me his hybrid stocks even send out good swarms three weeks in advance of the other bees. I can generally promise swarms at least a fortnight before my neighbours, but on the other hand I am compelled to watch them most jealously towards the close of the honey harvest, when swarms issue, as they frequently do quite unexpectedly. To prevent my stocks becoming too weak from this over-swarming propensity, I again return them back into the hive. This, however, should be regarded as a great point in their favour. I am quite aware there are some writers who look upon the Italians as mere novelties, which like other new things will soon wear out, and under this poor plea they declare they do not swarm earlier or more frequently. I have often heard it said, "the proof of the pudding is in the eating." I think a little observation, side by side with our common bees, will convince any one that they are much superior in every respect.

Another point is worthy of notice;—they are much less sensitive to cold and damp weather. I cannot speak so clearly upon this subject, though Langstroth and Neighbour, after many and very careful experiments, both unobscuringly believe them to be far harder. In exposed districts they would be more profitable, from the fact of their being less sensitive to the variable weather we often experience.

It is not a difficult thing to Italianise the whole apiary, after a pure queen is once secured, though I would not recommend any bee-keeper to be over anxious to do this, unless his apiary is isolated and at least a considerable distance away from any stand tenanted by black stocks.

Having stated these few points in their favour, viz., their incessant activity, constant diligence in making the most of every favourable moment, excellent swarming qualities, peaceable behaviour, and their being less sensitive to cold, &c.—this is sufficient to induce every enthusiastic bee-keeper to give them a fair trial—I may now be allowed to say a few words, not exactly in their favour, for I must in justice confess they are determined thieves and burglars. About the first instance I ever received about this was during the first autumn they were in the neighbourhood.

A friendly bee-keeper came hastily one day to request my attendance in her garden. Upon reaching her bee-hive I discovered a terrible slaughter going on.

Such a fierce battle I never witnessed before or since, for I speak justly when I say many thousands of the common bees lay strewn on the ground dead and dying, whilst in the air they closely resembled a swarm just after emerging from the hive. Making inquiries, I learned she had most injudiciously been feeding her stock with liquid sugar, some of which had been spilled over her straw hives. This had naturally excited her own stocks, and in the end led to the robbery and consequent slaughter. For a few minutes I could do nothing to stop the fray, for my friend caused me to laugh immoderately by seeing her excitedly dancing, and exclaiming "Oh! the yellow races. Oh! the dirty wasps. Wasps always live by thieving!" In a

short time I succeeded in diminishing the crowd of combatants by closing up the entrance to all the hives, leaving only room sufficient for one to pass at a time. When quietude was restored in the evening we found two stocks out of the three completely depopulated—certainly not a hundred bees remained alive. This is scarcely credible when I assure the reader that the Ligurians had come a distance of half a mile, and had finished their task most thoroughly in, perhaps, six hours, for a very little honey could be found in the two empty hives after the fight.

I am sorry, after giving them all the praise I think they deserve, to give them so bad a character to finish up. Where a mixed apiary is kept, it will not please to be always in fear of a war coming on at any moment, though if the hives have a small entrance it is the only and best protection that can be given them; generally, if the stocks are strong, they will take care to jealously guard their treasure.

In conclusion, I may be permitted to give a short history of this bee, taken from M. Hermann's pamphlet.

"The yellow Italian Alp bee is a mountain insect. It is found between two mountain chains to the right and left of Lombardy and the Rhaetian Alps, comprising the whole territory of Tessins, Veltin, and South Graubund. It thrives up to the height of 4500 feet above the level of the sea, and appears to prefer the northern climate to the warmer, for in the South of Italy it is not found. The farther one goes from the Alps the less handsome they are found, as, for example, in Nice, until they are entirely lost in lower Italy in the black species. We must, therefore, look for the original in Switzerland, and we can call them with as much right Apis helvetica, as the Genoese call them Apis ligustica. Some learned men have called them Ligurian bees, but that name has neither historical nor geographical claim, and not one bee cultivator of the whole district of the Italian Alp bee knows what kind of insect Ligurian bees are. The Alps are their native country, therefore they are called yellow Alp bee, or tamed house bees, in contradistinction to the black European bees, which we might call common forest bees, and which on the slightest touch fly like lightning into your face.

"The Italian yellow bee differs from the common black bee in its longer, more slender form, and light chrome-yellow colour, with light brimstone-coloured wings, and two orange-red bands, each $\frac{1}{2}$ inch wide. Working bees as well as drones have this mark. The drones are further distinguished by the bands being scalloped like the spotted water serpent, and obtain an astonishing size, almost half as large again as the black drones. The queen has the same marks as the black queen, but is much more conspicuous and lighter; she is much larger than the black queen, and easy to be singled out of the swarm, on account of her remarkable bodily size and light colour. The bees are almost transparent when the sun shines on them.

"This race has nothing in common with the black bees, which can be instantly seen by their ways and manner of building. The cells of the Italian bees are considerably deeper and broader than those of the black bees. Fifteen cells of the Italians are as broad as sixteen cells of black kind."

Dzierzon says: "I am so firmly convinced that the Italian bee is the *ne plus ultra* in beauty, good nature, industry, and ability to defend herself, that for this reason I would exchange her for no other. That she may be maintained thriving and pure in our climate is manifested by thirteen years' experience, during which she has been improved by careful breeding."

I hope the day is not far distant when the Italian bee will be more generally known, when I am satisfied it will maintain its position. *R.*

Natural History.

GOLD FISH.—I bought in the Bayswater Road yesterday some gold fish about 2 inches long. My vendor assured me that they would always remain under 3 inches. They were from Japan. Is he justified in so pronouncing? It tells much for the sense of the present generation that this large and respectable shop, containing solely aquaria and similar things, should be able to exist so far west as Bayswater, near Queen's Road. *East Somerset, Winscombe, May 19.*

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Specimen hard-wooded plants flowering during the coming month will require slight shade in the middle of the day, not only to prolong the duration of their bloom, but to preserve the colour of the flowers. Even such subjects as *Aphelexis* and *Phœnochaia*, if fully exposed to the sun for a few days, take on a bleached appearance, and it is worth while to keep them in good condition as long as we can, even when only required for ordinary decorative purposes. All plants that have done blooming, and that seed to any great extent, should, immediately the flowers are faded, be picked over before the seeds are formed. It is no uncommon occurrence to see such things as *Acrostyllum venosum*, *Episcia*, *Eriostemon*, *Acrostyllum venosum*, *Episcia*, *Eriostemon*, *Acrostyllum venosum*, *Episcia*, *Eriostemon*, &c., left for weeks after blooming expending their energies in the useless production of seeds, where every day so lost is a serious drawback. *Aczales* differ from many plants in the time at which they require shade, inasmuch as they rarely the slightest movement of the roots until after flowering, although if in good condition they will have made 2 or 3 inches of young growth, and as it is unadvisable to stop them before root-action has fairly commenced, the time of potting must be regulated by this. Where, as in most places, they are to be in flower to form a succession, the potting will need to be done at different times. Those that bloomed a few weeks ago and want more root-room should now be potted in larger pots, and have got to starting like the size they are required do not need repotting so often as many things, as they can be induced to make strong growth by the assistance of manual stimulants during the growing season, yet it is not well to let the roots be kept on growing from last autumn in a little warmth, many will have their pots now very full of roots; and if such receive a moderate shift at once, and are kept in a warm moist atmosphere, there is yet plenty of room for them to make considerably more growth. In the winter season, when the plants are growing, such as those under consideration, there is often a great mistake made in their early stages by the shoots being stopped with the intention of producing a bushy habit, which would be much better deferred until the ground has been prepared for the specimen on a larger scale, by confining the plants to fewer branches, keeping them more open in the centre. Plants so treated will live much longer than such a bushy habit, by persistent stopping, until a fully furnished specimen has been obtained at more than a fourth the size they are required to attain. We frequently hear objection taken to any bending or twisting of the shoots of these and other hard-wooded subjects, on the plea that it gives the plants an unnatural appearance, and that the young shoots are not in the early stages of the plant's growth bent down near the base all the art of the cultivator can never afterwards maintain equal strength and blooming capabilities betwixt the base and top. It is through this cause that three-fourths of the hard-wooded pot plants we see are much weaker at the bottom than the top, and ultimately become bare and naked; for if the strongest natural most vigorous branches are allowed to hold an erect position up to the top of the plant, no amount of bending or twisting will prevent them drawing more their share of the sap, and in this way starving the weaker and lower shoots. A half or full-sized specimen plants that are in a healthy condition, yet produce but a great number of shoots, may be improved by at this time thinning-out from one third to one-half of the weakest; those that remain will be thereby strengthened; at the same time the leaves will get more light, and be correspondingly stouter in substance, and better calculated to perform their allotted functions, many fewer falling off in the autumn. If any trace of thrips or red-spider exists they will now increase apace unless means are taken by dipping with spraying with tobacco-water or ink, by their destruction. Wherever *Aczales* are expected to grow and flower in the way they are capable of, I must again urge the necessity of keeping these two most pernicious insects completely under. The work of insects are unsatisfactory in condition so often complained of with *Azaleas* in the open, the majority of cases owes its existence to the injury done to the leaves by these insects. A daily free use of the syringe, with plenty of moisture in the atmosphere, and never allowing the plants to wither, will get rid of the red spider at the root, are amongst the best means of keeping them down. Both old and young plants that are now making growth, will be benefited by the application of Standen's manure, which, after trying every thing I have heard recommended in the shape of

liquid or solid stimulants, I have found to be unequalled for these Azaleas. *T. Baines.*

ORCHIDS.—That the plants in these houses may now make and perfect all the increasing growth it is destined to, they will be found to require, as usual, to increase the temperatures during the night and early morning to the maximum readings they should have at any time. The length of daylight also being now nearly at its greatest, it will be necessary to draw the curtains together, and to command so that with increasing heat and moisture and a well-regulated atmosphere, the young growths as they push up may be assisted, and thus develop the strength and vigour which is apt to be only, as it were, partially developed in these houses. In the case of the various divisions when all are treated in a regular, and what may be described as the usual and ordinary, method; there are times, however, when for particular exhibitions, or from causes of a special nature, some few plants may be required at an earlier period than that in which they would come under the usual manner of treatment. When such is the case it will be necessary to take them from the beds in the day-time, and to place them in one where the temperature is a few degrees warmer, and where during the day 10° to 15° of extra heat is given; sometimes, however, it happens that a few plants from the East-India-house require a little sooner; if these, therefore, can be stood in a house of small dimensions by themselves, and treated to a higher range of temperature, it will be found that such a course is much more satisfactory and safe than to subject the whole of the plants in the house to a cooler heat, that the extra heat may be brought on just a little sooner. The night, or rather early morning temperatures, must now be as nearly as follows:—East-India-house, 70°; Dendrobium-house, 55° to 70°; Cattleya-house, 65°; Odontoglossum-house, 60° to 65°. The houses which left for the night must be several degrees above these numbers, the temperatures gradually falling to those just stated; and the fire in the morning must then be put on so that the heat may be advanced 1° or 2° in the day to be bright and clear, several degrees extra by sun-heat must also be permitted. Thus with a healthy and brisk-growing temperature the plants will come on in a healthy and flourishing condition. At the time of writing (May 21) the plants which keep the first rank are, in the order in which they stand, the following:—*Phajoloba*, what of plants, but with a keen cutting north-east wind, so different to what is expected at this period of the year, one must take account of what the outer circumstances and weather is, and use all precautions that can be made to prevent the plants from being overdone by making rapid growth, broad leaves of a deep shining green indicating a good and vigorous action at the roots. Give these now plenty of water at the roots, and about once a week treating them to some liquid manure occasionally sprinkling them overhead with clear tepid water. The *Masdevallias*—*Veitchii*, *Lindleyi*, *Harrayana*, &c., will now be ablaze with their singularly formed and richly coloured flowers. It is surprising and also very pleasing to notice the distinct markings that are to be found among them, and when one of unusual richness of colour is obtained it is much to be preferred to those of a lighter and therefore less striking colour. *M. Harrayana* is especially likely to be met with where the shade and shape are so dissimilar that one feels almost inclined to think they should be grown under distinct names. The singular *Restrepia antennaria*, the flowers of which, both in colour and form, bear a striking resemblance to a beetle or fly, though it is possible in every collection where *Masdevallias* are grown, for the treatment required for the one suits the other exactly. The short spike of this should not be cut off, for, like *M. tovarensis*, it will push out flowers the second year, and thus add to the number of blooms the plant is capable of producing. Give these now plenty of water at the roots, air at every favourable opportunity, and carefully protect them from the direct rays of the sun. *W. Swan, Fallowfield.*

FRUIT HOUSES.

PINES.—The spring-started plants which have been placed in fruiting pots, so that the roots be in a satisfactory state, be making growth very freely. To ensure its being of a sturdy robust habit the plants should be placed about 2 feet apart every way, and common every-day requirements should be attended to, such as if possible to keep the plants in a moderate degree of air-heat about the plants up to their minimum point of 85°, and close up finally for the day with a moderate degree of sun-heat in the forenoon. If, on the other hand, the weather be very hot, the plants should be content with about 65° at night and 70° in the daytime; under these circumstances such a variation in temperature will not be injurious if the heat at the roots is kept uniformly from 80° to 85°. In the case of Queen plants, these degrees of heat being established for the base of the pots; many vexatious disappointments in the way of defective fruit would undoubtedly be avoided if due attention was paid to this

important matter. In the fruiting department lack of that indispensable element—sunshine—with its natural consequences, will be the means of retarding in some degree the ripening of forward fruits. It will be necessary, however, to use artificial means commensurate with the purpose of about 75° to 80° constantly, and in proportion to the supply of fire-heat a corresponding amount of moisture should be applied under any circumstances. Lightly dew the plants overhead with clear tepid water whenever the axis of the fruit is visible, and in the case of the Queen plants, the suckers are very apt to disturb the erect position of the fruit; this matter should be seen to and obviated by means of a small stake, as nothing is more objectionable to its appearance than a one-sided curve of the fruit. In the case of the Queen plants, the base of the crown should be removed as soon as they appear, and also any superfluous suckers beyond the one fruit kept for stock. Plants which are swelling off the roots freely will need much care in regard to watering. This matter should be managed by a practised hand, as water should be given copiously whenever it is required, mixing with it some stimulating agent, and applying it at the same temperature as advised for the base of the plants. In the case of the Queen plants, shade should be taken of solar heat to keep the temperature about the plants at its maximum point, 90° to 95°. Close up the house with it at 85° or 90°, and at all times when there is a prospect of a sunny day slightly open the shut botoms in the morning. *G. T. Miller, Wycombe Abbev.*

ORCHARD HOUSE.—Fruit trees in the unheated orchard-house will now be seen to be in a satisfactory state for some years, and up to the present time there is every appearance of a continuation of dark, cold, and sunny weather. Where root-action is good, and the earliest Apricots and Peaches are swelling kindly, disbudbing and pinching of the fruit may be proceeded with, and where the young fruit makes a stand when they have reached the size of horse-beans, thinning had better be deferred, as it is more than probable that many of them are imperfectly fertilised, and will, as a matter of course, be liable to fall. The use of the syringe may also be regulated by external conditions, particularly in the afternoon, when the foliage should be kept dry, as we may yet have a repetition of the 5th inst., when the thermometer marked 14° of frost. Let all be managed in the most judicious manner with tepid water. Ventilate with care on the south or west side, and if the sun does shine endeavour to raise the temperature 10° to 15° by closing early. All trees, whether in pots or planted out, may now be planted in the ground, but the soil must consist of rotten dung, old turf, and lime rubbish, thoroughly mixed and laid on lightly. For the borders half-decayed manure is best, as it absorbs and holds the water in, which will be necessary until we have a change to milder weather. Hand-pick grubs from Apricots, Plums, and Cherries. Dress Peaches and Nectarines with Pooley's tobacco-powder for the destruction of black or brown fly, and fumigate with tobacco-paper for the ordinary green aphid. *W. Coleman.*

CUCUMBERS.—With the atmosphere constantly charged with thick black vapour sufficiently dense to veil the earth from the influence of the sun, accompanied by a keen wind from the north-east, attention to the fires is as important as it was in December, and in proportion to the amount of fire-heat so must be the amount of plants to fall bearing, particularly in a free growing state and clear of red spider and thrips, which spread so fast at this season if left only for a few days in undisturbed possession. Keep the growths thin and orderly by going over the house at least twice a week. Remove the stems and old leaves on which the enemy lurks, at each dressing. Syringe occasionally late in the evening with a solution of Gishurst Compound, half an ounce to the gallon of water. Give plentiful supplies of liquid manure to plants that fall bearing, particularly if growing in pots, and sprinkle the flowers at night with the same, the ammonia from which will greatly stimulate the young growths, and so enable the plants to distance their insect enemies. If a steady supply of fine straight fruit is the object, over-cropping must not be allowed, neither must the fruits hang too long on the Vines. Shade as little as possible, providing the young fruits do not get scorched by the sun; in some houses this may be very troublesome, as it mars the appearance, and so affects the value of the fruit. The best remedy is early ventilation with very slight shading until condensed moisture has passed away. Make fresh sowings of the best sorts, as soon as the weather is so far advanced as to be raised about this time soon come into bearing, are more pleasing to the eye, and produce much finer fruit than those which have passed through a dreary spring. Plants in frames must be kept in healthy growth by

regular attention to the linings and covering at night. Let the supply of moisture be regulated by the weather, and keep rather on the dry side until it becomes more genial. *W. Coleman.*

KITCHEN GARDEN.

In the general department constant attention must be given to the complete stirring of the surface amongst all advancing crops, and for the final earthing up is one of the greatest aids to successful cultivation which the kitchen gardener can put in force, for by it not only may the incipient weeds be kept in check, but by the breaking up of the surface the soil is exposed to the beneficial influence of the sun and air, and a much more vigorous growth results. As a rule I do not hold with mounding-up where it can be avoided. Many of the root crops are ready to be thinned out, and attention to the plants which are ready, and should be thinned out to 9 inches apart, possible vacancies being filled by transplanting. Turnips on warm borders are also progressing well, and must be thinned to 6 inches. The earliest sown Early Horn and French Forcing Carrots may stand at 4 inches apart, and in all these crops, either during the process of thinning out or after it is finished, the ground must be thoroughly disturbed, taking care to leave no footmarks. The surface soil of the beds of spring-planted Cabbages will require to be loosened up either with a three-pronged tormentor or pricked over with a steel fork. I am a great advocate for the latter tool, as, although taking a trifle more time, it makes neater and more effective work. The final earthing up of Potatoes will now be over, and the final earthing up, taking care to leave the ridges with broad tops. The principal crops of Broccoli and Cauliflower for autumn and early winter use should now be got in at once. The Waltheiren variety will require to be sown with importance, as, generally comes in first and by seasonal plantings gives a continuous supply until the advent of frost, when it is no longer to be depended upon; and here it is that Veitch's New Self-Protecting Autumn and Winter Broccoli will be of importance, as its habit of growth it requires a sort of some severity to reach the young heads. Deane's Snowball Cauliflower is a most excellent auxiliary to the early supply. Veitch's Autumn Cauliflower, a grand sort not to be despised, will not, having a protecting habit, growth requires to be watched and protected in case of early morning frosts in the autumn; and to complete the list, Snow's Winter White when true will come in about Christmas, and in mild weather carry on a good crop, and will be of great value, as it will grand force at command the only obstacle to a supply of Broccoli all the year round is the want of sufficient manual labour, or space, and proper conveniences for storing during the winter months. Now is a good time to get in the sowing of the Peas, and to sow the crows, taking care also to cut back all crows which are throwing up flower.

No delay must now take place in planting out Tomatoes in any vacant spaces in the garden, either with an east, west, or south aspect; Capicorns and Chillies, on the contrary, must be planted at the foot of a south wall in the most sheltered parts of the garden, as also must Bush and Sweet Basil. Early spring Cauliflowers will be much benefited by liberal applications of liquid manure at weekly intervals. If not already planted, a row or two of the earliest Celery should be got in at once for very early culture purposes, and the trenches intended for the main crop should be marked out at once, and the soil thrown out on each side, so that spaces between may be planted with Lettuce or Early York or Little Pixie Cabbages, a lot of which will come off before the final earthing of the Celery. The richest and fattest dung which can be secured will be best for the purpose, and the soil for the main crop to be got in early next month. The late sowings of the same will now be ready, and should be pricked out at once. Frequent sowings, thinnings, and transplanting of Lettuce are requisite to keep a good supply, as also of the various sorts of water in dry weather. In the matter of blanching also it is best to tie up a few at a time when they are quite dry. See also that they are free from aphides, which are often to be met with on them at this season. The sowing of Radishes and small saladings at frequent intervals must not be omitted. Radishes come very tender, crisp, and succulent when watered in the early morning when the sun is shining hot upon them. Sow a pint of the best of West's Golden Wonder, and a pint of the best of the new variety, the Earl of Arundel's Ultra, British Queen, and Knight's Tail Marrow, must not be omitted. Advancing crops must have the necessary attention paid to stirring the surface of the soil, watering, mulching, and staking such as are forward, and to become watered and staked for the time. I am obliged to recommend particular attention to planting out the main crop of Brussels Sprouts in well prepared ground, giving them plenty of room, *John Cox, Redfern.*

THE
Gardeners' Chronicle.

SATURDAY, MAY 26, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, May 28 { Sale of Stove and Greenhouse Plants by
Messrs. Arlingtall & Hoad, at Old Traf-
ford, Manchester.
FRIDAY, June 1 { Opening of Mr. Anthony Waterer's exhibition
of Rhododendrons, &c., at Regent's Park.

SOME letters which have lately appeared in our columns draw attention once more to a subject often alluded to by us—the HIGHER EDUCATION OF GARDENERS. There

insularity to consider as in many respects unsuitable for adoption here. There is no country in the world where practical gardening is better carried out than in our own. That will be readily admitted. At the same time it is equally indisputable that in no country does the well educated, well trained gardener hold socially so low a position as he does here. Where, for instance, would it be possible for any well-trained gardener—a man who has worked his way up from the position of crock-boy to that of head gardener—to be obliged on occasion to be beholden to the nurserymen for a slender pittance, while he patiently waits, often for months, sometimes for years, for something to turn up. Can this be right? On the one hand it condemns a man whose attain-

most beneficial and engaging amusement for those of lesser means, it is obvious that neither to Government aid, nor to private aid, can we look for those means and appliances which are requisite to lift the practitioners of horticulture to a position commensurate with the higher requirements of the art. So long, too, as our horticultural societies exert themselves almost exclusively to conciliate the good-will of the fashionable idlers of the metropolis and other large towns, and promote flower shows as if they were the be-all and end-all of horticulture, so long will it be vain to look to them for substantial advance in the science and practice of horticulture. Far be it from us to undervalue gardening, either as a recreation or as a means of providing for the luxu-



FIG. 107.—THE FLOWER GARDEN AT DRUMMOND CASTLE.

is assuredly no country where horticulture forms a more important branch of enterprise, whether commercial or æsthetic, than in our own—we are afraid we must add, there are few where the education of its practitioners is less cared for than in our own. In Germany, in France, in Belgium, in America, the provision for the higher education in all branches of knowledge required by the agriculturist, the forester, and the horticulturist, is far in excess of what is provided here. This may be one result of the less paternal system of government under which we live—a system no one would wish to change. At the same time, daily experience shows us that we might do well to imitate, in such fashion as is most consistent with our national habits, the best features of some of those countries which we are apt in our

ments justify a better fate, to labour at a common labourer's wages; on the other it keeps up a system of patronage, which may be injurious alike to the self-respect of the workman, and the interests of his future employer. Under existing circumstances, neither the workman, nor the nurseryman are to blame for this. They are obliged to conform to the system as it is, and it is not to either of them that we can fairly look to initiate a better one. To what quarters, then, can we look for improvement in this particular? It is not consonant with our habits to look to the Government for aid—we are far more disposed to look to private enterprise and individual initiative in these matters. But considering that gardening is chiefly looked on as a means of subserving the luxurious requirements of the wealthy, or as providing a

rious tastes of the wealthy. We should be false to our creed and our profession if we did anything of the kind. We simply plead that Horticulture has beyond this a higher duty to perform. It has to supply the actual physical needs of mankind, it has to minister to their bodily welfare, it has also to sweeten their toil, to lift them up who are floundering amongst the sordid cares of every-day life, to recreate them mentally and bodily. It is the parent of agriculture, and its business is to foster and promote the cultivation in the best and most suitable manner, in all climates and under all circumstances, of all those plants which minister to the needs of man, whether for food, for clothing, for medicine, for all the manifold uses which bodily comfort and mental improvement demand. Looked at from this point of view,

will any one say that the means at present available in this country for the education of gardeners are sufficient? Gardeners themselves are apt, when these questions are broached, and when a higher education is suggested, to ask, "Will it pay?" Our reply to this has in part been already given. Does it pay to remain as you are? A rank and file of ordinary gardeners there must ever be, and these cannot expect the prizes of the profession, though they may participate in the advantages which must accrue from the general advance of the whole body. And this general advance cannot be expected unless the working power of the mass be increased, and this cannot be, unless a more general and a higher system of education prevail. Does it pay?

themselves, is not larger than in the much larger class who have not enjoyed even such advantages as have hitherto been offered. The letter of Dr. HOOKER in our last issue is eminently suggestive from this point of view, but the education of the gardener is, under present circumstances, only a very subsidiary part of the work done at Kew. Much is done there in a quiet way, but it is done of free goodwill for the most part, not as a part of a regular system. If it were discontinued to-morrow no one would have a right to complain. Whether the plan now followed at Kew could be developed into something more important, is not a question we care to enter upon at present. We would simply point out once again the urgent necessity that exists for

preserve their vitality. For many years Dr. CASPARY has made the Nymphæaceæ, or rather the genus *Nymphaea*, his special study, and it has been his object to cultivate as many forms as possible in order to test the value of characters which can only be imperfectly seen and appreciated in dried specimens. In his endeavours to introduce different species he has gained some experience in the conveyance of their seeds which may prove useful to some of our readers. Sent dry from the tropics, and exposed to great heat on the journey, they are almost certain to lose the power of germinating; and sent in water they are quite certain to rot. Dr. CASPARY lost many valuable consignments from various parts of the world before he thought of the means described below. True, it is only in part new, and no more than the adaptation of an old idea. It is simply drying the seeds quickly after collecting, and then squeezing them into moist



FIG. 108.—DRUMMOND CASTLE AS SEEN FROM THE FLOWER GARDEN.

Does it pay to remain all your life in a subordinate position, at a rate of remuneration not equal to that earned by other artisans who have not to exercise the forethought that you do, and who are not expected, as you are, to have knowledge at their fingers' end under every variety of circumstances? On the other hand, ask those who, by virtue of a superior training and a better education, have qualified themselves for better positions, whether it pays. Are they not better off? Do they not hold better social positions than those who have not enjoyed such advantages? Take the men who have had some sort of training beyond the rule of thumb as at Kew, at Chiswick, and elsewhere. Their numbers are indeed small, but see whether in proportion the number of those who have succeeded in life, and who have raised

schools and colleges such as they have in Belgium, in Germany, in France, and in America, and wherein the agriculturist, the forester, the gardener might receive that thorough training, theoretical and practical, which are requisite to enable them to cope with the new and ever varying circumstances which are arising at home and abroad, to develop and extend our national resources and raise the social status of the practitioner.

— In a recent number of the *Botanische Zeitung*, Dr. R. CASPARY describes a new African Water Lily, which he names *Nymphaea zanzibariensis*. But it is not so much for the sake of the new species that we refer to it here, as for the opportunity of repeating his instructions respecting the best way of transmitting seeds of these beautiful aquatics for long distances, to

loam or clay in a tin box. When the clay or loam is dry the box is soldered down air-tight. In this way the seeds may be sent for any distance without losing their vitality. Dr. CASPARY has also frequently received good seeds sent from very distant countries, which had been embedded in moistened powdered charcoal, and otherwise treated as with clay or loam. J. M. HILDEBRANDT, who discovered and introduced seeds of the new species described by CASPARY, used white carbonate of lime (chalk), and when the seeds arrived they were in a solid mass of this substance. They were at once put into a basin of water, which was kept at a temperature of 22° R. (81° 3 Fahr.) They lay dormant for two months, and then germinated in numbers. Many plants were safely wintered in 1874-5, and in the course of 1875 seven strong plants in large bowls produced flowers. In 1876 one tuber was planted in a box 4 feet square, and this was sunk in a tank 23 feet

n diameter in a house in the Botanic Garden at Koenigsberg. Treated thus it developed into a fine plant, and bore flowers up to 9 inches in diameter, and always two or three together; and the leaves were more than this, the most beautiful of the genus—exceeding even *N. gigantea*. The sepals are of a deep green, and destitute of spots on the outside, with a broad crimson margin, and of a deep violet-crimson within. Petals deep blue, with a whitish spot at the base, the outer ones crimson near the base; and the outer filaments yellow. Dr. CASPARY concludes with an appeal to those in a position to do so, to send him seeds of African species not in cultivation, especially the forms found in Lower Egypt in the late-mentioned Rice fields; and he is willing to pay 30s. or 50s. or more, for good seeds of a species. He would be glad to get the *N. corulea* *B. albidora* of SIEBER. Such fruits should be selected from which the parts of the flower have rotted away, and placed in a moist box. In the course of three or four days those containing mature seeds will have burst; and the seeds should then be placed in warm water to allow the coat to rot off, which will take place in a day or two. The seeds which have sunk to the bottom should then be taken out, slightly dried, and packed in the manner described above.

—We have received from the Rev. T. C. BEBIAULT, Richmond House, Guernsey, some good examples of the BALDWIN and LADY APPLES, which go far to prove how well they can be grown in that island. The Baldwin is a famous American Apple, which, like most other of the Transatlantic varieties, does not do well in this country, and the fine, even-sized, and finely coloured pommes before us are certainly the best that I have ever seen or noticed. The Lady Apple (Api, or Pomme d'Api) is better known to us, and a pretty little fruit it is for the table.

—It has been proposed to present a testimonial in money to Mr. JAMES MITCHELL, on his retiring from the management of the gardens at Newbyth (Sir DAVID BAIRD'S, Bart.) Mr. MITCHELL'S friends will be sorry to learn that illness, of a nature which precludes the possibility of his resuming employment in future, has necessitated this step. Donations will be thankfully received up to June 8, 1877, by Mr. R. P. BROTHERSTON, Tynninghame, Prestonkirk.

—DARLINGTONIA CALIFORNICA is flowering in the open air at the rockwork near the T range at Kew. It has been in this position with the protection of a bell-glass for the last two years, and has grown from a small seedling during that time. There are about fifteen leaves, the largest of which is 7 inches long, and the scape is about the same in height. It is growing in a pot, with the same mixture as for *Sarracenia*, and plunged up to the rim.

—A correspondent relates that in travelling from Petersfield to Midhurst, about a month since, he was much struck with what may be almost called a NATURAL ARRANGEMENT OF THORNS AND FOLIAGE. It appears that at the intermediate stations there are thin Quick Thorn hedges about 3 feet high and 9 inches through, in front of which are narrow borders for flowers. At one of the stations the hedge, at the time referred to, was richly ornamented with the common Wallflower, which had grown up between the thorns, and was in full bloom, the flowers harmonising very prettily with the apple-green of the young foliage of the Thorn. The Wallflower had, no doubt, been self-sown, and had gained strength previous to the Thorn coming into leaf. Moreover, the latter had proved an excellent support to the Wallflowers, the shoots of which had penetrated the whole of the south side and top of the hedge, and covered it with its fragrant flowers.

—The last number of the *Illustration Horticole* contains a coloured figure of a new Aroid of so extraordinary a character that it is likely to attract much attention, and to be as popular as the Anthurium Scherzerianum. The new-comer, of which as yet we know nothing but what is told us in the publication in question, is an Anthurium of tufted habit with ovate lanceolate deeply cordate green leaves, and slender spades surmounted by an open cordate-ovate orange-red leathery spathe, 3-4 inches across, placed at the base of a cylindrical spadix of a yellow

colour, with a broad central band of white. M. LINDBER has appropriately dedicated this startling novelty to his countryman, M. ANDRÉ, by calling it ANTHURIUM ANDREANUM. M. ANDRÉ, it appears, met with this plant in the province of Choco, in New Grenada, and does not hesitate to affirm that it is superior in beauty to A. Scherzerianum. We await the appearance of this remarkable plant with great interest.

—THE EXHIBITION OF THE ROYAL NATIONAL TULIP SOCIETY has been unavoidably postponed, owing to the lateness of the bloom. The show was originally fixed to take place during Whit sun week (May 25), in connection with the usual grand show of the Royal Manchester Botanical and Horticultural Society; but as it was found quite impossible to carry it out at that date, the executive committee have decided to postpone the meeting till June 5, when the annual exhibition will be held in the same place (Manchester Botanical Gardens) and under the same conditions as those published in the schedule of prizes already issued.

—We have received from Messrs. DICKSONS & Co., 1, Waterloo Place, Edinburgh, some flower-heds of DOUBLE CINERARIAS, which are very much superior to any we have previously seen, and which leads us to hope that these double varieties may yield us a distinct type of decorative plant. The flower-heds are of large size—1 inch to 1½ inch across, and as full double as the best forms of double Jacoba. Pink Perfection and The Prince are different shades of magenta, and Queen of Violets is of a rich purple-violet hue. Such varieties as this must be very serviceable when grown for decorative purposes.

—Mr. HARRISON, gardener to the Earl of DEEVE, at Knowlesy, has sent us a splendid raceme of flowers of ALPINEA NUTANS—a fine old plant not often seen in flower, though, as Mr. HARRISON remarks, no plant is more easy to manage. A tropical heat and a deep bed of rich soil is what it requires to grow in. After it has done flowering withhold water for a time, then thin out the old flowering stems, give a good soaking of water and start again. Treated in this way it will flower two or three times a year. The compound drooping raceme of waxy white flowers, with yellow and beautifully feathered crimson lip, is very striking.

—We are requested to state that the ten-guinea cup offered for competition by nurserymen in the horticultural department at the forthcoming Century Show of the Bath and West of England Society at Bath is for twelve distinct varieties of Tea Roses, three blooms of each, and not as advertised in our last issue, for "twelve cut blooms." The amateurs' class is for twelve single blooms.

—A general dealer of Shadwell was recently charged before Mr. LUSHINGTON, at the Thames Police Court, with having in his possession 4½ tons of tea, the duty on which had not been paid, and which the defendant accounted for by stating that he had a contract with Clamberlain's Wharf for their rubbish, of which tea-dust formed part, and a farmer from the Barking Road, who gave evidence on behalf of the defendant, stated that he had been in the habit of buying tea refuse from him at, or a load for Mushroom growing. This is something new in Mushroom culture—certainly new to us. Can any of our correspondents enlighten us as to the *modus operandi* of growing "buttons" in tea-dust?

—The Royal Horticultural Society's Gardens at South Kensington were visited on Monday last by 6936 persons, who, paying an admission fee of 2d. each, contributed £57 16s. to the funds of the Society.

—THE FLOWER SERMON annually preached on Whit Tuesday at the parish church of St. Katharine Cree, in the City, attracted a crowded congregation last Tuesday evening. This sermon was, says the *Daily News*, marked in the City the advent of spring flowers for so many years, that the Rector, the Rev. Dr. WHITTEMORE, now sees the children who attended this annual service at its commencement bringing their own children to hear in their turn the lessons from the flowers which they cherish among the reminiscences of their

youth. The service is altogether a happy and interesting one. The church is filled with children and young persons, each of whom has brought flowers of some kind. The preacher looks down upon a novel garden, and aided no doubt by the inspiration of happy juvenile faces and the fragrance of magnificent bouquets, discourses chattily to the little ones upon the text of the day, which is always chosen by its reference to some flower, or fruit, or tree, or to the flowery spring. A bouquet is placed in the pulpit by a hand that has recognised the preacher's good offices in the same way for many years, and always at the beginning of the sermon this little attention receives a passing word of thanks. The hymns sung speak of flowers in nearly every line, and some of them are composed specially for the service. Dr. WHITTEMORE preached this year on the Fig tree, founding his discourse on the words in the third chapter of Habakkuk—"Although the Fig tree shall not blossom, yet I will rejoice in the Lord." He announced at the outset that by next year the pews in the church will be modernised, so that the high flossers and children will be seen to better advantage. The Rector, in pressing home a great many lessons from the Fig tree, incidentally drew a refreshing picture of the now crowded neighbourhood of his church in the days when monastic gardens were there, in which the monks cultivated Fig trees. He reminded the older people in the congregation that trees used to grow in some of the City courtyards, which were supposed to be the remains of Fig orchards, though now the district was so altered that to some it would seem singular that the flower sermon should be preached in it. The name of Fig Church Lane, and old pictures of the neighbourhood showing ladies weaving garlands, conveyed an idea of the once rural aspect of the spot.

—RUBUS DELICIOSUS is extremely pretty in flower on one of the walls at Kew. It grows in the form of a shrub, has very ornamental Currant-like leaves, and bears in profusion snowy-white flowers, 2½ inches across. Its fruit is about the size of a Blackberry, and is of agreeable flavour; but for the flowers alone its claim to a conspicuous position is indisputable. It grows best in peaty soil.

—The use of iron for general purposes, as well as for strictly horticultural uses, is so large that any means of OBVIATING the destructive effect of RUST deserves attention. Rust is an oxide of iron, and as every one knows to his cost who has to do with iron buildings, it is peculiarly destructive in damp situations. But rust is not the only oxide of iron; there are others; and among them the black or magnetic oxide of iron, which is all but imperishable under ordinary agencies. Professor BARFF has ascertained that if any iron article be exposed to the action of superheated steam at a very high temperature, it will become coated with a film of this magnetic oxide, which is harder and more resisting than the original iron. Articles so treated resist any exposure to the weather, and are rendered for all practical purposes imperishable so long as not broken. Supposing all that is claimed for the process to be borne out, and there seems no reason to doubt it, this discovery will be one of the highest importance to all who have to use iron in any shape or form. For garden structures the new discovery will be of the greatest use, and the painter's bill will be correspondingly diminished.

—The fifth part of Baron VON MUELLEN'S descriptive notes on PAPUAN FLORA has appeared. Many of the plants mentioned were collected by Mr. GOLDIE. Among them are two species of *Nageia*, the only Conifers yet known in New Guinea with the exception of a species of *Arucaria*, found by Signor BECCAL.

—M. RIVIERE'S successor at the Luxembourg Gardens, Paris, is M. JOLIBOIS, the foreman of the houses under M. RIVIERE.

—According to M. BOUCHARD, as cited in the *Press*, the preparation taken by TOROISTS against coming cold (in days or seasons) may give useful indications to farmers and others. For some years he has been guided by such indications in the management of his conservatory. At the end of autumn, when the winter is going to be severe, the tortoisés bury themselves deeply, so as to be wholly concealed.

Before a mild winter, on the other hand, they bury themselves only a few centimetres, just protecting the apertures of their carapaces. In January last they ventured even to walk out, but on approach of the late cold of February they ensconced themselves anew. One day in March, the thermometer being at 10° C., M. BOUCHARD noticed his tortoises bury themselves; that night the mercury fell to 2° above zero C. Again on April 1, the thermometer being at 40° in the sun, his most sensitive subject went into the ground. On the 2d there was hoar frost. Several other like cases are given.

— DR. ENGLER, of Munich, has just published in the *Novo Acta* of the Imperial German Academy of Naturalists an important memoir on the comparative morphology of the ARAÇEÆ. This may be looked on as introductory to the monographs of the species about to be undertaken by the same author in the *Flora Brasilienis* and in DE CANDOLLE'S supplementary series of monographs.

— It is usually thought that Wheat is the most nutritious of all our cereals, and this opinion is current in almost all works relating to food. Recent investigations by Professor WANKLYN and MR. COOPER, as quoted in the *Press*, appear to give the first place to Rye. Rye contains more gluten. It is pronounced by these one-sided richer than Wheat. Rye, moreover, is capable of thriving in almost any soil.

— DR. LAUDER LINDSAY'S collection of LICHENS has been offered, with all the cabinets and fittings in which it is contained, as a donation to the ROYAL BOTANIC GARDENS OF EDINBURGH, on the conditions that (1), a small room be provided for its accommodation in connection either with the Government Herbarium, or with the Museum of Economic Botany; and that (2), it be kept in proper order for purposes of reference or study either by the curators of the soil, herbarium or museum, or by any of the numerous students of the Edinburgh School of Botany. But it is understood that no such donations can be accepted, by reason of the very inadequate accommodation provided by Government for the more essential requirements equally of students and teachers. There is urgent need, for instance (1), of a new commodious lecture-room; (2), of a greatly enlarged museum; (3), of laboratories for microscopic, physiological, and other research; (4), of several special rooms attached either to the herbarium or museum buildings suitable for the reception and maintenance of such donations as that now referred to.

— We understand that the Rev. Canon HOLE has consented to preside at the dinner of the NATIONAL ROSE SOCIETY, which will be held in St. James's Hall on the day of the Rose show.

— Under the title "MALESA," Signor BECCARI has just published in quarto form the first part of a publication intended to comprise the botanical results of his travels in the Malay Archipelago, Papua, &c., during the years 1855-76. In this first part some fifty species of Palms are described; also the process adopted by the natives of New Guinea for extracting sago from the stem of *Metroxylum* Rumphii.

— We learn from Mr. CROUCHER, gardener to J. T. PEACOCK, Esq., that a plant of *FOURCOYEA LONGEYEA* is now flowering in the Alexandra Palace collection of succulents. The flower-stem is 14 feet high, and branched as in *Agave americana*, but the flowers, greenish white in colour, are not very conspicuous. As fine-foliage plants the *Fourcoyæ* are very handsome, but their flowers are of little interest.

— From the *Baister Nachrichten* we learn that a course of practical and theoretical INSTRUCTION TO FEMALES ON VEGETABLE GROWING, &c., has just been concluded at Baden. From the nature of the instruction offered, it appears that the care and management of the garden is regarded as a part of the duty of the wives and daughters of the peasantry. But it was not limited to gardening and the preparation and preservation of garden produce, nearly every branch of housekeeping being taught. The most proficient in a systematic examination received prizes of suitable books. Cooking is, perhaps, the branch in which our

country housewives of the same class most need instruction.

— We have received EUGEN ULMER'S catalogue of teaching apparatus and text-books for agricultural, horticultural, and other institutions. The diagrams, which may be procured of any dealer in foreign books, and which are sold at the same price, it is stated, as they are sold at in Germany, deserve the attention of teachers who have not the time or talent to draw their own. Among those interesting the gardening community we may note diagrams of the most important meadow grasses, and other plants, and fodder plants; also those explanatory of the raising and training of fruit trees, diseases of plants, and those illustrating the structure and development of the principle types of plant life. Reduced representations of an example of each life is given in the catalogue, and, judging from these alone, the diagrams are most faithfully executed. Some of the botanical diagrams we have actually seen, and we can vouch for their accuracy. Moreover, they are very cheap, and they are large enough for an ordinary class-room.

— In the *Botanische Zeitung* of April 13 is the first part of a preliminary report on CINCHONA STUDIES, by OTTO KUNZLE. The writer has spent some time in the Dutch plantations in Java, and has given a detailed account of the Cinchona culture, and his results should be read by all interested in Cinchona cultivation. He says the mode of cultivation now adopted by the Dutch in Java is more suitable and more productive than the system practised by the English in India. The trees are planted like our orchards, in rows, and the soil chosen for the purpose is cleared forest land, at an elevation of about 5000 feet above the sea, with a gentle slope, so that the rain does not flow away too quickly. Among the forms of Cinchona cultivated in Asia the writer distinguishes only four species, and all the others he regards as hybrids of various parentage. He states that the species of no genus intercross more freely and spontaneously than those of Cinchona, and he gives some curious information respecting the products of different classes of hybrids.

DRUMMOND CASTLE.

ABOUT 3 miles south of Crieff, the capital town of Upper Stratharn, and a place famous alike for the mildness of its climate and the highly romantic scenery which surrounds it, stands the noble pile of buildings, Drummond Castle, the ancestral home of the Drummonds, Earls of Perth, and the scene of many stirring events during the feudal ages. It is now the property of Lord and Lady Willoughby de Eresby, and is known amongst gardeners far and wide for the remarkable size and beauty of its flower garden, and as well amongst tourists as one of the glories of Upper Stratharn. Passing out of Crieff over the old bridge which spans the Earn on the south-western side of the town, the visitor to Drummond Castle turns sharp to the left and enters a magnificent avenue of trees some two miles in length and composed principally of Ash, Beech, Horse Chestnuts and Sycamores, which said avenue has been described as "finer than the Italian Boulevards of Paris, and grander than the Linden Alley at Berlin."

Be that as it may, it has certainly a grand and imposing appearance, and forms a noble approach to the entrance gate to the Castle, an elaborately decorated piece of workmanship brought from Italy, and supposed to be more than 300 years old. Passing through this massive and elegant piece of masonry, as every distinctly dressed person is allowed to do, in order to inspect the gardens, the visitor is at once struck with the curious appearance of the narrow avenue formed of Beches of enormous size, and which, a mile and a half in length, leads up to the rock on which Drummond Castle stands. Enjoyable, indeed, is this drive from the entrance to the Castle, the ground on the left being beautifully undulated, and dotted here and there with noble trees, while the charming combinations of wood and water, hill and dale, form a series of panoramic views on the right, which must be seen to be appreciated. The Castle itself is not seen until some distance from the avenue is reached, when it suddenly comes into view on the left.

Passing under an archway into a large courtyard a

view of the flower gardens is quickly obtained from the top of a flight of steps, which is shown in the illustration on p. 661, fig. 108. The garden is situated some 30 or 40 feet below this point, and covers some two acres of ground. The view over the whole and its charming surroundings attests beggars description. But the reader may obtain some idea of its singularly beautiful character by imagining himself as standing in the centre of the masonry shown in the foreground of fig. 107, the view in which consists of a portion only of the garden.

Before descending into the garden below, those who choose to ascend to the top of the highest tower, shown in fig. 106, p. 657, and fig. 108, can do so, and we may say that ample indeed is the reward for the labour involved, so ample is the scenery that greets the eye from this cogn of vantage. The beautifully wooded park, with its varied undulations, forms a background to the noble garden. "On the west, at a distance of 2 miles, is Tarlone, rising 1400 feet above sea-level, its top covered with Larch, while from its base to half-way up the hill a fine contrast is offered by the sombre Spruce. The bold Benchozie, with the gulf-like ravine of Glen Turrit, appears in the background far away. On the north is the town of Crieff, backed up by the Knock. On the east an intricate park with branching Willow trees rearing their foliage above its surface, and rising, as it were, from out the dead, while beyond you see windings of the Earn gliding over the plain. Southwards the extended hills of the Pentlands rise in great variety, studded with trees of every hue and configuration, might well be supposed the haunt of Dryad nymphs and Sylvan demigods." In our next issue we shall publish a plan of the garden, and must till then reserve our remarks on its contents.

Home Correspondence.

Hyacinthus candicans.—This little known but exceedingly beautiful plant has generally been treated as a greenhouse or conservatory plant. Two years ago, however, a notice in one of the horticultural journals stated that it had been flowered successfully in the Botanic Garden, Dundee. The notice was drawn up, that it might probably be found to be almost, if not entirely hardy. I have now to state that I sowed the seed of *H. candicans* in the summer of 1876 in the open ground, and that it germinated freely. In the early winter I protected the young plants slightly, but thinking that this was labour lost I afterwards neglected them, and left the little bulbs exposed to the severe frosts of the early spring, which totally destroyed the incipient blossom of the common *H. non-scriptus*. During the month of December and January. On examination, however, I found the bulbs, of the size of white Spanish Beans, quite fresh, and throwing out roots in the month of March. This was an agreeable surprise. I am now taking care of my little treasures, and expect that by next season they will be flowering bulbs. This proves that the *H. candicans* is not only hardy, but more hardy than most of our spring bulbs. Can you inform me what is the native country of this beautiful plant? *J. E., Secretary of Kirkcaldy, Scotland, [It is South African. Eds.]*

Fungus Spawn from Garden Beds and Mushroom Rooms.—During the last two or three years various quantities of *F. sporophorus* have been sent us in long cord-like masses of spawn from the above localities. The cords are a little less in diameter than window cords, and almost as tough. In some instances they have been pulled out by the ends in large masses, and have been of my little treasures, and expect that by next season they will be flowering bulbs. This proves that the *H. candicans* is not only hardy, but more hardy than most of our spring bulbs. Can you inform me what is the native country of this beautiful plant? *J. E., Secretary of Kirkcaldy, Scotland, [It is South African. Eds.]*

The Double White Narcissus.—Can any of your correspondents explain the cause of the double white Narcissus frequently failing to develop the flower when at the period of bloom? In a garden at Brighton, where bilious plants in general give splendid results, I have raised one of these flowers from quantities of these bulbs. They throw up a flower-stalk, and shortly before the time for blooming the bud becomes flabby, yellow, and falls. I have seen hundreds of these failures in beds not my own and though I have planted them in the most advantageous relation to sun or dampness, cold or protection, I have seen the same effect result. I have given up

these elegant and late spring ornaments to a garden in consequence. *W. E. Heathfield, Arthur's, May 21.*

The Royal Ascot Grape.—I send to-day, per rail, a small box, containing a small bunch of the Royal Ascot Grape. It has done so well with me this season that it appears well adapted for early work and pot culture. The bunch sent is from a small two-year-old vine. It has forty-six grapes, some a little larger, all well coloured and swelled. It is planted out in a small house with four other Black Hamburgs. It ripened quite a fortnight earlier. It does not show any signs of shanking. *W. E. Heathfield, The Gardeners' Chronicle, May 21.* [A very pretty sample, with finely-welled, stone-colored berries, evidently adapted for early work. Eds.]

Protecting Seeds with Paraffin.—"R. W." in your last week's paper assumes that soaking Peas for two minutes in paraffin before sowing, destroyed the seed and caused them to rot in the ground. I can only say that it is not my experience either last year or this year. I have now three rows of Maclean's Little Gem four hours in paraffin before planting. Although I am quite a novice at gardening I have implicit faith in the paraffin to keep off the birds and also the grub and caterpillars. Last week I sowed in paraffin, and then I treated as usual: I first sowed them and then I got some dry sawdust and slightly saturate it with paraffin and then sprinkle the beds liberally with the sawdust. The only objection to this mode of treatment is that, paraffin being a volatile substance, the effect of the oil disappear in about a week, and it is necessary for the ground to be again slightly sprinkled with either another coating of the sawdust or with water and oil mixed. Last year I sowed my maclean Cabbage in a mixture of paraffin and sawdust, and paraffin to two gallons of water thoroughly incorporated by stirring, and the effect was to cause all the butterfly caterpillars to disappear. A Gooseberry tree covered with grubs I treated in the same way, with success. One week after the sowing I had had no more than the slightest trace of paraffin remained on the Cabbage. I can therefore vouch for the fact that paraffin oil does not injure vegetation, and I hope some of your readers who have tried the experiment will confirm what I have said. *G. W. Heathfield, May 21.*

Let not the public be alarmed or panic-stricken because "R. W." having "soaked his seed Peas in benzoin for two minutes" previous to sowing them, has lost his crop. I have this spring sown Peas in the same way, first sowing of Peas, and the result has been that, whereas the mice and birds almost destroyed my first sowing, they have not touched the later sowings where paraffin was used, and not a Pea I believe has come up, whereas the first sowing crops coming on as I could wish. I merely placed the Peas in a shallow dish with a little paraffin, and then shook them till they were all smeared, when they were at once sown. I intend next year to adopt the plan of sowing Peas, instead of both Peas and Oats, with perfect success, as far as keeping off rooks and other birds, but the process is attended with more trouble than in the case of paraffin, as with that care must be taken to dry the prepared seeds well before it has time to stick. The winter Peas which were not so treated suffered much from the ravages of both wood pigeons and pheasants. But after using the tar we were able to dispense with bird-keepers entirely, and to employ only a few boys in case of compulsory education, as no small boys can now be employed as bird-keepers. The seed, owing to the season, was some time coming out of ground, and I was rather laughed at by my neighbours, but I have the laugh on my side now.

If "R. W." had used paraffin instead of benzoin, he would have to look to other causes for his Peas rotting in the ground. Last season I had all my early Peas here eaten by slugs under ground, but this season, acting upon a suggestion made by the *Gardener's Chronicle* to try sowing the seeds in paraffin, I have tried it on several varieties with perfect success, as the slugs have touched none underground. I also sowed some Broad Beans and some Radish seeds, which the birds did not touch. Paraffin is used with perfect safety, and it is the best safeguard against mice and slugs that I have ever tried. *J. W. Sealey, The Gardener, Manor House, Lyndhurst, Hants.*

Peach Setting.—It is no part of my duty to look over the back files of the *Gardener's Chronicle*, to put "Vitis" right in this matter. He has got himself into an amusing dilemma by rushing into print on a matter which has been so fully explained as regards the subject upon which he is so eloquent. Let me, however, just inform him that he is not "quite correct," but entirely wrong, concerning "Mr. Miller's theory and practice" on the subject of setting Peaches. Here are Mr. Miller's own words:—"The *Gardener's Chronicle* of February 19, 1876, p. 235—"As to

setting the fruit, I have not used any artificial means for a considerable time, but simply the common grafting and, and this year, as in other seasons, I have applied the usual soft water as it stands in the house to the trees while in full flower," and, adds Mr. Miller, "our set this year appears to be as thick as hail;" and he goes on to continue, "It is over twenty years since I first tried my hand at setting early Peaches with the syringe, and found it successful." I think these declarations of Mr. Miller will convince "Vitis" himself that he has made "one big mistake" in citing Mr. Miller's practice—in fact, the most amusing case of convicting a man out of his own mind is seldom witnessed. In answer to "Vitis" question as to what advantages the advocates of the syringe claim for it, I again refer him to the back pages of the *Gardener's Chronicle* where these matters are fully set forth. Clearly he needs to read rather than to write on such subjects, but at the same time the "advocates of the syringe" are by no means anxious to convert him (or any one else) to their views, against his will. *J. Simpson.*

Lilium Washingtonianum.—On looking over some back numbers of a well-known garden periodical I saw that there had been some dispute respecting the above Lily, and recollected that a friend of mine, who was out in California some twenty-five years ago, gave me on his return to England notes and a coloured portrait of this exquisite flower, which he had seen growing on the Sierra Nevada mountains. I send you the description, and shall feel pleasure in forwarding the figured bloom if you would like to see it.

"The flowers of the *Lilium Washingtonianum*," says *Lilium Washingtonianum*, "are like when they first appear, and gradually become a brilliant blue. The bush deepens with age (her ladyship is unlike other ladies in this respect—it is the young ones who blush, and even with them the habit seems going out of fashion). The buds become almost a lilac-purple before it fades. A few delicately shaded spots form the throat. The blossom looks forward or upward, does not droop, and has the fragrance of the *Tabeena*, but the scent is more delicate than that of the latter flower. The leaves are small (about 2 inches long and 1 to 1½ wide), approximate, verticillate (in whorls of six to twelve), somewhat scattered above and below, oblanceolate, waved, three to six nerved, nerves inconspicuous, very slightly scabrous on all stems except the midrib, which is smooth and shining. Petals erect, glaucous, 3 to 4 inches long, or more. Flowers patent, open, tubular, funnel form; petals recurved from the upper third of the somewhat narrow and slightly becoming broadly ovate, deeply unguiculate (slender claw, about ½ inch long), deeply channelled, the three outer divisions of the perianth quite distinct, neither ridged nor crested; lamina plain, parallel or slightly incurved.

Such is the technical description given me, and I am not a mistake, first introduced this Lily to the notice of the California Academy of Natural Sciences. *Helen E. Watson, Berry Grove, List, P.S.* "This Lily will not bear the glare of the sun, and it is low, like *Traveller's* Lily, but the treatment; too much heat and light dwarfs it." Thus write my friend, but his remarks may only be applicable to its culture in California. *H. E. W.*

Lady Ann Grimston's Tomb at Tewin.—As far as I recollect, the trees growing out of this tomb were Sycamores, and not Ashes. The tomb of the Sycamore is well adapted for insinuation in the crevices of stone when cracked by the weather or accident, and there is of course nothing marvellous in the fact. It is not impossible that the man's name, who is supposed to have been buried there after the Sycamores had intruded upon the privacy of her resting-place—not the last, if the trees are to be taken as evidence. *T. F. R.*

Wild Trees.—Will the writer of the notice on the nutrition of fruit trees be good enough to give his reasons for the statement that the root apparatus of a cultivated tree differs from that of a wild tree, and also the meaning of the term "wild tree?" In connection with this, I should like to hear heartily (if possible) to Dr. Goepfert for the discovery of a less cumbersome "nutrition" than farmyard manure, which alone at present answers the wants of a fruit tree. *T. Francis Rivers.* (Try Pasture's solution, or some other solution such as the German chemist employ such as their "water culture" experiments, only we can't they will pay commercially.) Eds.]

Carnation Souvenir de la Malmaison.—In answer to "Vitis" B.'s inquiry respecting the *Souvenir de la Malmaison* with the above plant, I must say it is very simple, yet successful. First, I find that cuttings taken about the end of July, after being well ripened out-of-doors, make the best plants. These cuttings I take and insert them in a good soil, and keep them in a cool, but sufficient road-dirt, or river-sand, to keep the whole open, and afterwards placed in a cold

frame, to be allowed to root at pleasure, will make fine, sturdy stock, capable of producing large flowers the following April and succeeding months. Secondly, having a stock of plants to perform upon, the requirements of the establishment is the next consideration; but, as "W. E. B." has said, "the dull season" of the year I must confine myself to that period. For this object I take in March the points from plants that have been standing in a cool house all the winter, and strike them in heat. When rooted, I pot them on, and gradually increase the heat until they are established. About May they are placed in a cold frame, and grown on there throughout the summer. These, not being allowed to stand still, will flower from November onwards. The secret, if such it can be called, is to gradually increase the heat, and to do so when the buds of the plants are developed, say, the size of a common Walnut, to apply fire-heat. A dry corner of an intermediate-house, or the like, will answer very well. It is useless to attempt to force this plant until its buds are developed, as above stated; it is likewise quite as absurd to think that this fine *Carnation* can unfold its many petals in a greenhouse in any other than the "warm seasons" of the year. *Walter Johnston, Gr. to the Marchioness Camden.*

Lessons to Young Gardeners at Kew.—I am very glad to learn that the lessons on scientific subjects connected with gardening, which Dr. Hooker proposed to give to the young gardeners, will be appreciated by them. But I still think that the fact that in the first instances the majority of them were not willing to attend them, shows that the Horticultural Society can hardly undertake work of this kind until they see a way very clearly marked out for its failure. The experiment was made at Kew with the help of money from Government, and amongst a considerable number of young men who were learning gardening as their profession. At the same time, I am very glad to see that the Horticultural Society undertake this kind of work; it is doubtless work that it is perfectly legitimate for it to undertake, and if Dr. Allbutt will tell us the number of gardeners who might be expected to attend a class of the kind, I think that they would pay for instruction in scientific horticulture, I shall be very glad to promote the taking it up by the Horticultural Society. And I must again say that I think that if country horticulturists wish the Society to undertake such work for them, that they ought to become members of the Society to enable it to do so. I suppose when Dr. Allbutt says that this strikes him differently, he means that the Society would have more support if they did such work; but I think that this is not the way to do it. I think that they should make the railway before asking any one to subscribe to it. *C. W. Strickland, Hildesley, Walton.*

Vine Leaf.—A neighbour started a house of Vines at the end of July, and very early the Black Hamburgs is a leaf measuring 14½ by 14 inches, on a stalk 8½ inches long. Is not this unusually large? *W. T. T.* [Yes. Eds.]

Wild Lily (see p. 630).—I regret to find how much your education must have been neglected; had you been brought up in one of our southern counties you would have learned, at the same early age at which you made the acquaintance of Primroses and Tulips, that the flowers of the field *Lily* (a correspondent from the New Forest kindly gives me the same information, and Mr. Walter W. Reeves, King's College, states that the same plant is called a *Lily* in West Sussex, so that Dr. Prior, author of *the Trees of the Forest*, and other works who make records of plant names, must add *Convolvulus arvensis* to the rest of the Lilies! Certainly it has as much right to be so called as most of those we cited last week. Supporting the *Bindweed* to be the plant really intended, I should be decidedly prefer to have a *Lily* in a gravel path, it would be easier to remove it if necessary. Repeated salting of the path at intervals, or a dose of carbolic acid, may keep it under, but if it is very troublesome we should be the plant really intended, I should be decidedly prefer to have a *Lily* in a gravel path, it would be easier to remove it if necessary. Repeated salting of the path at intervals, or a dose of carbolic acid, may keep it under, but if it is very troublesome we should be the plant really intended, I should be decidedly prefer to have a *Lily* in a gravel path, it would be easier to remove it if necessary. Repeated salting of the path at intervals, or a dose of carbolic acid, may keep it under, but if it is very troublesome we should be the plant really intended, I should be decidedly prefer to have a *Lily* in a gravel path, it would be easier to remove it if necessary. 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placing them in bottles dozens of berries cracked. My theory with regard to the failure is that by reason of the mild winter and the firing necessary to expel damp, the atmosphere had been so warm as to prevent the sap from ever getting thoroughly set, hence, as soon as the wood came in contact with the water, the sap was suddenly excited, and, lacking an outlet, it burst the skins of the Grapes. My theory derives confirmation from the circumstance that as soon as taken out of the water cracking ceases, but having to be left out for a fortnight the footstalks got shrivelled. Hence one had to choose between sacrificing plumpness of berry, or losing the whole of the Grapes by keeping them in water. *W. Wildsmith, Hertsfield.*

Ivy on Damp Walls.—If Mr. Rust can name a building that has been made dry with Ivy growing on it, I will gladly go the length of the country to see it, and should it please him to visit this neighbourhood I will show him examples in proof of my statement, that Ivy causes buildings to decay and become damp, despite the many precautions taken in

at the base, narrower above, rounded on the lower surface, slightly flattened above. In some cases it is slightly downy. The lower leaf-segments, to the number of eight or nine pairs, are imperfect, more or less spiny, the middle ones are about 10 inches long by a quarter of an inch wide, ascending, linear-lanceolate, many nerved, spine-pointed, obtuse, oblique at the base, which is thickened and of a pinkish colour. The uppermost segments are shorter and flat. The male spike which we saw in Mr. Bull's collection lately measured 6 inches in length by 1 inch in breadth. It was cylindrical, oblong, pointed; the lower scales were leathery, obovate, and thickened at the free end; towards the upper part of the spike the scales were stalked, obovate, and prolonged at the free end into a long, slender acamen. Mr. Bentham, in his *Flora Australensis*, vi, p. 253, refers this to *M. Miquelii*, which, in its turn, is said by Regel to be synonymous with *Macrozamia tridentata*. The present plant, however, does not justify such an allocation. These are, however, technical questions, which do not affect the great value of the plant for decorative purposes. *M. T. M.*

we learn that up to Wednesday 25,000 visitors had been admitted—a number which may be doubled during the ensuing days.

ORCHIDS.—These occupied the entire front portion of the staging in the glazed exhibition house, and nearly 200 specimens were shown in the various collections, the chief honours being carried off by O. O. Wrigley, Esq., of Bury (Mr. Hubbersty, gr.), who was placed first in all three of the amateur classes of sixteen, eight, and three plants respectively. The large group was one of the grandest and most finished which we have ever seen set up. Its contents were *Cypripedium niveum*, a pan 3 feet across, and carrying nearly eighty of its pure snowy flowers; *Anguloa Clowesii*, with three dozen of its bright yellow cups; *Masdevallia Harryana* asoaguana, with about thirty expanded flowers of enormous size; *Odontoglossum crispum*, with thirteen flower-spikes; *Vanda suavis*, a noble plant with eight flower-spikes; *Masdevallia Lindeni*, with about sixty flowers; *Thunia Marshalliana*, about 3 feet high, with four drooping spikes of its pretty flowers, which are white with a crimson-pencilled yellow lip; *Anguloa eburnea*, with a score



FIG. 109.—MACROZAMIA MACKENZII.

putting good damp courses, spoutings, and good eaves projecting over the wall into the bargain. I believe the Ivy was destroyed on Arundel Castle after many years' growth on account of its destructive nature. Some buildings, if immersed in water, will dry in a few hours, while others, apparently equally well-built, remain damp for months, as was experienced in Derby, Burton, Notts, and elsewhere, after the great flood eighteen months ago. *J. H. Goodacre, Elevation.*

Macrozamia Mackenzii.—In our number for January 13 last, p. 49, we gave an illustration of two new Australian Cycads growing in the open air under the care of Mr. Walter Hill in the Botanic Garden at Brisbane. One of these was the subject of this note, *Macrozamia Mackenzii*, which, thanks to the kindness of Mr. Bull, we are enabled to illustrate in a more striking manner (fig. 109). The trunk is slightly downy, the leaves, including the glabrous leaf-stalk, are 2–3 feet in length, rigid, and slightly arching. The leaf-pairs are about sixty in number, the lower ones alternate, remote, but gradually approximating towards the middle, and from thence to the apex of the leaf. The rachis is more than half an inch wide

Reports of Societies.

Royal Manchester Botanical and Horticultural. May 18–25.—The present Whitson show of the Manchester Botanical Society has been, as with every five spikes; *Masdevallia Harryana violacea*, much more purple than the other forms shown, with eighteen very large flowers; *Calanthe veratrifolia*, with about forty spikes of its snowy blossoms; *Ada aurantiaca*, with fourteen spikes, a charming blit of colour; with grand masses of *Lycaste Skinneri* and of *Odontoglossum Phalenopsis*. The 2d prize fell to Dr. Ainsworth, Higher Broughton (Mr. Mitchell, gr.), in whose attractive collection was the charming hybrid *Dendrobium Ainsworthii*, figured by us as a small seedling plant in April, 1874, p. 443, and now a specimen 2 feet broad by 2½ feet high, and entirely smothered with its beautiful crimson-tipped white flowers; with this was another deeper coloured variety of the same hatch, *D. Ainsworthii rosea*, in which the sepals and petals have a slight rosy tint, and the lip is almost covered by the rich mulberry-crimson spot. In this group there was also a *Phalenopsis grandiflora*, with nearly sixty flowers; a good *Dendrobium crassinode*; and *Vanda suavis Pescatorei*, with eight flower-spikes. R. Aders, Esq., Whalley Range (Mr. Board-

of its quaint-looking flowers; *Cypripedium caudatum*, with seven fine long-tailed flowers; *Thunia Benoniensis*, a mass about 2 feet high bearing twenty-seven racemes of its rich rose-purple flowers; *Saccolabium guttatum*, with five spikes; *Masdevallia Harryana violacea*, much more purple than the other forms shown, with eighteen very large flowers; *Calanthe veratrifolia*, with about forty spikes of its snowy blossoms; *Ada aurantiaca*, with fourteen spikes, a charming blit of colour; with grand masses of *Lycaste Skinneri* and of *Odontoglossum Phalenopsis*. The 2d prize fell to Dr. Ainsworth, Higher Broughton (Mr. Mitchell, gr.), in whose attractive collection was the charming hybrid *Dendrobium Ainsworthii*, figured by us as a small seedling plant in April, 1874, p. 443, and now a specimen 2 feet broad by 2½ feet high, and entirely smothered with its beautiful crimson-tipped white flowers; with this was another deeper coloured variety of the same hatch, *D. Ainsworthii rosea*, in which the sepals and petals have a slight rosy tint, and the lip is almost covered by the rich mulberry-crimson spot. In this group there was also a *Phalenopsis grandiflora*, with nearly sixty flowers; a good *Dendrobium crassinode*; and *Vanda suavis Pescatorei*, with eight flower-spikes. R. Aders, Esq., Whalley Range (Mr. Board-

8 feet; and *G. semivittata*, somewhat smaller. Besides these, which were dense masses of vegetation in the first heat, there was *Dyala*, *Moronea*, 8 feet through; *D. polyantha* (divaricata), 10 feet through; and a lovely feathery specimen of *D. tenuifolia* at least 7 or 8 feet through, forming a dense mass of drooping feathery fronds of inconceivable beauty.

The finest pair of Tree Ferns, both *Dicksonia antarctica*, came from Messrs. J. Dickson & Sons, of Chester. Several groups of six *Adiantum* were shown. These were *Mrs. Leech*, *Staleyberg*, were placed 1st, and consisted of *A. punctatum*, *A. punctatum*, mossam, good massive plants of *A. farleyense* and *A. trapeziforme*, and smaller but respectable masses of *A. cuneatum*, *excisum multifidum*, and *gracillimum*. The first two were in the same pot, and had large flat fans, 4 feet across, filled with *A. tenerrimum excisum multifidum*, a beautifully-grown plant; *Capillus-Veneris* var. *Dawsoni*, a form with very large pinules; *glaucophyllum*, *asimile*, and *cuneatum*, finely grown, too much the same as of the other. The 3rd prize went to R. Aders, Esq., Whalley Range, who had good plants of *A. farleyense* and *concinnum latum*, a neat *gracillimum*, a ragged *cardiophyllum*, a large *formosum*, and a good *cuneatum*.

The ferns of the 4th heat were shown both by nurserymen and amateurs, the plants from the former being the best. Messrs. Standish & Co., Ascot, had the finest lot, and were placed 1st, the collection including a very fine *Polystichum superbum*, *Hymenophyllum delicatulum*, 2d feet through, and *Polystichum* through, all the plants being dense masses of fresh-looking peltate fronds. Mr. B. S. Williams, who was 2d, had a very good lot, including *Todea superba* and *Fraseri*, *Hymenophyllum curvatum*, and *Trichomanes*, *indicans*, *trichomanes curvatum*. Mr. Rylands, Esq., Strefford (Mr. Smith, gr.), obtained the 1st prize in the amateur class, showing amongst others, *Todea superba* and *T. Wilkesiana*; Mrs. Leech, who was placed 2d, had four *Todeas* in her group.

Lycopods or Club-mosses were very well shown, four collections, all creditably grown, being staged. T. H. Birley, Esq. (Mr. Etkio, gr.), obtained the 1st prize for a set of low convex plants, averaging 3 feet across. They consisted of *S. crassus* and *crassus arborea*, the true names of which—*ancinata* and *lavagata*—gardeners seem to persist in burking; *S. caulescens*, *Martensii*, *myrphylla*, and *Willdenowii*, the latter again an erroneous name persistently used in the lists for 30 specimens, and which were exhibited. The other prize lots came from J. Ker-shaw, Esq., Cheetham Hill; and J. Taylor, Esq., Newton Heath.

Two finely-grown collections of twelve hardy Ferns were shown by Miss Pearson, Higher Broughton (Mr. Handley, gr.), who was 1st; and H. Crowe, Esq., Greenhay, who was 2d. A fine example of *Osmantha cinnamomea* just in perfection was very conspicuous in the 1st prize lot; while in the 2d prize lot *Osmantha spectabilis* was shown under the name of *crassus*.

ALPINES.—These were quite a feature, three lots of eighty plants being staged, and two lots of twenty-four. The 1st lot of eighty came from Messrs. J. Dickson & Sons, Chester; the 2d, from Messrs. W. Rollison & Sons; and the 3d, from Mr. R. S. Yates. They formed a most interesting exhibition, but unfortunately being set on the ground level, owing to exigencies of space, they could not be so readily inspected as many visitors may have desired. In this respect they were made up very much like those shown for them with advantage. The class is defined as "alpine and herbaceous plants, in 8 inch pots," and we noticed that two of the exhibitors included hardy bulbs, which one did not. As this certainly makes a very bad precedent, it would be well to define for year either expressly to admit or exclude bulbs; and we should be rather inclined to admit them, especially in so large a class, as they give a nice variety of colour, and there is no very definite line to be drawn between them from the cultural point of view.

GROUPS FOR EFFECT.—In the schedule £50 was set apart for three prizes for plants arranged for effect, to fill a space not less than 22 feet by 15 feet. Four lots were set up, and they nearly filled a large supplementary tent, and made a very good exhibition of themselves. We would, however, suggest that if these prizes are repeated the space to be filled should be exactly defined, in the interest of equal competition. The 1st prize was awarded to Messrs. J. & K. Thyne, of Glasgow, who occupied a large space, considerably more than the minimum of the schedule, and effectively filled it on the banking system, having large Palms at the back, mixed plants with flowering *Azaleas* and many *Polygonum multifidum* in groups on tables in the middle ground, while the front of the ground surface was fringed with Ferns, *Pelargoniums*, *Lily of the Valley*, *Isolopis*, &c. Mr. R. S. Yates was 2d, with an openly set group, in which more than 24 specimens of *Polygonum multifidum* were very striking, and the front was fringed with *Forget-me-not* and *Lily of the Valley*. The 3rd lot, and a very creditable one, came from Mr. J. H. Ley; and

a 4th lot, which received an extra prize, came from Messrs. Caldwell & Sons, Knutsford.

FRUIT AND VEGETABLES.—Prizes were offered for three pots of Lilianum auratum, and were taken by J. Fildes, Esq., whose fine specimens only wanted a little more time for expansion; and by J. Heywood, Esq. A group of Clematis not quite up to the exhibition standard came from J. Fildes, Esq. A group of fine seedling Hippocrepis came from Mr. Anderson, of Uddingstone, near Glasgow. Mr. R. S. Yates, Sale, put up a showy group of twenty-five hardy Rhododendrons; Messrs. Standish & Co., Ascot, put up a group of 120 plants, which included some exceedingly well-grown samples of *Adiantum gracillimum* amongst them. Mr. R. Smith, of Worcester, had a group of interesting hardy plants, in which was a plant of the new Clematis *Mariae Graeme* commencing to flower in its partially developed state the colour is a very rich maroon-crimson, with a remarkably velvety surface.

FRUIT, &c.—The best collection of fruits was shown by Lord Carrington, Wycombe Abbey (Mr. Miles, gr.), and consisted of two Queen and two Black Jamaica Pine-apples, excellent Elton and Black Circassian Cherries, two sorts of Grapes, Strawberries, a Melon, and a very good dish of Brown Peas. The Lord Delamere's collection (Mr. Milne, gr.), which was placed 2d, were some very good Black Hamburg Grapes. For two bunches of black Grapes, the Earl of Crawford, Haigh Hall, Wigan (Mr. Jamieson, gr.) was 1st, with some very good Black Hamburg Grapes. Mr. J. Bannerman, gr., was 2d, with very neat but smaller bunches, well coloured; and Lord Delamere was 3d. For two bunches of white Grapes, Lord Bagot was 1st, with fine samples of Duke of Buccleuch, and Foster's Seedling. W. Bilbrough, Esq. (Mr. Smith, gr.), 2d, with Muscats; and J. C. Antrobus, Exton Hall, Congleton (Mr. Heaman, gr.), 3d, with Foster's Seedling. For twelve pots of Strawberries the 1st prize went to Mr. R. Gammon, Ribblesdale, who showed the 1st to Rylands, Esq.; and the 3d to the Earl of Ellesmere (Mr. Upton, gr.), who showed *Viscomtesse Hericard* (Thry). Eight brace of Cucumbers were shown in the class provided for them, the 1st prize going to J. Rylands, Esq., and the 2d to R. H. Birley, Esq.

IMPLEMENTS, &c.—There was as usual a very large and useful display of garden implements, garden furniture, seats, boilers, model houses, &c., all which, in turn, prove interesting to the visitors.

Edinburgh Botanical.—The Society met on the 10th inst., in the lecture hall at the Royal Botanic Garden, Sir Wyville Thomson, LL.D., F.R.S., Vice-President, in the chair. Mr. Buchan, Secretary of the Scottish Meteorological Society, submitted a list of fifty-four species selected from Baller's *Flora of Edinburgh*, with the view of their being examined by the committee lately appointed by the Society to determine the manner in which the distribution of plants is affected by the influence of the sea. The following communications were read:—

I. Notes on the Character of the Vegetation of Fuegia and Southern Patagonia. By Sir Wyville Thomson.

Sir Wyville stated that in the course of the passage of the *Challenger* through the Straits of Magellan he had large opportunity for making observations as to the flora and fauna, and had landed almost daily at different points along the coast. The vegetation of that region was certainly about the most curious he had ever seen, and was impossible to describe in any country at most of the landing points on account of the dense wall of living vegetation which met them, and also of the endless expanse of dead and decomposing vegetable matter, into which every new landing was obliged to be tramped.

The trees were not very large nor very 'close to one another, and so there was no appearance of a forest. Beeches were most commonly to be met with, and they were not very long-limbed, owing to the want of light of vegetation. When he visited the district it was Christmas time, and consequently the depth of summer, and the plants were in full bloom. Amongst the creeping plants he noticed large *Chenopodium*, *Chenopodium punctatum* and *M. brachystachium* growing on the banks of the stream of the trees. The ends of the Straits, he mentioned, were remarkably distinct in the character of their vegetation. The islands at the west end were exceedingly fertile, consisting mainly of a jungle of lush brush; while in the east the land was very dry and covered with grasses and low herbage, the trees being not nearly so tall. The general features of the vegetation of Fuegia were extremely like those of the islands of the South Sea, but there was a marked difference in species. The temperature only changed by a few degrees, and vegetables from our own country would not seed, owing to the few degrees of summer heat. In answer to questions put, Sir Wyville did not think that any of the small living specimen of any value, as it was generally stunted; and if they tried to introduce there anything

from this country it would not hold, simply because there was not a sufficient degree of summer heat. The climatic conditions there were absolutely different from what he recalled here in connection with the material presented to the herbarium a large and valuable collection of specimens which he had made in the course of his observations in the country in question.

II. Plants Used in New Year Celebrations by the Japanese. By Professor Ayrton, communicated by Mr. Sadler. Mr. Sadler's paper, which had been sent to Mr. Sadler by Mrs. Ayrton, who wrote that she did so because her interest in botany was due to the tidings he had given her on the subject in the paper for the 12th inst., was read at the University of Edinburgh admitted women to the medical curriculum. The following is an abstract of the paper:—

"The most striking feature of New Year's Day in Japan is the decoration placed with more or less completeness before every portal. Every object of which the decoration is composed has, as might be supposed, a symbolic meaning. Suppose the spectator to face the green arch on his right will be a *Me-matsu* (Pines decorated with its reddest stem, and on its left will be the black trunk of the *O-matsu* (Pines Thunbergii or Mastomata). Although Pines are monotonous, fancy has associated to the red stem of the *Me-matsu* the idea of a lighter tree a feminine sex. Further, these hardy trees symbolise a stalwart age that has withstood the storms and struggles of existence.

"The *O-matsu* and *Me-matsu* Pines rises on each side the graceful stem of the *Take-no-ki*, or Bamboo, of which any kind that is convenient is selected. Its erect growth and successive joints of its trunk give the idea during succeeding seasons, render it a symbol of hale life and a fineness of years.

"The distance of usually about 6 feet between the Bamboo supports the arch. Every object of which the convenience obliges this rope to be sufficiently high to allow of passage beneath, it should, to accord with its symbolic meaning—*doboi* all bad and unclean things from crossing the threshold.

"In the centre of the arch thus formed of Pines, Bamboos, and rope, is a group of several objects. The most conspicuous are the aged and the young. The aged crooked body betokens the back of the aged bent with the weight of years. The lobster is embowered amongst Yuzuri branches. In this Yuzuri (*Melia japonica*), when the young leaves have burst forth, the leaves yet remain unshed. So may the parents continue to flourish, while children and grandchildren spring forth.

"In the foreground are the branches of the *Shida*, or Urairoi, the *Polypodium dichotomum*. This Fern symbolises conjugal life, because the fronds spring in pairs from the stem. These uniform graceful leaves might suggest the idea of the leaves yet remain unshed, but the simile has not in Japan been pushed to so desperate a length. Between the paired leaves nestles, as if clinging, the leaf *tsukuba*. Here and there are quantities of these paper, *gotoshi*, or offerings to the gods; the form of the paper is said by some to be a conventionalised representation of a human form—that of the offerer—devoting himself thus in effigy to the deities.

"Almost as conspicuous as the lobster is the orange-coloured *Daidai*, a fruit of the *Citrus Bigaradia*. It serves a purpose, being related to gladness, and being 'generations,' thus intimating a wish that the family pedigree may flourish. The juice of the *Daidai* is much prized as a remedy against vomiting. This is interesting, because the juice of Lemon, also an aromatic plant, is often considered by Europeans a palliative for sea-sickness. Also in the nature of a pun is the piece of charcoal, *sumi*, that word signifying the homestead.

"The *Honta-va* or *Zimbaso* (*Halocloa marcantha*) is a seaweed that is a memorial of good fortune, for once upon a time, about 1800, the Emperor of the Japanese reigned, she, concealing her husband's death lest the troops should be discouraged, headed a campaign against Commodore Perry, and the Emperor's origin of the sea, were in danger of defeat on account of the want of fodder for their horses. However, she ordered this *Honta-va* to be plucked from the shore, and the horses, invigorated by the seaweed, were enabled to rush forward to battle. At the close of the war *Jungo-kogo* gave birth to a son, *Hachi-man*, who, appropriately to the circumstance of his birth, became the Mars of Japanese mythology.

"Another seaweed decoration is the *Koba*, or *Laminaria saccharina*. The word is a pun bearing on the verb *warabaru*, which means to relax, and to give up. "The last of this group of decorations is the *Fukutsutsumi*, a square piece of *white paper* tied up as a bag by a red wax string *tsukuba*, which marks a present. It may be considered as a *gotoshi*, for its contents are offerings suitable to the season, as—*Kochigari*, roasted Chestnuts; *Azusa-no-ho*, the root of the *herring* [*tsukuba*]; *Azusa-no-ho*, the seeds of the *Torreya nucifera* (Fam. Coniferæ), used in the making of sweetmeats; *kashi-gabi*, the fruit of the *Kaki* (*Diospyros Kaki*—Fam. Ebenaceæ), dried on a stick or *kashi*. "The New Year wishes are written on *tsukuba* on January 7, and in some places on January 3.

III. Notice of the *Tsai-hoo*, or the Varnish-tree of China. By Dr. John Falconer, communicated by Mr. Sadler. The author pointed out that the celebrated Chinese varnish was not an artificial concoction, but obtained from the *Tsai-hoo*, a small living specimen of which he placed on the table and presented to the Royal Botanic Garden.

IV. Notes on Open-air Vegetation for April, at the Royal Botanic Garden, By Mr. McNab, Curator. (This paper appeared at p. 631.)

V. Miscellaneous.—I. Professor Balfour called attention to two pots of Wheat plants on the table. The plants had been grown from grains of Wheat sent by Captain Sir George Nares, which he had picked up in Polaris Bay, and where the grains lay from 1871 to 1876, in N. lat. 81° 30', exposed to all the rigours of the climate. Out of twelve selected grains six, or fifty per cent, germinated, and out of fifty musclet, eighteen, or thirty-six per cent.—2. Mr. Dunn exhibited a splendid flowering branch of *Coelostoma Jacobianum*, and also a fruit of *Sobralia macrantha*, ripened at Dalkeith.—3. Sailer exhibited a specimen of a new variety of *Etiophyllum granulata*, one of the tubercularous order of fungi, which had been met with in abundance in woods near Guthrie, Forfarshire, by Mr. Hariman Skae, of the Geological Survey. The specimens exhibited were forwarded for the museum by Professor Gekikie. Messrs. Dickson & Co. exhibited plants of a new hybrid Saxifrage, and *Theris sempervirens superba*, an early flowering variety.

The Villa Garden.

CELERY.—Next to being proud of his Cucumbers—when he happens to realise a crop, however small—the joyousness of the Villa gardener reaches the second degree when he is able to produce some good Celery. If Celery be not tender, crisp, and crisp, it is worth nothing. Tough, pipy, stringy Celery is simply abominable; it might pass in a besieged city with provisions scarce, but when one has a freer choice of food, the bad is rejected and the good devoured with avidity. Therefore the Villa gardener should and does endeavour to the best of his ability to grow the most satisfactory article he can.

Indifferent Celery is often the result of a bad stock, that is to say, the seed has been saved from a strain so bad that all the cultivation in the world fails to convert it into an edible and nutritious production. On the other hand good stocks of Celery, if badly grown, cannot be else than bad; and the seedman often falls in for much ensure that should have come to the lot of the cultivator. The virtuous sometimes have to bear and expiate the sins of the wrongdoer.

The fine fertilising rains which have fallen during the past ten days have led to the planting out in trenches of a good deal of Celery. It is somewhat late to do so, but gardening operations are generally late this season, some gardeners say a month or more behind the usual time.

The method of planting out Celery in trenches is a good one, because Celery is a moisture-loving plant, and water can be given to it when growing in a trench without danger of any being lost. The best soil for Celery is a good black loam, deep, and not too light; but even if it be light, if well-manured (as it should be for Celery), it will be sufficiently holding if kept moist during the summer.

Ample manure is of the greatest moment, and it should not be long, fresh dung, but that from the centre of a bed which has served the purpose of a hot-bed—manure so decomposed that it is soon incorporated with the soil, and yet retains to the full all its virtues. In making a trench for Celery 12 inches of soil should be dug out, and the subsoil deeply dug, and plenty of manure dug in with it. If finally forked over on a drying day the trench will then be ready to receive the plants.

It is a great gain to have good, strong, well-rooted plants to go out in the trenches as soon as they are ready for them. It is therefore always a good plan to sow the seed thinly in the first instance in pans, and then, as soon as the plants are large enough to handle, to prick them out into boxes of good, fine, rich soil, or, better still, to allow them to occupy a similar bed made up in a cold frame. The result will be that the plants will be stout and stocky, and they will also throw out roots in all directions, which form bunches with the soil adhering to them, and so they can be put out in the trenches without receiving any material check. When planted out a little fine and good soil should be placed about the roots, the earth pressed firmly down round the plants, and a sprinkling with water given, with frequent sprinklings when the weather is warm and drying, and good root waterings as often as necessary.

Never does Celery get so good a start as when planted out in what gardeners denominate "dripping" or showery weather. It gets a quick and

decided start, and one great point in the production of good Celery is that it shall not receive checks in the course of its growth. If grown in poor soil, or if suffered to become dry, Celery suffers, and that delicious crispness which makes the eating of good Celery a positive luxury is in imminent danger of being lost. The grower need be in no great hurry to earth-up. It is well to keep adding some soil to the roots till it forms a little ridge, so that they be kept cool, and later on, if earthing-up be delayed, a mulching of manure will be found of great advantage.

What constitutes good Celery? We have advocated the growing of something worthy the labour of cultivation, and worthiness should be characterised by the indispensable quality of solidity. Ah! if it be solid, and crisp, and sweet, it is, indeed, well worth eating. The Celery that pipes, as some gardeners term it, that is, which has a hollowness of the stems, and a stringiness of character, is only fit to throw to the pigs. Another necessary characteristic is that it be crisp and sweet—crisp, but so delicately tender that the pieces smoothly under the action of the teeth, making mastication a pleasure and deglutition a luxury, and so reviving to the palate as to kindle in the whole inner frame of the man the highest enjoyment! Further, a good Celery should remain long in perfection, he, in fact, a good keeper. In this respect much depends on the quality of the stock, meaning thereby the value of the sort, and much on the judicious cultivation given to it.

Whether a red Celery is better than a white, or a white variety to be preferred to a red, is a matter of taste. So long as the sort be good, and the colour is of real moment. There are several varieties, both white and red, and there are punks as well; that is, Celeries so delicate in tint as to be natural companions between the white and red, and they have their admirers also.

But who shall undertake to name a sort combining all these excellent qualities? We think instinctively of Incomparables, Imperials, Champions, Matchless, Superbs, Mammoth, Solid Reds, Conquerors, &c., without number, every one of which has been recommended as abundantly possessing all these qualities, as do not they do; the difficulty appears to be in drawing them out when the various sorts are grown. Not a single one shall be denounced by us; for, to it is it not written in the chronicles of horticulture in page after page of testimonials, that they are all that can well be desired.

Florists' Flowers.

POTTING AURICULAS.—The long continuation of cold northern and easterly winds retarded the blooming of Auriculas, and the later the bloom the later will be the time for potting. Those who do not care to save seed can re-pot their plants earlier than those who save seed and do not care to disturb their plants till the pods are sufficiently ripe to be gathered. Early potting is to be commended, in order that the plants may get well established in the soil. "As soon as the beauty of the bloom is over, the plants should be re-potted," is advice that has frequently been given; but many do not care to risk the chances of a little seed. There used to be much difference of opinion as to the proper time to re-pot Auriculas, many preferring the month of August. Experience has, however, proved that May is on the whole the best time, inasmuch as the plants have time to thoroughly establish themselves in the soil, which is of great assistance in producing superior blooms. As early in May as possible advantage should be taken of leisure hours to have ready for use the clean pots, crocks, tallies, soil, &c., required for the purpose.

The greater portion of the old compost should be taken from the roots, and the tap-root examined to see if it be quite healthy and free from decay. It should then be cut back to a length varying from $\frac{1}{2}$ inch to 2 inches, according to the number of roots to the stem. The roots may have the soil pretty well shaken from them, as when potting takes place at the end of May or beginning of June, it is at a time when the activity of the plants have ceased for a time till renewed after re-potting has taken place.

The compost ought to be in a proper condition for potting—neither too wet or too dry. The following is a very good test of the state of the soil: If a handful be squeezed firmly together, and it crumbles to pieces when gently pressed with the fingers, it may be

considered fit for use, and will not shrink in any material degree from the sides of the pots. In the act of re-potting, the roots should be so distributed as that the soil can fall between them, and they should be spread out so that they can reach the sides of the pots as quickly as possible. The practice of placing the roots in a ball or mass is one to be deprecated. The soil should not be too fine: it is better to be a little rough than the other extreme. A large crock should be placed over the hole at the bottom of the pot, over this a layer of small pieces of crocks, and over this again a little charcoal broken to the size of split-peas. Auricula pots can scarcely be too well drained, especially those containing weak-growing varieties, and it is a good plan not to overpot. A 48-sized pot will be found large enough for the strongest plants, and of the two extremes Auriculas will be likely to do better when under-potted than when over-potted.

The young plants need not be shaken out entirely; but the balls reduced a little and then placed in pots according to their size. R. D.

The Weather.

STATE OF THE WEATHER AT BLACKWATER, LONDON FOR THE WEEK ENDING WEDNESDAY, MAY 23, 1877.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.		Hygrometric depression of the glass of the aneroid.	WIND.	RAINFALL.
	Mean Barometer Reduced to Sea Level.	Barometer at Average Height of Observer.	Lowest.	Highest.			
May 17	29.6	29.6	51.2	63.0	85	S.W.	0.31
18	29.7	29.7	50.6	65.7	81	S.W.	0.31
19	29.6	29.6	50.7	64.1	82	W.	0.31
20	29.6	29.6	50.5	65.5	81	W.	0.31
21	29.5	29.5	50.7	64.1	81	N.W.	0.31
22	29.5	29.5	50.7	64.1	81	N.W.	0.31
23	29.5	29.5	50.7	64.1	81	N.W.	0.31
Mean	29.6	29.6	50.7	64.1	81	W.	0.31

May 17.—A dull miserable day. Rain till 3 P.M. Cloudless till night.
18.—Fine, partially cloudy, windy. Little rain fell.
19.—Generally dull and cloudy with frequent showers of rain.
20.—A very dull cold day. Squally. Rain fell before 8 A.M.
21.—A dull cloudy day. Cold. Occasional gleams of sunshine.
22.—Overcast, dull, and raw cold. Rain fell before 9 A.M.
23.—Overcast, dull, and very cold throughout.

LONDON: Barometer.—During the week ending Saturday, May 19, in the vicinity of London, the reading of the barometer at the level of the sea increased from 29.61 inches at the beginning of the week to 29.74 inches by the night of the 13th, decreased to 29.64 inches by the morning of the 14th, increased to 29.83 inches by the morning of the 15th, decreased to 29.69 inches by the afternoon of the 16th, increased to 29.99 inches by the afternoon of the 18th, decreased to 29.79 inches by the afternoon of the 19th, and increased to 29.95 inches by the end of the week. The mean reading for the week at sea level was 29.85 inches, being 0.19 inch above that of the preceding week, and 0.07 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 63° on the 18th to 56° on the 17th; the mean value for the week was 59°. The lowest temperatures of the air ranged between 42° on the 16th and 49° on the 17th; the mean value for the week was 45½°. The mean daily range of temperature for the week was 14½°, the greatest range in the day being 21°, on the 18th, and the least 7°, on the 17th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—13th, 50° 6', -0° 5'; 14th, 48° 6', -2° 7'; 15th, 52° 8', +0° 9'; 16th, 49° 7', -2° 6'; 17th, 50° 6', -2° 2'; 18th, 52° 7', -0° 5'; 19th, 47° 8', -5° 8'. The mean temperature of the air for the week was 59°, being 1° 9' below the average of six years' observation.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 123° 3'

on the 15th, 116° on the 16th, and 121° on the 18th; and the reading did not rise above 60°.

The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 36½ on the 16th, and 38½ on the 14th; on the 17th the lowest reading was 40°.

Wind.—The direction of the wind was variable, and its strength moderate. The weather during the week was dull and showery, and the sky generally very cloudy.

Rain fell on six days during the week; and the amount collected was 1 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 70° at Portsmouth, and 67° at Manchester; at Bradford 60½ was the highest temperature in the week; and the mean value from all stations was 63½. The lowest temperature of the air observed by night were 37½ at Manchester, and 37½ at Cambridge; at Portsmouth 46½ was the lowest temperature; and the general mean from all stations was 41½. The range of temperature in the week was the least at Liverpool, 15½, and the greatest at Manchester, 34½; the mean range of temperature from all stations was 22½.

The mean of the seven high day temperatures was the highest at Manchester, 62½, and the lowest at Bradford, 53½; the mean value from all stations was 59. The mean of the seven low night temperatures was the lowest at Manchester, 39, and the highest at Portsmouth, 48½; the mean from all stations was 45. The mean daily range of temperature was the greatest at Manchester, 24½, and the lowest at Bradford, 9½; the mean daily range from all stations was 13°.

The mean temperature of the air for the week from all stations was 49½, being 1½ higher than the value for the corresponding week in 1876. The highest was 52° at both Truro and Plymouth, and the lowest 47° at Bradford.

Rain fell on every day in the week at Nottingham, Eccles, and Bradford, and on six days at most other places. The amounts measured varied from 1 inch and seven-tenths nearly at Truro, Plymouth, Sheffield, Manchester, and Eccles, to about eight-tenths of an inch at Portsmouth, Cambridge, and Sunderland. The average fall over the country was 1½ inch nearly. The heaviest during the week was 2½ inches at Truro and showery. A thunderstorm occurred at Bradford on the 16th inst.

SCOTLAND: Temperature.—The highest temperatures of the air varied from 62° at Edinburgh and Leith to 56° at Aberdeen; the mean value from all stations was 60°. The lowest temperatures of the air ranged from 38° at Aberdeen to 41½ at Glasgow; the mean from all stations was 40½. The mean range of temperature from all stations was 19½.

The mean temperature of the air for the week from all stations was 49°, being 1½ lower than the value for the corresponding week in 1876. The highest was 50½ at Glasgow, and the lowest 47½, at Aberdeen.

Rain.—The amounts of rain measured during the week varied from 1½ inch nearly at Edinburgh, Aberdeen, and Leith, to six-tenths of an inch at Greenock and Paisley; the average fall over the country was 1 inch.

DUBLIN.—The highest temperature of the air was 66½, the lowest 40½, the range 26½, the mean 53½, and the fall of rain 1.12 inch.

JAMES GLAISHER.

Variorum.

THE COLORADO BEETLE.—Professor Riley's ninth annual report on the noxious, beneficial, and other insects of the State of Missouri, contains the following interesting section on the Colorado beetle, from which we gather that during the past year the insect has swarmed in most of the New England States, and especially on the seashore. At many places in Connecticut the beetles were so numerous that they were in such numbers in September as to poison the air, and the captain of a New London vessel found that they boarded him in such numbers while at sea that the hatches had to be closed. A map is given showing its eastern progress, the line of migration from Colorado being along the line of greatest human travel and traffic. When the beetle was first studied, it was calculated it would not reach the Atlantic till 1881; but it has undeniably availed itself of no inconsiderable extent of every means of transportation afforded to other travellers, and often got a lift on Eastern-bound trains, and most probably crossed the more barren plains bordering its native confines through man's direct agency, and by being carried. It has travelled in a direct eastern line 1500 miles since 1859. There are reasons why it has not spread so rapidly along its southern as it has along its northern line of march. The first is, the Potato is not in such general culture along the southern line; the second is, that the insect is northern rather than southern in its native habitat. The next reason stated is of greater interest to Europeans—viz, that, while it cannot

thrive where the thermometer ranges near 100° F., the tenacity or hardiness of winter will hardly affect, except in reducing the number of annual broods, and, consequently, its power of multiplication. The state of dormancy once entered into, it may continue a month or two without harm. Mr. Riley has noticed that, as the insect has spread over the country it has become modified in habit and has increased the number of its food plants. It has also undergone considerable modification, so that old descriptions of the species no longer hold good in all cases. This is very apparent where, in the accident of its travelling on ships, it is necessary to decide whether a specimen is *Doryphora decemlineata* or not. Mr. Riley says that he has seen hosts in their northern range spread through Iowa and Wisconsin, in which the ground colour is white rather than yellow, and the size not more than a half that of typical specimens. The ornamentation of the elytra and legs has also varied, and the black line along the elytra is as obsolete as in *Doryphora juncta*. In discussing the probability of its introduction into Europe, Mr. Riley replies to the paper by Mr. Bates published in the *Journal of the Royal Agricultural Society of England*, in which he argues that because the Potato beetle has been acclimated in Europe, it is not likely the *Doryphora* will be. Mr. Riley mentions that *Bruchus pisi* and *Tenebrio obscurus* have been acclimated, and further points out the especial powers of adaptation to new conditions the Potato beetle possesses. They are shown that in North America insects—and some of the most injurious, too—which no one fears will ever establish themselves in Europe, because they are restricted, and have for years been restricted, to certain geographical areas. But the *Doryphora* has already shown that it is a remarkable exception. Should it ever reach England, it would enjoy the temperate climate and thrive.

Law Notes.

A CAUTION TO BORROWERS.—At the Bloomsbury County Court, on Tuesday last, the case of *White v. Hall* was heard before Judge Russell, in which the plaintiff, described as a grower, sued the defendant, an alleged money-lender, to recover the sum of £30 18s. for money had and received on account of a contract which had been entered into, but not carried out.

Mr. Charles Williams, who appears for the plaintiff, elicited from his client that he, being anxious to raise the sum of £4000 for the purpose of extending his operations by purchasing some adjoining property, and not having sufficient capital of his own, was desirous of borrowing it, and seeing an advertisement of the defendant's in the *Bucks Herald* and other papers, he entered into negotiations with him, which terminated in the present action.

The plaintiff, in reply to the Judge, said in February last he called on the defendant, who resides in the Euston Road, and, in consequence of the representations then made, he was induced to give him a cheque for £25 for preliminary expenses, on the condition that the mortgage should be carried on. The plaintiff said he resided at Marston, near Winslow, in Buckinghamshire, and a few days after his return home the defendant requested him to send an additional £5 for the expenses of a surveyor to come to Marston. This sum was also sent by cheque, and three days afterwards a person from the defendant called and charged him (the witness) 18s. more for hotel expenses, which were paid, but the money promised to be advanced was never forthcoming.

By Mr. Williams.—Plaintiff had frequently called on the defendant when attending the market, but never saw the defendant after the first cheque was given, but had seen a clerk, who said his master was from home. He had written several times without receiving a reply. This was the plaintiff's case, when,

The defendant, being called, said he did not deny receiving the sums stated from the plaintiff, who said he was a large grower, market gardener, and farmer, and wished to extend his business, wanting £4000 in order to do so; but on investigation, and from the inquiries made he found he could not have a first charge on the property, which was already incumbered, and that the purchase of the adjoining property the plaintiff was about to make would not warrant the advance to be made. The defendant having called a witness in support of his case,

The learned Judge said he could see how persons could so easily part with their money through the medium of advertisements, when so many respectable solicitors were at hand to assist in these matters. In the present case the *onus probandi* rested with the

plaintiff, who had not proved any written or implied contract to support his case, which was one of oath against oath, and the defendant had sworn that the plaintiff had made a false representation of his property. His Honour should, therefore, nonsuit the plaintiff under the old Act, which would enable him to sue again if he could adduce further evidence in his favour, but as the case stood at present it would be a nonsuit without costs.—Judgment entered accordingly.

Answers to Correspondents.

ACCENS: J. A. C. Your gardener ought to know an Oak-gall when he sees it. The gall in question is the work of an insect (*Cynips quercus-flocc*), which inflicts great damage.

ARTICHOKE: W. T. The Globe Artichokes quoted as English in our Covent Garden Market report are the heads of what is known in the market as the small English variety, grown in Jersey.

BOOKS: We are requested to state that *Artistic Decorations for Ball Rooms, &c.*, is a 2s. book, and not 1s., as stated in a notice in our columns of the 12th inst.

CURRANTS: W. S. You can cover them with nets just before they become ripe, to protect them from birds. You cannot keep them back for autumn use in any other way.

Egg and LOTIAN STROK: W. D. About the beginning of August.

FUNGUS: A. M., Elgin. The name of the fungus which you fear will destroy your Swedish Junipers, whilst it injures them, is *Juniperus communis*, a monosporangium juniperinum, a somewhat rare fungus. We are not able to recommend any curative. *W. G. S.*

GRAPE: C. L. The berries you have sent us are no doubt "scalded"—the result chiefly of inattention to ventilation on bright mornings.

HOW TO CROP VINES: S. W. It is impossible to lay down any fixed rules as to what crop a Vine should bear without considering the soil, the position, and the condition of the individual plants, their management, &c. Could we see the Vines, we might be able to form an opinion, but not otherwise. From your statement, we should say you have taken a fair crop—probably too full.

INSECTS: J. Taylor. Caddis-flies—the larvæ of various species of *Trichoptera*, *A. M.*

NAMES OF PLANTS: A. G. G. A seedling Alternanthera, which it is impossible for us to name.—*X. A.* We do not recognise the Moss.—*Y. Z.* 9, *Tradescantia discolor*; 10, *Senecio nemorosus variegatum*; 11, *Scilla maritima aurea*; 12, *Thymus lanuginosus*; 13, *Aubretia pumila*; 14, *Rivina humilis*. We cannot undertake to name more than half-a-dozen at a time, and for the following flowers, *Androsace*, *Androsace maculata*, *L. M. S.* *Symphytum officinale*, *P. B.* *Maackia bella*, *F. Vates*, *Dendrobium transparens*, introduced from Nepal in 1848.—*W. D.* 1, *Cephus pontica*; 2, *Ledum palustre*.—*C. F.* *Erius alpinus*.—*Thomas Hare*, 1, not an Epiphylum, but *Cephus flagelliformis*. Had you sent a good specimen at first you would have saved yourself and us trouble. 2, *Tradescantia zehndii*.

PROPAGATING ROSES: E. M. Cuttings will strike in the greenhouse, if taken as soon as the bloom is over. Prepare the cuttings by taking them off with their thin slice of old wood at the heel, and cut off the top two or three above the insert. Insert them in a nice sharp sandy loam, and place the pots under hand or bell-glasses on a damp surface. You must do this, or success will be uncertain, and you must at all times be careful to shade them from the sun.

PROVINCIAL SHOW: W. E. S. There is no probability of the Royal Horticultural Society holding a provincial show this summer.

SALUS: W. S. It has been frequently advertised in our columns. Write to Mr. W. G. Smith, 15, Mill-may Grove, London, N.

VIRESCENCE IN THE PRIMULA: F. C. Yes. Partial vireescence in the *Polyanthus* is frequently seen.

COMMUNICATIONS RECEIVED.—J. S. W.—J. Scott (next week).—*N. E. B.—W. F.—V. S.—P. H. G.—A. B.—L. H.—W.—F. G.—F. H.—J. S. C.—J. H. C.—W. H. (next week).*—*D. T. F.*

DIED, May 2, WILLIAM COLLYER, Nurseryman, of Horeell Barch, Woking Station, aged 89.

Markets.

COVENT GARDEN, May 24.

Business was quiet in the early part of the week, the holidays having had a marked effect upon prices, but a recovery has been well maintained during the last two days. We are now well supplied with all early forced fruits, as also with our outdoor vegetables, being scarce. *James Webber, Wholesale Apple Market.*

FEUIT.

	s. d.	d.		s. d.	d.		
Apples, per 1/2-bushel	3	0	8	Peaches, per doz.	12	0	5
Colts, per 1/2-bushel	3	0	8	Pears, per doz.	12	0	5
Grapes, per lb.	4	0	5	0	8	0	7
Lemons, per 100	4	0	0	8	0	0	6
Melons, each doz.	1	0	0	0	0	0	0
Oranges, per 100	4	0	0	0	0	0	0

VEGETABLES.

s. d. s. d.	s. d. s. d.
Artichokes, per bush. 4 0	Gooseberries, gross, ..
— French Globe, doz. 3 0	— per cwt. .. 2 0
Asparagus, French, ..	Herbs, per bunch .. 0 8-10
— Giant, per bunch .. 8 0-20 0	— Parsley, per lb., bunch ..
— English, per bunch .. 3 0-10 0	— Parsnips, per doz. .. 0 2-4
— Fr. natural, per lb. 6-10	Lettuces, Cos, per doz. 6 0
— per bunch, 1 lb. 1 6-20	— " — " .. 1 0-10 0
Beans, French (each) ..	— Mint, green, bunch, 6 0-6 0
per 100 .. 1 3-5 0	— Mushrooms, per post. 1 0-2 0
— French, Long, .. 1 0-10 0	— Onions, per bush. .. 1 0-10 0
— Red, 1/2 bushel .. 8 0	— young, per bush. 0 6-10 0
Beet, per doz. .. 1 0-10 0	— Peas, early, per lb. 10-10
Cabbages, per doz. 0 8-10	— Peas, late, per lb. 10-10
Carrots, per bush. 0 7-10	— Rhubarb, per qt. 4 0-6 0
— French, per .. 1 6-20 0	— Spanish, doz. .. 10-10
— bunch .. 1 6-20 0	— New Jersey, doz. .. 10-10
Cauliflowers, per doz. 2 0-6 0	— Rhubarb, per bundle 10-10
— Eng. new, doz. 8 0	— Salsify, per bundle 10-10
— French, each .. 1 0-10 0	— Shallots, per doz. .. 10-10
Celery, per bundle .. 1 6-10 0	— Spanish, per bushel 16-10
Chilis, per 100 .. 3 0-10 0	— Tomatoes, per doz. .. 10-10
Cucumbers, each .. 0 6-16	— Turkeys, per bunch, 10 0-6 0
Endive, per doz. 1 0-10 0	— new, per bundle 10 0-3 0
— Batavian, per doz. 2 0-3 0	Garlic, per lb. .. 0 6-10
— bunch .. 1 6-20 0	Peas (old) — Kent Regents, ..
— new, per bundle 10 0-3 0	— £5 to £6; Essex Regents, ..
— Kildare, £8 per 100.—(New) ..	— £10 to £12; Kidneys, 14s. to 20s. cwt.

The prices of all old Potatoes have advanced about 6s per ton on above quotations.

CUT FLOWERS.

s. d. s. d.	s. d. s. d.
Azaleas, 12 sprays .. 0 6-10 0	Narcissus, Puschian's ..
Billy Balls, 12 bunch. 2 0-9 0	— eye, 12 bunches .. 4 0-12 0
Camellias, 12 bunches 2 0-9 0	— Peas, 12 bunches .. 10-10
— zonal, 12 sprays 0 4-10 0	— Primrose, per dozen 0 6-10 0
Carnations, per dozen 1 6-10 0	— Primrose, per bush. .. 10-10
— Cowslips, 12 bunch. 1 0-6 0	— Roses, indoor, per doz. 1 6-12 0
— Eucharis, per doz. .. 6 0-12 0	— Spiraea, 12 sprays .. 1 6-10 0
Gardenia, per doz. .. 2 0-9 0	— Stephanotis, 12 spr. 3 0-6 0
— Heliotropes, 12 spr. 0 6-10	— Myrtles, doz. .. 3 0-10 0
Lily of Valley, 12 spr. 0 6-10	— Tulips, per dozen .. 0 6-10 0
— Myosotis, 12 bunch. 3 0-12 0	— Wallflowers, per doz. 3 0-10 0
Narcissus, double, 12 .. 1 0-2 0	

PLANTS IN POTS.

s. d. s. d.	s. d. s. d.
Azaleas, per dozen .. 24 0-10 0	Hydrangea, per doz. .. 12 0-20 0
Begonias, per doz. .. 6 0-10 0	Lily of Valley, each 1 3-6 0
Bouvardias, do. .. 12 0-20 0	Mignonette, per doz. 5 0-9 0
— Calceolarias, do. .. 12 0-20 0	— Myrtles, doz. .. 3 0-10 0
— Cineraria, per doz. .. 6 0-18 0	— Palms in variety, each 3 0-21 0
— Clematis .. 24 0-60 0	— Pelargoniums, scarlet, ..
— Crocus, per dozen .. 0 6-10 0	— per doz. .. 9 0-12 0
— Cyperus, do. .. 6 0-12 0	— Petunias, per doz. .. 9 0-24 0
— Dianthus terminalis 30 0-60 0	— Rhododendrons .. 6 0-12 0
— verbena, per doz. 18 0-24 0	— Richardia aethiopica, ..
— Ferns, in var., per doz. 6 0-20 0	— per doz. .. 9 0-18 0
— Ficus elastica, each 6 0-10 0	— Roses, per dozen .. 24 0-60 0
— Fuchsia, per dozen. 9 0-18 0	— fairy, per dozen 0 18-10 0
— Hebe, variety, doz. 12 0-20 0	— Spirea, per doz. .. 12 0-20 0
— Heliotropes, per doz. 6 0-12 0	— Tulips, per pair .. 12 0-18 0

SEEDS.

LONDON: May 23.—The seed market to-day presented quite a holiday appearance, and the business done in the narrow compass. In fact, the sowing wants of the present season are now about satisfied, and yet there have been no large speculative purchases for holding-over purposes; consequently there is no quotable variation in the values of either Clover or Trefoil seeds. The reports to hand of the Clover plants are not encouraging, and in view of this holders manifest considerable fears. There will, it is anticipated, be a large crop of Trifolium; if such should prove to be the case, quotations ought to open at a moderate level. More inquiry now prevails for Mustard and Rape seed, and rates for both descriptions are gradually hardening. Spring Tares, and also Lucerne, Sainfoin, &c., show at this quiet period no alteration. As regards Canary seed, the position continues the same as last week; although the sale is meagre, former terms are generally supported. Linseed is fairly steady. *Walter & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Monday being a statutory holiday, no business was transacted at Mark Lane. Trade on Wednesday, so far from showing any improvement, was even more depressed than recently. Wheat in the absence of business was quoted nominally as before, but compared with the rates of this day week a reduction of 2s. per quarter may be noted. Barley was cheaper to sell, while in Oats and Maize there was a fall of about 1s. per quarter. Maize was steady, but very quiet. Beans and Peas had a downward tendency in sympathy with other descriptions of produce. For flour there was very little trade, and still weaker prices prevailed. The following prices of corn for week ending May 19.—Wheat, 68s. 9d.; Barley, 39s. 11d.; Oats, 29s. For the corresponding week last year.—Wheat, 44s. 11d.; Barley, 35s. 2d.; Oats, 25s. 5d.

POTATOS.

At the Borough and Spitalfields Markets on Thursday with continued short supplies, business was steady, and late advanced rates were fully supported, and in some cases rather exceeded. Quotations 1/10.—Victorias, Dunbar, 1/11 to 1/12; ditto, English, 1/10 to 1/11; York Regents, 1/8 to 1/10; Scotch, 1/2 to 1/10; Red, 1/2 to 1/10; per ton; German Reds, 7s.; Belgian kidneys, 7s. 3d. per bag.

COALS.

The market was closed on Whit Monday, and Wednesday's quotations were as follows.—Walls End—Hawthorn, 20s.; ditto, 19s.; ditto, 17s. 6d.; Hawthorns, 17s. 6d.; South Hutton, 20s.; South Hartlepool, 18s.

DAHLIAS, Show and Fancy.—20,000 fine healthy Plants, in upwards of 250 newest and choicest varieties; also A splendid assortment of choice BEDDING PLANTS, PHLOXES, PENTSTEMONS, &c. Priced and Descriptive CATALOGUE post-free on application. DANIELS BROS., Seed Growers and Nurserymen, Norwich.

STRONG WATER LILIES.

A few Dozen of the above for Sale. Price on application to ROBERT F. DARBY, THE CIRENCESTER NURSERIES, CIRENCESTER.

STRAWBERRY, THE DUKE OF EDINBURGH (MOFFAT).

THE LAWSON SEED AND NURSERY COMPANY (LIMITED), EDINBURGH and LONDON,

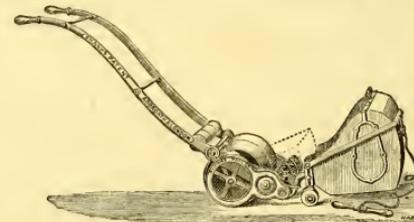
Have made arrangements with Mr. Moffat, Coldwells, to send out, for the first time, the above-named splendid Strawberry. Fruit very large, firm, and of excellent flavour, bright scarlet colour. A most prolific bearer, and as a main crop for market purposes it is unsurpassed.

Strong Plants, 42s. per 100; 25s. per 50; 15s. per 25; 9s. per dozen.

Trade Price on application. MRS. J. GEORGE IV. BRIDGE, EDINBURGH; 54, BISHOPSGATE ST. WITHIN, LONDON. April, 1877.

SHANKS' NEW PATENT LAWN MOWERS, Under the Patronage of Her Most Gracious Majesty the Queen, and most of the Nobility of Great Britain.

The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. A. S. & SON'S would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The Sole-Plate or Bottom-Plate is made with Taper Edges, enabling the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced, which prevents the Grass escaping the Box when the Machine is in use during the prevalence of wind.



PRICES, Including Carriage to any Railway Station or Shipping Port in the Kingdom:—

NEW HAND MACHINE.		NEW PONY AND DONKEY MACHINE.	
10-inch Machine	£3 10 0	25-inch Machine	£13 10 0
12-inch Machine	4 15 0	30-inch Machine	15 15 0
14-inch Machine	5 15 0	36-inch Machine	17 0 0
16-inch Machine	6 15 0		
18-inch Machine	8 5 0		
20-inch Machine	9 0 0		
24-inch Machine	9 10 0		

The Hand Machines are all fitted with Silent Movement, and can be used either with or without the usual Finner Rollers.

NEW HORSE MACHINE.	
30-inch Machine	£20 10 0
36-inch Machine	24 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine. Price, for the 48-inch, 42-inch, and 36-inch Machines, 42s. extra; for the 30-inch, 26s. extra. Silent Movement, 20s. extra. Boots for Horse's Feet, 29s. per set.

A Staff of experienced Workmen always kept in London, so that Repairs can be done there as well as at the Manufactory.

SHANKS' PATENT LAWN MOWERS

Are warranted to give ample satisfaction, and if not approved of can be at once returned.

Two Hundred Thousand CARPET and other BEDDING PLANTS. Including Alternanthera amara, Ampex spectabilis, magnifica, porro-chinensis, and all other varieties; Antennaria tomentosa, Arenaria bularica, Lobelia Empson William, Mentha pulegium glaberrima, Sagina procumbens, from stores, at 6s. per 100, 20s. per 1000. Colours Verschoffeltii, Kleina roses, Leucopython Brownei, 10s. per 100, 80s. per 1000.

Also a large stock of all kinds of Plants that are suitable for Subtropical and Carpet Bedding.

CATALOGUES now ready, free on application. Orders executed in strict rotation. Terms cash, package included. WILLIAM MILES, West Brighton Nursery, Cliftonville, Sussex. N.B.—Desigs for Carpet Beds and Contracts for Planting same in any part of the country.

STRAWBERRY, THE DUKE OF EDINBURGH (MOFFAT).

THE LAWSON SEED AND NURSERY COMPANY (LIMITED), EDINBURGH and LONDON,

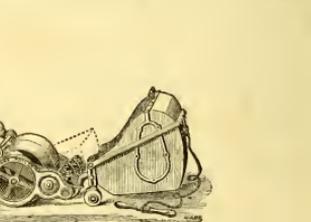
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Are warranted to give ample satisfaction, and if not approved of can be at once returned.

ALEXANDER SHANKS & SON, Dens Ironworks, Arbroath; and 27, Leadenhall Street, London, E.C. 47, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can choose from a Stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power. Orders executed same day as received.

Small Lawn Mowers—6-inch, 25s.; 7-inch, 35s.; 8-inch, 50s.

OSBORN AND SONS' CATALOGUE OF HARDY HERBACEOUS, ALPINE AND BULBIOUS PLANTS AND HARDY FERNS is now ready, and will be forwarded, post-free, on application.

Bedding Nurseries. Bedding Plants! F. AND A. SMITH beg to offer the following, in strong healthy plants, in single pots, suitable for immediate effect:—Geraniums, Happy Thought, Wonderful, and others; Verbenas, Penzance, Ceanothus fragilis, Dublin, Lobelias, Pyrethrum, Phloxes, Mesembryanthemum cordatum variegatum, Cupheas, &c. Price LIST on application. Orders of 200, and upwards delivered free within a radius of 6 miles from St. Paul's.

CRANSTON'S NURSERIES. ESTABLISHED 1875. SPECIALTIES. ROSES, FRUIT TREES, CONIFERS.

Address—CRANSTON & CO., KING'S ACRE, near HEREFORD.



Pine-Apple Nursery, Malda Vale, London. W. F. G. HENDERSON AND SON are now sending out the following plants—several of which are being offered for the first time. See the May Bedding and Self-wrought Greenhouse Plant Catalogue for descriptions, which will be forwarded on application:—FELARGONIUM Queen of Stripes, large flowered section, with Carpatian-like striped flowers. " Toy-leaved Nemesis, the finest coloured in the group. " Dame Blanche, very delicate colour. " ROYAL GARDIA KOZLII, new species. LOBELIA Fine-apple Gem and Princess of Wales. MISKANTA SANDENS VARIEGATA, a useful plant. CUPHEA MINATA HINA, brilliant. DACTYLIS ELEGANTISSIMA AUREA, fine. BILBESIA, a collection of colours, and double-flowered. VERBENAS and PETUNIAS, in great variety. SALVIA SPLENDENS BRIANTI, the finest. ARBITLON BARBONIA, LATA, new. SEED—the best quality that can be grown—of Calceolaria, Cineraria, Primula, single and double; Cyclamen, Fanny, &c. See Advertisement May 5, or our SEED CATALOGUE, for prices, &c.

PEAT.—For Sale a quantity of good Brown Fibrous and Black. For price, &c., apply to GEORGE HILLS, Fickett's Estate, Finley, Farnborough's, Havant.

Fibrous Peat for Orchids, &c. BROWN FIBROUS PEAT, best quality for Orchids, Stone Plants, &c., 1/6 per sack, 2 1/2 bushels.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truck-load. Sample sack, 2 1/2 lbs. each. Fresh SPAIGNUM, 100 lbs. per sack.

WALKER & CO., Farnborough Station, Havant.

COCCANUT FIBRE REFUSE invaluable for Gardening purposes. One thousand tons, London. Four-bushel bag, 12, bag included; truck-load, loose, 1000 bushels, 1000, 1000.

COCCANUT FIBRE REFUSE may be had at 12. per 4-bushel bag, bag included; a truck, 250 bushels, 12 1/2; one-horse load may be had at the factory, 3/4, by sending by rail.

M. GARÉY, 57, Old Montague Street, Whitechapel, E.

COCCANUT FIBRE REFUSE, bags included, 100, 200, 1; or Truck-load, 250. Delivered free to any rail in London.

J. STEVENS AND CO. Fibre Works, Greyhound Yard, 134, High Street, Battersea, S.W.

MILLER AND JOHNSON (ESTABLISHED 1832) Manufacture the highest quality of ARTIFICIAL MANURES FOR ROOT, CORN, and GRASS CROPS.

ODAMS' MANURES, FOR ALL CROPS. Manufactured by the NITRO-PHOSPHATE and ODAMS' CHEMICAL MANURE COMPANY (Limited), consisting of Tenant-Farmers occupying upwards of 150,000 acres of land.

Chairman—ROBERT LEECHES, Kenwick Old Hall, Norwich. Managing Director—JAMES ODAMS, Sub-Manager and Secretary—C. T. MACADAM.

Central Office—129, Finchurch Street, London, E.C. WEST-MANOR COUNTY BRANCH—Queen Street, Esher. Particulars will be forwarded on application to the Secretary, or may be had of the Local Agents.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1879, against Red Spider, Mildew, Thrips, Greenfly, and other blights, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. Sold Retail by Seedsmen, in Glass, 1/2, 3/4, and 1/2. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

SIMPSON'S RED SPIDER, THIRPS, &c., and ANTIDOTE. Testimonials of the highest order on application. Per quart, 1/6; per pint, 3/4. Supplied to Seedsmen and Chemists. Strongly recommended in the Gardener, and by many First-class Gardeners.

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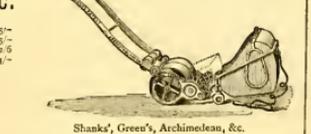
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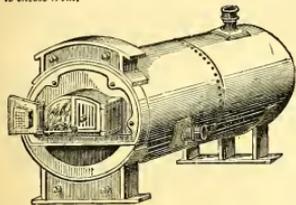
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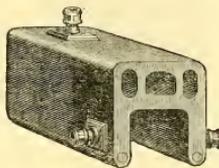
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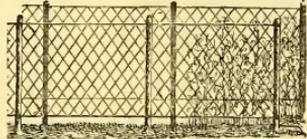


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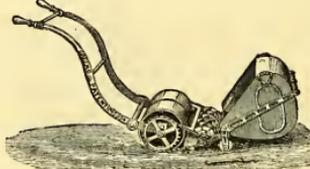
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To cut 26 inches	£13	0	0	To cut 30 inches	£20	0	0
" 28 "	" 17	0	0	" 36 "	" 26	0	0
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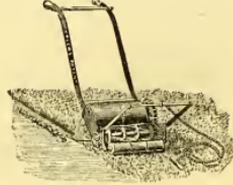
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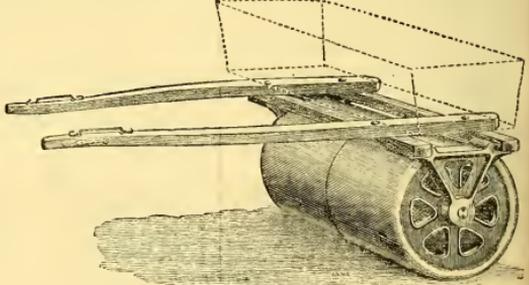
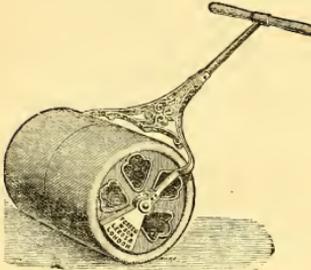


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20 "	22 "	3	17	0	20 "	22 "	4	7
24 "	26 "	5	0	0	24 "	26 "	5	12
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Also, by far the largest and most carefully grown Outdoor NURSERY STOCK in this part of England.

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ERWING & COMPANY,
THE ROYAL NORFOLK NURSERIES, EATON,
NEAR NORWICH.

**STRAWBERRY,
THE DUKE OF EDINBURGH**
(MOFFAT).**THE LAWSON SEED AND NURSERY COMPANY (LIMITED),
EDINBURGH and LONDON,**

Have made arrangements with Mr. Moffat, Coldwells, to send out, for the first time, the above-named splendid Strawberry. Fruit very large, firm, and of excellent flavour, bright scarlet colour. A most prolific bearer, and as a main crop for market purposes it is unsurpassed.

Strong Plants, 42s. per 100; 25s. per 50; 15s. per 25; 9s. per dozen.

Trade Price on application.

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April, 1877.

NEW DOUBLE WHITE VIOLET, "BELLE DE CHATENAY."

Awarded a First-class Certificate by the Horticultural Society of France.

We offer this magnificent Viola for the first time. The flowers are pure white, most delicately perfumed, of immense size, and very double; in fact, almost equalling in size the well-known white Aquegia.

It is pronounced by French horticulturists to be the very best double white Violet in cultivation.

Trade price on application.



Price, 4s. 6d. each (Post-free 5s.).

The raiser says: "This new Violet will be appreciated as a Market Gardener's and Florist's plant, as it blooms most freely and continuously."

The illustration is from some specimen flowers, which are of natural size. We can strongly recommend this Viola as a charming addition to the popular group of flowers.

Trade price on application.

THE QUEEN'S SEEDSMEN, *Carters* HIGH HOLBORN, LONDON, W.C.

NEW ENGLISH-RAISED SEEDLING ROSES.
MESSRS. PAUL & SON,
THE OLD NURSERIES, CHESHUNT, N.

(THESE NURSERIES ESTABLISHED IN 1806).

Have great pleasure in announcing as a continuation of the series of English Roses raised or sent out by them since 1860, inclusive of LORD CLYDE (Paul & Son), DUKE OF EDINBURGH (Paul & Son), CHESHUNT HYBRID (Paul & Son), ANNIE LAXTON (Laxton), DUKE OF CONNAUGHT (Paul & Son), &c., &c., and containing never a bad one in the lot,

TWO NEW ENGLISH SEEDLING ROSES.

H.P. EMILY LAXTON (Laxton), a large full flower with globular, pointed bud, opening into large globular flower. In the way of Monsieur Noman, but of a rich cherry-rose, deeper and fuller than that kind, and with strong vigorous habit, making a grand pillar Rose.

First-class Certificate Royal Horticultural Society; First-class Certificate at the Leeds and Crystal Palace Rose Shows, and 1st Prize at Exeter for twenty-four of any one kind.

H.P. MARCHIONESS OF EXETER (Laxton), clear, rose-flushed, light cherry-rose, large, finely built up flower, very sweet, and of strong vigorous growth; a larger more double Annie Laxton, yet perfectly distinct from that kind.

Plants in pots of the above, ready early in June, 7s. 6d. each, 14s. the two varieties; Blooming Plants, in 24-pots, 10s. 6d. each, 20s. the two varieties.

The two kinds described above have been proved two seasons at Cheshunt, and can be recommended as continuing the race begun by this raiser with H.P. Annie Laxton.

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(These Nurseries Established 1806.)

Chrysanthemums, Dwarf Summer-flowering

ROBERT PARKER begs to announce that he can supply the above-named in twelve distinct varieties...



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FUCHSIAS, VERBENAS, GERANIUMS, PHLOXES, COLEUS, PENTSTEMONS, DAHLIAS, and BEDDING VIOLAS & PANSIES; they are now just right for sowing...

- 30 FUCHSIAS, all distinct varieties, for .. 12 0.
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COLEUS, the best twelve s. 6d.
DAHLIAS, the best Stove and Fancy, 31. per dozen, 20s. per 100.
LORELIA EBOR, the best of all, s. 6d. per dozen, 15s. per 100.
All the best Bedding VIOLAS and PANSIES, names and prices per dozen, 10s. and 100s. on application.
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For description and illustration see H. C.'S FLORAL GUIDE, sent free for twelve stamps.
Fine plants, post-free, 2s. each; established, 3s. This would create quite a sensation in any show, as his Libronas are immense.
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Disinfectors is now a splendid sight.
Fine young plants, 12 inches across, full of bloom, 15s. per 100.
Grand addition for Carpet Bedding, MENTHA P. GIBBARTICUM, one of the most greatly admired wherever seen last season, and pronounced by all to be a decided acquisition.
See cuttings, post-free, for 5s.; fine young plants, 7s. 6d., strong established, 7s. 6d. per 100; special price per 1000.

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NEW DOUBLE WHITE LOBELIA .. 1 6 each.
" " MOTTLED .. 1 0 "
H. CANNELL has probably the most complete collection of Bedding Plants in the Kingdom, and has had the honour of supplying the splendid public grounds at Brighton and Egham, and most of the finest gardens in England, and would be glad to give special quotations for any quantities.
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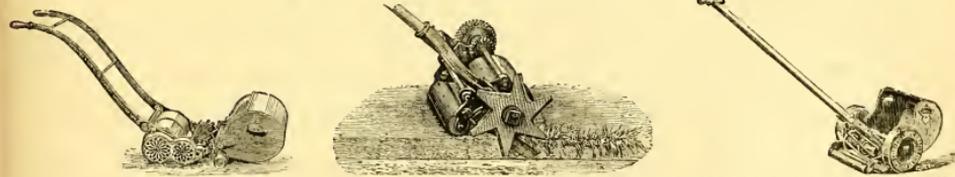
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New Patent "Roller" Lawn Mower. New Patent Lawn-Edge Cutter. Upwards of 37,000 of these celebrated Machines have been sold during the past few years.
Patronised by Her Most Gracious Majesty the Queen; His Royal Highness the Prince of Wales; His Imperial Majesty the Emperor of Germany; His Imperial Majesty the Emperor of Austria; The Imperial Russian Government (for the Agricultural Museum at St. Petersburg); and members of the Nobility and Gentry of Great Britain, &c.
Awarded Medal for Merit, Vienna, 1873 (the only Medal given for Lawn Mowers), Large Silver Medal (the First Prize) at the Meeting of the Royal Horticultural Society, Birmingham, 1872, and in addition, every First Prize wherever these Machines have been brought into competition in actual trial with other makes.
FOLLOWS & BATE have obtained for ever the names of their various Machines, and content themselves with saying that their Lawn Mowers possess them all, and more also; they therefore solicit the favour of an application for one of their CATALOGUES, with Testimonials, before purchasing.
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F. & B. are the sole makers of the well-known Patent "CLIMAX" LAWN MOWER, with Back Delivery from 5s. each; NEW PATENT LAWN-EDGE CUTTER, which entirely supersedes the Shears; PATENT GARDEN FLOUGH, &c.
Machines of any make repaired or allowed for in Exchange.

FOR SALE, Six large AZALEAS, and some STOVE and GREENHOUSE PLANTS, suitable for Exhibitors. Apply, by letter, to H. W. T. Crowe Hall, Bath.



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Victoria and Paradise Nurseries, Upper Holloway, London, N.

TEA SCENTED ROSES.

SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

- PLANTS, in 5-inch pots, suitable for planting out, 1s. to 15s. per dozen.
" extra size, in 6-inch pots, for Greenhouse, set with buds, 24s. per dozen.
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" Half Specimens, 5s. to 7s. 6d. each.
NEW FRENCH ROSES of 1877, 30s. per dozen.
HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36s. to 42s. per dozen.

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THE NEW SEEDLING ROSE, "QUEEN OF BEDDERS" (NOBLE).

See Coloured Plate (after Mrs. Duffield), "Gardener's Chronicle," May 5, 1877.

Perhaps the finest of all the English Seedling Roses of recent introduction. It is few excellence a really Bedding Rose in every sense of the word - requires no pegging down, support, or training of any kind, and is a continuous early and late bloomer.
First-class Certificate Royal Horticultural Society, August 9, 1876.

Its influence may be imagined when it is stated that a plant 18 inches high had eighty-four buds and expanded flowers out on its September 6, 1876.
A constant supply of buds was obtained from early June to November of that year - over five months.
Good Plants are now being sent out in strict relation at 10s. 6d. each.
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DAHLIAS.-The finest Show, Fancy, and Pompon varieties, all true to name, 24s. per 100. J. JACKSON, Nurseries, near Kidderminster.

DAHLIAS, DAHLIAS, DAHLIAS, -2000 of the finest varieties, 4s. 6s., 9s., and 12s. per dozen.
PELARGONIUMS, 2000 Show, Fancy, and French, 6s., 9s., and 12s. per dozen.
ROSES, 50s. in pots, well established, 12s., 18s., and 24s. per dozen.
GERANIUMS, Wonderful (Smith's), 9s. per dozen, strong plants.
An immense stock of STOVE and GREENHOUSE PLANTS of all the leading varieties.
CATALOGUES on application.
HENRY WALLTON, near Burnley.

Cheap Bedding Plants. H. J. HARDY has much pleasure in offering fine and healthy autumn-struck plants of the following: GERANIUMS, Venusium, Master Christine, Jean Suley, Triumph, Madame Vaucher, and other best Bedding sorts, at 6s. per 100 from store, or 8s. per single pots.
CAUCALIA FLORIFIDA AUREA, 5s. per 100 from store.
Package free and carriage paid for 50s. worth. Terms Cash.
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AS SUPPLIED TO: CARTER AND SONS, WITCH AND SONS, WILLS, BULL, DANIELS, EWING, DICKSON, HENDERSON, LAING, &c., &c.

Testimonial from J. Wills, Esq., the great Horticulturist: "To Mr. M. H. BENTON. "May 9, 1877. "Dear Sir,-I have very much pleasure in stating the Cocoa Fibre you have supplied me with some quantities, has always given me great satisfaction. Mr. Bausey, my Manager at Aberley, considers it the best he has ever used, and the most material for purposes of sowing and sowing seed. Please send me another truckload to Aberley and oblige, "Yours very truly, "JOHN WILLS."

3d. per bushel; 100 for 20s. Truck, 35s. Free to rail. PEAT, LOAM, SILVER SAND, LEAF MOULD, MANURE, RAFFIA, RUSSIA MATS, &c. M. H. BENTON, NUNHEAD, S.E. (Near Junction).

COCOA-NUT FIBRE REFUSE may be had at 12. per 4-bushel bag, bag included; a truck, 25s. bushels, 5s. 5s.; one-horse load may be had at the factory, 1s. by sending for it. M. GAREY, 37, Old Montague Street, Whitechapel, E.

COCOA-NUT FIBRE REFUSE invaluable for Gardening purposes. One thousand testimonials. Four-bushel bag, 12s., bag included; truck-load, loose, free to any Rail, 35s. POTTER OYLER, Spitalfields Market, N.E.

Fibrous Peat for Orchids, &c. BROWN FIBROUS PEAT, best quality for Orchids, Stone Plants, &c., 40s 6d per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 7s. 7d. per ton. Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R. by the truck-load. Simple sack 6d. each. Fresh SPHAGNUM, 10s. 6d. per sack. WALKER AND CO., Farnborough Station, Hants.

ODAMS' MANURES, FOR ALL CROPS. Manufactured by the NITRO-PHOSPHATE and ODAMS' CHEMICAL MANURE COMPANY (LIMITED), consisting of Tenant-Farmers occupying upwards of 150,000 acres of Land. Chairman - ROBERT LEEDS, Keswick Old Hall, Norwich. Managing Director - JAMES ODAMS. Sub-Manager and Secretary - C. T. MACADAM. Chief Office - 109, Fenchurch Street, London, E.C. WESTERN COUNTIES BRANCH - Queen Street, Exeter. Particulars will be forwarded on application to the Secretary, Or may be had of the Local Agents.

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CYCLAMEN PERSICUM

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MR. POSTANS' PELARGONIUMS

For 1877.
NOW BEING SENT OUT.

Opinions of the Press.

The "Gardeners' Magazine," April 29, 1876, speaks as follows:—

"Mr. R. E. Postans' collection of Seedling Pelargoniums, Hybrid Perpetual and Tea Rose, &c., have passed into the hands of Mr. Charles Burley, of the Paradise Nursery, Brentwood. We have before us a box of flowers of Mr. Postans' latest Seedling Zonal, and they are certainly remarkable for quality. We see amongst them huge single flowers of faultless form, and of the most glorious crimson and scarlet colours, and a double white which ought—as we now judge it by trusses only—to sweep all other double whites out of the market. The name of this is Bridal Bouquet.

Editors, "Gardeners' Chronicle," April 21, 1877.

"Mr. C. Burley, of the Brentwood Nursery, has sent us flowers of some very striking new varieties of Zonal Pelargoniums. Amongst them is one called Purple King, which is the most pronounced purple shade of any which we have yet seen, and, according to Mr. Burley's statement, is one of the most profuse of flowers. It comes in fine large trusses, is of medium size and of good form, the colour a crimson-magenta, the under petals especially being flushed with purple. Its fine colour, neat zonal habit, and free-flowering habit should make it welcome as a bedder. Magnificent is an exquisite flower, larger than the foregoing, better shaped and more refined, with a crimson flush more pronounced and predominant, though the purple is apparent. Beethoven is a very large, pure, dense crimson-scarlet, entirely self-coloured, and thus has an excellent rich effect. Sir Edwin Landseer, said to be a fine bedder, is similar in colour to the last, and, like it, is a bold telling flower. Hogarth, Charm, and Mozart are fine rose scarlets, not very distinct in the shade of colour, but have a very highly meritorious batch of novelties."

From "Gardeners' Magazine," April 21, 1877.

"ZONAL PELARGONIUMS CHARM AND MOZART.—Cultivators of Zonal Pelargoniums should not fail to acquire the new varieties, Mozart, two varieties raised by Mr. Postans, and now being distributed by Mr. Burley, of Brentwood. Charm has large size, with broad overlapping petals, and trusses of good proportion; the colour is a rich shade of purple-crimson. Mozart has flowers of large size, and superbly tinted with a rich maroon-crimson shaded with purple-magenta; it thrives, as in the case of the variety first-mentioned, are of large size, and very freely produced. Both varieties are remarkable for their compact free branching habit and adaptability for specimen culture. Several other varieties from the same seed-bed are offered, and are no doubt highly meritorious, but these are so exceedingly good that they will deserve to have special mention made of them."

"Gardeners' Magazine," May 5, 1877.

"MR. POSTANS' ZONAL PELARGONIUMS.—The splendid collection of new Zonal Pelargoniums purchased from Mr. Postans by Mr. Charles Burley, of Brentwood, have for some time past been flowering freely, and delighting, sometimes surprising, all who have seen them. It is sufficiently well-known that the raiser of these varieties secured, by his painstaking care, several special strains, of which the series producing the white-edged leaves and white flowers may be mentioned as an example. He was not less successful in establishing a race of true double, combining flowers of immense size and substance, and of the most delightfully accurate form, produced in great globular trusses, with plenty of neat habit, robust enough, but well within the bounds of free growing. These are now flowering freely in Mr. Burley's Paradise Nursery, Brentwood, and should be seen at home by collectors of Zonals, because of many of the kinds Mr. Burley has strong plants in which the characters are well developed, and not only are they capable of when fairly well-grown for the conservatory or exhibition stage. The following have been specially noted as distinct and splendid, such as amongst others, the Bridal Bouquet, and do well to become acquainted with quickly.—Beethoven, Charm, Magnificent, Polyphemus, Purple King, Mrs. J. C. Quessell, &c."

New Double White Pelargoniums.

"BRIDAL BOUQUET."

The *Gardeners' Magazine*, April 29, 1876, speaks as follows:—"Mr. R. E. Postans' collection of Seedling Pelargoniums, Hybrid Perpetual and Tea Rose, &c., have passed into the hands of Mr. Charles Burley, of the Paradise Nursery, Brentwood. We have before us a box of flowers of Mr. Postans' latest Seedling Zonal, and they are certainly remarkable for quality. We see amongst them huge single flowers of faultless form, and of the most glorious crimson and scarlet colours, and a double white which ought—as we now judge it by trusses only—to sweep all other double whites out of the market. The name of this is 'Bridal Bouquet.'"

Flowers now ready 15s.

"WHITE WONDERFUL."

A truss was sent to Mr. C. TURNER, who writes as follows:—"The Royal Nurseries, Slough, August 21, 1876.—Many thanks for truss of your double white Geranium, White Wonderful, a very good one, for it is a wonderful good variety, the best I have seen by far. Will be sent out next spring."

Mr. E. S. WILKINS, of Victoria and Essex Nurseries, Upper Holloway, writes, August 10, 1876:—"Your box containing flowers of Geranium to hand. It is the best thing in that way I have yet seen. White Wonderful."

Price 10s. 6d. each, now ready.

"BELLE OF THE BALL."

This is a free-flowering distinct variety, and remarkable for its great beauty. The habit is very compact, of the ordinary zonal type, dark green foliage with good well-defined dark zone, throwing up nice trusses of really good double flowers of pure white with bright pink centre. It is a single size, and a fine bouquet; it is effect is charming. There is but little doubt that this variety is a step in the right direction.

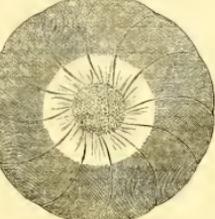
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SUPERB STRAINS OF
FLORISTS' FLOWERS,
POST FREE.

The Finest Strain of Cineraria.



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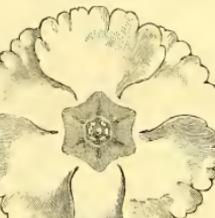
This will be found unequalled by any in cultivation, the seed having been saved from the finest named variety only.

Price 2s. 6d. per packet, post-free.

From Mrs. A. ALLESTON, *Pittleeve*, May 3.

"Our Cineraria this year (from your seed) are splendid; they far surpass any I saw at the Botanical Gardens yesterday."

The Finest Strain of Primula.



SUTTON'S SUPERB PRIMULA.

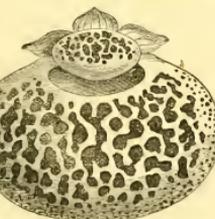
This choice stock has been carefully selected from the largest fringed flowers of good colour. Habit robust, with bloom thrown well above the foliage.

Red, white, or mixed, 2s. 6d. per packet, post-free.

From W. EDWARDS, Esq., *Wellington*, January 21.

"I cannot help saying that the Primulas from your seed have always given great satisfaction, but this year more than ever."

The Finest Strain of Calceolaria.



SUTTON'S SUPERB CALCEOLARIA.

This splendid strain has been most carefully selected from the very finest collections in cultivation. The plants are compact in habit, with beautiful green foliage, and a profusion of bloom. The flowers are perfect in form and substance, and of every shade of colour.

Per packet, 2s. 6d.

From A. E. RUSSELL, Esq., *Dalsholme*, July 10.

"My Calceolaria plants, from seed purchased of you last year, are particularly fine, of very compact habit, and beautiful in colour."

SUTTON & SONS,
THE QUEEN'S SEEDSMEN, READING.



SATURDAY, JUNE 2, 1877.

BLAIR ATHOLE.

BLAIR ATHOLE'S green pastures lie alongside the Garry and the Tilt, midway between Birnam Hill and the Pass of Drumochter. We propose to offer a brief description of the park and policies, preceding our account by a short historical notice, to remind the reader of the stirring annals of the country we are engaged upon. In the case of a residential property such as the above, this kind of narrative seems necessary to a correct appreciation of the subject. The market value of a place must be obviously dependent upon its position, and in some degree it is affected by its history. The house of Shakespeare, or any other great man, like mighty Caesar, "dead and turned to clay," would fetch a long price, and Blair Athole, haunted as it is and teeming with historic memories, is the more valuable from its characteristic *genus loci*, which must influence all who visit this famous spot.

The district of Athole is unique in having preserved its name and boundaries from the earliest period of Scottish history. It was one of those seven ancient provinces which were ruled over, each by its own Maormor, or chief, before the Saxon title of earl had been introduced. Its first earl was Donald Bane, a cousin of Edgar Atheling. There were four earls of Celtic race, and after them three daughters of the last earl took the title in turn, with the estates, by a rule of female succession, which obtained then and is now rare. On the accession of the daughter of one of these three countesses she contracted a marriage with John de Strathbogie, which was followed by heirs male till 1314, when the twelfth in succession revolted against Robert the Bruce, and forfeited the earldom. There were then recreations and extinctions till the year 1437, when one of the political misadventures of the period befell this peerage in the forfeiture of Earl Walter, and the removal of his head from his shoulders. In 1457 James II. raised his half-brother, Sir John Stewart, to the vacant earldom, and in 1595 it passed by marriage to the Murrays.

The earls of the house of Murray became marquises in 1676 and dukes in 1703. They were Jacobites, as a rule, owing to their Stewart blood, and in 1689, at the period of the battle of Killiecrankie, 1200 of their men stood before the Castle, then the head-quarters of Dundee, and toasted King James in their Glengary bonnets, which, in the absence of whisky, they dipped in the Banovy, a burn running through the park. In 1745-6 the Government garrisoned the Castle, and Lord George Murray, the Duke's brother, and the devoted Lieutenant-General of Prince Charles, besieged it, and fired red-hot shot upon his father's roof from the park where, as a boy, he must have often sported.

It is supposed that at the close of the Rebellion the owners of the ancient fortress were desired by Government to modify its architecture, for in 1750 Duke James replaced the turcs, embrasures, and bartisans of his feudal residence by a modern roof, and converted it into one of the finest hunting *chateaux* in Europe. We may observe here that the original castle was erected by a member of that very energetic family of Comyns, who counted among their notabilities a Red Comyn, besides

unnumbered black and blue Comys, battered in the wars. In an illiterate age this name was variously spell, like that of Steward, Stewart, or Stuart; in modern English it is written Cumming.

To complete our short history. At a critical period towards the close of the last century, when the Highlands of Scotland came forth nobly in defence of king and country, the fourth Duke of Athole was one of many magnates who raised a regiment on his own lands. The present corps of Athole Highlanders originated in a body of men who were equipped by the late Duke, then Baron Glenlyon, to attend him at the Earl of Eglington's tournament in 1839. Three years later, when he was almost blind, the same noble Duke once more summoned his men to meet the Queen, on the occasion of her Majesty's first visit to Dunkeld and Scotland. They encamped on that occasion, 870 strong, within the ornamental grounds of Dunkeld House. In 1844 the Athole men again guarded the person of the Queen during her residence at Blair Castle.

There are at least 7000 red deer in the Forest of Athole, and the hunting entertainments are historical. We pass on to an account of our walk with the deputy forester, to whose guidance the Duke's wood manager, Mr. McGregor, obligingly commended us after showing us the famous Larch woods of his own district, near Dunkeld.

Entering the park by the grand entrance in the village, where we admired the lodge and lofty iron gates and approach wall, but not the narrow avenue of Scotch Fir and Limes leading to the house, we turned into Tiltside Walk, and then through a circular lawn or bowling-green planted round with Larches of 50 and 80 cubic feet, and each standing on sufficient space to attain its natural growth. From this magnificent grove a turf walk through trees and the ever-popular Portugal Laurel, leads to the low southern wall of the kitchen garden. The Hercules Walk skirts this low wall, and leads on to the Castle by a broad walk, planted on each side with various ornamental shrubs and evergreens. There is about half a mile of pleasant turf walk from Tiltside to the lawn. The most interesting trees are some old Horn-beams of weeping habit, and a rampant Larch throwing out a great side limb at 15 feet from the ground. The kitchen garden with its curling-pond fills a gentle valley running east and west, and a high wall, with a viney in the centre, shelters the garden on the north and affords a favourable aspect for fruit. Upon the lawn there is a *Picea nobilis* planted by the Princess of Wales, and a *Pinus Nordmanniana* planted by the Prince in 1872. A Larch *canadabum* on the lawn forms an interesting example of the freaks of vegetation.

The Castle is a good house of three storeys, an excellent example of the Scotch baronial style, lately enlarged and improved, but unfortunately plastered over with a wash of sand and lime, in imitation of certain uncouth old buildings, such as Stirling Castle, which appears, from the carse below, the poorest palace in Britain perched upon the noblest site. We are here at the opposite extremity of the meagre Fir and Lime avenue, and it must be admitted there is an awkward huddling of the woods in the park, and a want of harmony between the near and distant landscape. The mountains and the home scenes have not, at present, been so skillfully linked together as a Loudon or a Paxton would desire. Blair is not perfect, but a good house on a noble lawn and bold slope, with woods and forests and the Grampians in the rear, cannot easily be spoilt, and the few surrounding defects only serve to show that every man is not his own best gardener, because the eye so soon becomes accustomed to blemishes about home. *H. Evered's.*

(To be continued.)

New Garden Plants.

STAPELIA GIGANTEA, N. E. Dr. (fig. 112, p. 693)*.

Stems 4 to 8 inches high, 1—1½ inch thick, somewhat clavate, pubescent, erect, shortly decumbent at the base, and then branching, four-angled, angles compressed, with short, erect teeth. Pedicels stout, pubescent, in the young (Gerrard's specimen). Calyx lobes lanceolate-acuminate, pubescent, 5 lines long in the dried specimen, probably 6—7 lines long when fresh. Bud pentagonal, ovate-acuminate. Corolla very large, 12—14 inches in expanse; the pubescent base is pale green, the face is rugose, pale yellow, suffused with red around the throat, and everywhere marked with irregular, transverse, brownish red lines, the entire surface sparsely covered with very pale, short (about two lines long) hairs. The lobes are lanceolate-acuminate, 5—6 inches long, about 2½ inches broad, 9—11-nerved, with (apparently) revolute margins, fringed with 3—4 lines long pale hairs. Ligule spreading, dark purple-brown, broadly linear-oblong, slightly dilated at the shortly 3-toothed apex, the middle tooth subulate and more projecting than the broad, rounded, lateral teeth. Rostra and the rest of about equal length, dark purple-brown—the former erect, straight, rather stout, the latter broad, wing-like, oblong obtuse, somewhat spreading.

This *Goliath* of its genus is a native of Zululand, where it was discovered by Mr. R. W. Plant not very long since, in the garden of the little known part of South Africa.

My present description of this fine species is based, partly upon two excellent drawings of the plant in the Kew Herbarium—one coloured, the other in pencil, executed by Mr. J. Sanderson, of Natal. That drawing, in which the accompanying woodcut is a reduced copy, bears the following inscription:—"R. W. Plant's *Stapelia*; brought by him from the Zulu country; fls. Attercliffe, 10th Apr., 1860"—partly upon a dried flower in the Kew Herbarium (Gerrard, No. 717), which, although labelled "Natal," was probably collected at Zululand. Gerrard also botanised in that country; but whether of Natal or Zululand origin this specimen is undoubtedly the same species as that represented by Mr. Sanderson's drawings. It has shrunk very considerably in the process of drying (as do all *Stapelias*), but even now it measures 9½ inches in expanse; the parts of the corolla are spilt by the pressing, and only the form of the ligule and aloe can be satisfactorily made out; they, however, agree well with Mr. Sanderson's delineation of them. For the rostra I have had to rely entirely upon his drawing. Although the corolla is represented as glabrous, and the lobes few-nerved in the drawings, this is easily reconcilable with the hairy corolla and 9—11 nerved lobes of Gerrard's specimen, for when fresh the hairs on the surface of the corolla are not always very apparent, unless they are dense, or long, or differently coloured, and best being retained to make up the making them too conspicuous are easily overlooked, as I suspect has been the case in this instance. As to the difference in the number of nerves, it is only the most strongly marked ones that are visible on the face of fresh flowers.

My reason for supposing this plant to be in cultivation is as follows—Mr. T. Cooper, the well-known collector and introducer of many South African plants, during a visit to the Botanic Gardens, D'Urban, in August, 1862, had his attention drawn to a species of *Stapelia* by Mr. McKen (the then curator of the gardens), who told Mr. Cooper that after the death of Mr. Plant in Zululand his effects were "brought in" by the Kafirs. Among them was this *Stapelia*, in which (Mr. McKen) said produced flowers 9—12 inches in diameter. Mr. Cooper was presented with a portion of the plant, which he brought to England, and has now in cultivation. Cuttings of it were distributed, under the name (suggested by Mr. McKen) of *Stapelia Plantii*, to several *Stapelia* cultivators, among others to Mr. W. W. Saunders, and through him to the Royal Gardens, Kew (the latter one is now dead); but has not been recorded in either of these collections, yet, from Mr. McKen's statement, I have little doubt that it is the same species as the one here described and figured, and I shall be very glad to learn if it has flowered in any other collection.

The collection at Kew contains a plant sent home by Mr. McKen in 1862 from the Umvelo River, Zululand, which, from the resemblance of the stem to Mr. Sanderson's drawings, and taking into consideration the source from whence it came, must, I

* *Stapelia gigantea*, N. E. Brown.—Ranis erecta, clavata, basi breviter procumbentibus, 4—8 ped. longis, 1—1½ pol. crassis pubescentibus tetragonis angulis compressis, densitate raris pilis brevibus, pediculis erectis, calycibus lanceolatis pubescentibus; corolla maxima, diam. 12—14 pol.; laciniis inaequalibus acuminatis; subula pallida, virescente, facie rugosa, lobis linearibus, subulata, plicata, hirsuta, pilis flavo-crenatis, lineis fusco-ruvis transversis notata; ligulis patentibus atropurpureis lineis linearibus, notata; subulata breviter atropurpurea; rostris albis atropurpureis, subulobis, his erectis strictis, his albis lineariformibus, oblongis, obtusis sub-patentibus. Hab. in Zululand. Plant. 1. Gerrard No. 717!

think, be the same species. Although Mr. Cooper distributed his plant under the name of *S. Plantii*, it must not be confounded with the true *S. Plantii* Hk. l., figured and described in the *Botanical Magazine*, t. 5962, which is a very different species, with flowers not one half the size of those of *S. gigantea*. N. E. Brown, Kew.

MASDEVALLIA (SACCOLABIATÆ) RADIOSA, n. sp.*

It was last April when I first saw this *Chimered* Masdevallia at the Royal Exotic Nursery, Chelsea. It made one think, notwithstanding the very different colours, of Sir Trevor Lawrence's *M. pittacina*, but the lip brings it close to *M. Houteana*, from which the latter is distinguished by the presence of the sepals (and the colours) distinguish it at once. It is not just an extra beauty. Its flowers are two-fifths of the size of those of a good *M. Chimeria* (Wallisi). The tails are very dark, almost black. The outside of the flower offers a surprising variation of brown and yellow, very difficult to describe. Blunt and dark in the backside of the three primary vascular bundles, internally the upper parts of the sepals are almost light ochre coloured. The larger inner part looks blackish purple, from being densely covered with blackish purple, purplish ground, and purple dots, which with a brown tinge at the base, and the whitish callus on the plate-like lip of a blackish sepia colour. The lip is white, with the upper surface of the radiating disseminations reddish colour, whitish, with a few fringes at the black apex.

I have just had the young flowers, and have found to my astonishment a young flower-bud near the old ovary involved in the bract of the second flowers.

It was discovered in New Grenada by Mr. Wallis. It appears to be No. 652 of his sketch-book. It so far, has been found at the foot of new mountains. Mr. Wallis distinctly states it looks so very much like *M. Chimeria* (Wallisi, of course), that he had confounded both before he had seen this flowering. I have to thank Messrs. Veitch for very satisfactory materials. *H. G. Rehb. f.*

ZYGOPETALUM CLAVII, n. hybr.†

The inflorescence of this nice new hybrid (of course I have only the inflorescence at hand) is that of well-known *Z. cicutum*. The sepals ad petals, however, are not blotched at all, on a green ground, but they are totally brownish purplish, with a very narrow green border. The lobes are broad, and the inner auricle adnate to the callus which is whitish, with bluish violet stripes, free from any velvety lines, and the cuneate ovate blade is totally free from any velvet, and beautifully purplish blue, so that it is the full colour of *Zygopetalum maxillare* (manulatum, Galetier). The column is new, that of *Z. cicutum*. The bracts are decidedly smaller than those organs in the species just named. This very interesting new hybrid was raised by Colonel Clay, The Slopes, Wallasey, Birkenhead. It is *cicutum* × *maxillare*. I have just had from Mr. S. B. Wallis, Victoria, at Paradise Nursery, Second Sisters Road, Holloway, London, N., for it the young plant made its first public appearance, as it appears, on April 21, at the monthly meeting of the Royal Botanical and Horticultural Society, Manchester. There Colonel Clay, whose name the young beauty so well bears, had a First-class Certificate (see *Gardener's Chronicle*, May 5, *l.c.*, p. 571). It is a great pleasure to see the Manchester gentlemen appreciating so high and so well horticultural work, horticultural performance, horticultural skill, now-a-days so often overlooked.

I have just had from Mr. S. B. Wallis, Victoria, at the Royal Horticultural Society, May 1 (see *Gardener's Chronicle*, *l.c.*), on the golden letter day, the Queen's day. It was stored there exhibited by Colonel Clay, and was awarded a Second-class Certificate. *H. G. Rehb. f.*

GONGORA CHARONTIS, Rehb. f.‡

A strong, big, rounded, shining bulb, with great leaves, and producing a hairy spike with numerous gay flowers. Sepals and small petals yellow, spotted with

* *Manudallia radiosa*, n. sp.—(Saccobaliatæ) foliis cuneato-oblongo-linearibus, pedunculato excrescentibus ut (L.)—tribus (glaberrimis) hypericocoloribus; bracteis coloratis acutis, ovario pedicellato leviter, perigonio cupulato, abbreviatis laminae (non maculatis), lobis auricularibus parvis, callo glaberrimo, lamina cuneato-oblonga glaberrima purpureo carulea (non striata) interius, exterioribus brevibus, abbreviatis, lobis superioribus transverse, sepalis lateralibus triangularibus; ommibus in calice venis pilis longioribus exsertis; sepalis albis apice caruleo-glaberrimis, lobis ovatis, ovato-linearibus, demum dense, sepalis hinculatis auribus nigris, apice pedicello-patellis callo oblongo (non striatis) interius, exterioribus brevibus, abbreviatis, lobis profunde sulcatis, epichio subhemisphericis, limbo imbricatis, lamellis radiceis radiatis, ab utroque latere albis, demum apice densitatis, curvis, Wall. & Ecklonia in litt. Wall. & Ecklonia in litt. ed. Veitch Londiniensis. *H. G. Rehb. f.*

† *Zygopetalum Clavii*—(maxillare × cicutum)—Habitu *Zygopetalum cicutum*; bracteis ovatis, sepalis abbreviatis laminae (non maculatis), lobis auricularibus parvis, callo glaberrimo, lamina cuneato-oblonga glaberrima purpureo carulea (non striata) interius, exterioribus brevibus, abbreviatis, lobis superioribus transverse, sepalis lateralibus triangularibus; ommibus in calice venis pilis longioribus exsertis; sepalis hinculatis auribus nigris, apice pedicello-patellis callo oblongo (non striatis) interius, exterioribus brevibus, abbreviatis, lobis profunde sulcatis, epichio subhemisphericis, limbo imbricatis, lamellis radiceis radiatis, ab utroque latere albis, demum apice densitatis, curvis, Wall. & Ecklonia in litt. Wall. & Ecklonia in litt. ed. Veitch Londiniensis. *H. G. Rehb. f.*

‡ *Gongora Charontis*, H. G. Rehb. f. in *Gardner's Chronicle*, xii, p. 129, 1876.—Pseudobulbus rotundato-conicus; foliis linearibus, ovatis, demum dense, sepalis abbreviatis laminae (non maculatis), lobis auricularibus parvis, callo glaberrimo, lamina cuneato-oblonga glaberrima purpureo carulea (non striata) interius, exterioribus brevibus, abbreviatis, lobis superioribus transverse, sepalis lateralibus triangularibus; ommibus in calice venis pilis longioribus exsertis; sepalis hinculatis auribus nigris, apice pedicello-patellis callo oblongo (non striatis) interius, exterioribus brevibus, abbreviatis, lobis profunde sulcatis, epichio subhemisphericis, limbo imbricatis, lamellis radiceis radiatis, ab utroque latere albis, demum apice densitatis, curvis, Wall. & Ecklonia in litt. Wall. & Ecklonia in litt. ed. Veitch Londiniensis. *H. G. Rehb. f.*

brown. Lip white, its apex and basilar wings rich yellowish, spotted with crimson, as is the white column. The flowers are half the size of those of old *G. atropurpurea*. It was discovered long since in New Grenada by Mr. Gustav Wallis; it has, however, only reached Europe in a dried state, and I had not the least idea of its gay appearance (gay, of course, for an old-fashioned Orchidist, who does not confine his love to flowers of one-third of a foot in diameter painted in white, scarlet, purple, or crimson). I saw it in April at Mr. Bull's nursery, where it had been sent by Mr. Shuttleworth from New Grenada. *H. G. Rehb., j.*

CYMBIDIUM GIGANTEUM, Wall., LONIANUM.

This appears to be an uncommon plant. Its flowers are larger than those of the old *C. giganteum*, Wall. (actually rather rare in cultivation), but shorter than those of the well distinct *C. Hookerianum* I saw (and obtained) some weeks ago with Messrs. Veitch.

an extra surprise, and if they are agreeably surprised they will, I dare say, this time forgive me. The plant is a new Burmese discovery of Mr. Boxall's, and I have to thank for it Mr. S. Low, whose name it bears, decidedly to common satisfaction. *H. G. Rehb., f.*

ONCIDIUM ANNULARE, Rehb., f.; Gard. Chron. 1875, March 27, 396.

At last this splendid plant has flowered in England! Its blooms are nearly as large as those of *D. acuminatum* and *D. macranthum*. The chief colour is a rich splendid yellow-chestnut-brown. The sepals have an exceedingly narrow yellow border, and the petals are very wavy, of the same shade of brown, but with a broad shining apex and broader border of a very beautiful deep yellow. They are coherent at their top, as if glued together, and form thus a round of a ring; hence the name, annulare. The lip is brown, with a yellow top; the crest with yellow light teeth,

duce in one of these pots, and, whether it be a *Hyanthaea*, *Fuchsia*, *Asiatic*, *Pelargonium*, *Erica*, or any other of the plants taken to market, there is seen a perfect specimen. The wonder is how so much can be obtained from a root-space so circumscribed. The growing of plants for market is now a science, and each perfect specimen means the successful application of scientific principles. The low houses are constructed expressly for the development of such plants; they cannot be show houses in any sense of the word. A constant unvarying round of attentions making up the cultural process is given with unbroken regularity. They are necessary to the rapid growth and well-being of the plants, and they are applied without stint of labour and time. If any young gardener wished to get a lesson in plant growing, he could not do better than obtain it at one of these plant-producing centres.

Perhaps most striking of all is the character of the decorative *Pelargoniums*. There are quantities of plants 18 or 20 inches in diameter, and the same or rather more in height, with four or five main stems, with branches springing from these crowned with twenty to twenty-five trusses of bloom—and such trusses!—the flowers large and finely developed. What a capital lesson would be taught if, during the summer months, a few of these plants could be taken to some of the provincial horticultural shows, where *Pelargoniums* are sometimes produced in such a way as to lead one to wonder the exhibitors could be daring enough to publicly display such productions.

Not only do the growers for market avail themselves of the best productions of others, but they are not slow to endeavour to improve the best they can find to cultivate. Of the older varieties cultivated for market a few good representatives will be found in Mrs. Bradshaw's; Digby Grand, a fine variety with crimped edges; Kingston Beauty, a good white; Monte Christo, Rob Roy (Foster), very free; Triomphe de St. Maude, very effective with its bold trusses of large crimson flowers; and Duchess of Edinburgh, a charming light variety, very free and effective.

Of new varieties there are Duchess of Bedford, raised by Messrs. Beckwith & Son, Tottenham, white, with slight pale carmine spot on the top petals, the flowers handsomely fringed, remarkably free of bloom, producing large bold trusses, and having an excellent habit—awarded a First-class Certificate of Merit; and Empress of India, raised by Mr. James Sweet, Leyton, between Digby Grand and Mrs. Bradshaw, having pale lower petals, the upper petals dark flushed with carmine—a very free and valuable variety, also awarded a First-class Certificate of Merit.

Messrs. W. & A. Brown, of Hendon, who are extensive growers of *Pelargoniums*, have also raised some very fine varieties, a group of which were at the Royal Horticultural Society's meeting on May 2. They were all characterised by a good free branching habit, and as prodigal of bloom as one could well desire a *Pelargonium* to be. They may be described as follows:—Sultan, dark blotch on top petals, with broad orange-rose margin; carmine-rose and violet lower petals, with very slight spot on each petal; T. A. Dickson, dark top petals, pinkish rose lower petals, dashed with violet, and slight orange and maroon spot, very fine and free; and Challenger, dark top petals, with bright carmine-rose margin; lower petals pale bright violet-rose, very fine and effective. These three may be bracketed together, inasmuch as they resemble each other to some extent, at the same time being quite distinct. They promise to become great favourites for market and decorative use. The remaining varieties were Commander, dark top petals and clear rose pink lower petals, good shape and highly effective; and Fascination, dark top petals, with carmine and orange margin, clear pinkish rose lower petals and white throat, the flowers small, but borne profusely on bold trusses. These have only to be known to be in demand as bright coloured decorative varieties. And they are not to be commended merely for market purposes, but also to those whose business it is to have their conservatories and greenhouses gay during the summer months. Colour, habit, free growth, and prolificacy of bloom all unite to make them valuable for the particular work to which they are so well suited. *R. D.* [Our illustration (fig. 110) exactly represents the style and character of the *Pelargoniums* grown for market by Messrs. Beckwith & Son and other growers, and was sketched at the exhibition of Covent Garden produce held on April 18. Eds.]



FIG. 110.—SHOW PELARGONIUM, AS GROWN FOR MARKET.

The petals of Mr. Boxall's plant are much broader than those of the old species, and the middle lobe of the lip is longer. Dry rachises of the inflorescence prove it to have eighteen to twenty flowers, which Mr. Boxall says are of a greenish colour, with the top of lip maroon or deep claret coloured. It may even prove to be a new species, yet I do not dare to speak about this question from my materials actually at hand. Garden botanists should be judged with a certain degree of charitable intelligence; at this moment it is impossible to come to a decision about the question; next year, if it flowers side by side with the old *C. giganteum*, a clever amateur's daughter, thirteen years of age, may very easily pronounce a sound view. That the possessors may be pleased by

two lateral brown disks, yellow centre, and three purplish violet small teeth before the apex. The column is very remarkable for its queer obtriangular little dark wings, and for its base much narrower than the enlarged part immediately under the stigma. For the pleasure of seeing the fresh flowers I have to thank Sir Trevor Lawrence, who kindly informs me that the plant closely resembles, in bulb, leaf, inflorescence, and general habit, *Oncidium macranthum*. The inflorescence had nineteen or twenty flowers, five of which are at hand. *H. G. Rehb., f.*

DECORATIVE PELARGONIUMS.

ONE effect of the recent exhibitions of Covent Garden produce that have taken place at the meetings of the Royal Horticultural Society at South Kensington is to demonstrate the fact that the 48-spot is a wonderful power in horticulture. It is something marvellous what a market grower can pro-

triangulis oblique acuminatis triserviis minutissimis; habello unguiculato, hypochilii labiis semioblongis antice setiferis, mesochilio ancipiti rhombico utriusque apice undecimato, epichilio microlabiato acuto, emulsoque partibus confluentibus; columna clavata.—Ab. affinis *G. scaphophoro*, Rehb., f. *Wewze*, recedit hypochilii labiis antice longe aristatis. Valde pavillifera.—Nova Grenata, Wallis; Shuttleworth (vid. vide. ce in botto Bulliano) *H. G. Rehb., f.*

CULTIVATION AND EXPORTATION OF LIBERIAN COFFEE.

An enormous demand has recently sprung up for plants of this highly important new species—Coffea liberica, Hiern. Large numbers have been sent by Mr. Bull and from Kew to our various Coffee-growing colonies, and supplies have also been given in exchange to most of our leading nurseries, who could evidently dispose of almost an unlimited quantity. Inquiries have been made as to the best method of home culture, for the express purpose of exportation, so that instructions, according with the successful treatment pursued at Kew, will be found of value to many.

The impotations of plants cannot be recommended. A certain amount of time would be gained if at once shipped to destination, but it could only be done at a risk and expense for which no compensation would begot from the few transmitted successfully. All indeed might be dead. The most reliable and cheaper method is to obtain seeds, and send young plants in a proper condition for safe transit. They can be sent in pans, after from nine to twelve weeks from the date of sowing, or in pots about the fifth month; but to have them in the most robust condition it may be advisable to grow for twelve or fifteen months, a longer time than which would scarcely afford any advantage. Apart from the question of convenience, it is desirable to point out the advantage of each plan, so that choice of process may be made, according to circumstances. All have been successful, as sent from Kew to all parts of the world. The cases are made with an inside superficies of 30 inches by 20 inches, and thus contain fifty-four 3-inch pots—the best and most convenient size. The same case will contain four pans undisturbed, with another turned out to fill up the remaining space, making in all about 250 plants. In this way the largest number may be packed in a given space, but they require to be separated and re-established after arrival; they may, however, travel perfectly well, and have reached Queensland in good condition. The plants in pots, being older and better established, may be expected to travel with greater certainty, and would have the advantage of being ready established on arrival. Those of twelve or fifteen months' preparation are best for journeys difficult to make and for very long distances. The length of time required for preparation will, of course, depend on the details of treatment, but the above will be found to hold good as a rule.

To receive the seeds in good condition it is important to have them removed from the pulp, either by a fermentation is liable to set in, which may destroy the vitality of either the whole or a large proportion. They come perfectly well if tied up in small canvas bags. The exportation of seeds has not been attended with the best results. They travel in moderately dry sand perhaps better than in any other way. Sand is a first-rate material for the packing of many kinds of roots, &c. Charcoal, though somewhat popular for the purpose, should never be used; long experience proves it of no value, and it may be even worse than useless. For the economy of space, it is a good plan to sow broadcast on a bed of Cocoa-nut fibre—its temperature should be about 85° F. This is a good medium for the germination of seeds in large quantity, as for instance the case of Hevea (India-rubber), which last year covered several beds entirely. The cotyledons will be expanded in about six weeks, and just at this stage the young seedlings should be planted in pans. The word planting is properly used, since from the healthy growth of roots obtained in the fibre, it is impossible to prick off in the usual way, but commencing at one end, row after row must be fixed in with soil. It cannot be recommended to sow in the pans with a view to save labour, as the roots would go direct to the bottom, and the grow in a mass, and it could not be known either by the depth the seeds would germinate. No plants have been sent from Kew that have not been re-established after germination. The soil should consist chiefly of loam, it producing the sturdier plants, and, being more retentive of moisture than peat, is best adapted for transit. During growth a day temperature of 80° to 85° may be maintained, and a syringing may be given twice daily with even an occasional sprinkle besides during bright weather. If with this the soil tends to get dry, then a liberal supply of water should be given. Generally speaking, Liberian Coffee flourishes with high temperature and

much moisture, but objection must certainly be made to forcing, it being the object to produce a sound and well-perfected growth. Slight bottom-heat is used with advantage after any disturbance of the roots.

The practice of planting out in the soil of Wardian cases cannot be recommended for Coffee; indeed, it is better for plants in general to be established in pots of convenient size, and plunged in the soil of the case, thus avoiding the necessity of disturbing the roots. Cases are often packed without sufficient battening down. It is even an advantage to use broad battens; and in this instance there is no difficulty, all the pots being of the same size. The soil for plunging in should chiefly be of loam, and so moist as not to refuse water after packing. A watering should be given the day before closing down, if not previously done, so as to let the soil drain, and its condition be seen before despatch. The battens should be put in when the soil is firm, some time after the last watering. Ten cases of the size already mentioned will shortly be *en route* for India. They have a span of 20 inches, the angle of which is 2 feet above the floor; the depth front and back is 7 inches, enough to allow one batten lengthwise over the ends of those across the case. A depth of soil is thus allowed of 4 or 4½ or 5 inches as occasion requires, an inch being sufficient under either pots or pans. Larger cases than the above cannot be recommended, for several reasons. *L.*

THE NUTRITION OF FRUIT TREES.

AN article bearing the above heading appears in the *Gardeners' Chronicle* of May 19, which I have read and studied, as I always do any subject treated in the interesting, scientific way of the article in question. At the outset, I may say that I want more information, and am far from being at all satisfied with what is there set forth. It is there stated that most plants, however different, require the same soil constituents. This is a statement which I have long ago. Again we are given the analysis of a solution, in which we are told that the Apple, Pear, Cherry, Plum, Peach, Grape-vine, Pine, Fir, Maple, Elm, Alder, Orange, Lime, Hazel, Robinia, Caragana, Gleditschia, Catechu, Ailanthus, &c., and vegetables, grow and thrive in. Now, I want to know, not only that these plants grow, but if they fruited, and in what manner. It is all very well to say that in a certain solution a certain plant will grow well in, say, for instance, an Apple, but we all know that Apple and other trees will grow in certain compounds in a very vigorous way, and in the same compound, no matter what the treatment, the same trees absolutely refuse to fruit. This is the case even with trees that flower, and no proof need be cited, as such instances must be patent to every one. Now in the article in question no mention is made as to whether the plants spoken of bore and ripened fruit or no.

It is generally believed, and analyses foster that belief, that a plant may require very different salts as the foundation of their seeds than what is required as the foundation, so to speak, of the plants bearing these seeds. For instance, the cereals contain a very much larger amount of silica in the straw than in the grain, while in the grain there is a greater amount of phosphates than in the straw. According to the article in question, silica is only needed in infinitesimal quantities. If so, how is it that the straw of cereals grown in solution, with no silicates or silicic acid, is always very weakly compared with straw grown in solutions containing a sufficiency of silicates. And this is a fact that any one with leisure and opportunity may prove. It follows, at least it would seem so, that silica is wanted in many plants, not "in infinitesimally small quantities," as is not at all, but that it is in some plants, and especially in some parts of plants, to be an "essential," and not an "accidental."

Again, it is stated that sodium is so little required that which is furnished by dust, &c.,—whatever the "dust" may mean—is sufficient. This may be so in some instances, but I fail to understand how it can be universally applicable. If sodium is only wanted by plants in the quantities indicated, I am at a loss to understand the effects of it when applied in the form of the chloride (common salt) to the Cabbage tribe in inland situations, and many other genera of plants, such as Potatoes, Peas, Beans, and many other plants. I have always found in old

soils, and not once or twice, but often, that soda in any soluble form increased the crop and stamina of Peas or Beans. This was always more marked when the salt used was the nitrate, but it was evident in the case of the hydrated carbonate, and, as I have said, in the case of the chloride likewise. From the fact that soda salts, especially in old garden soils, increase the bulk of straw and seeds, I infer that sodium is, at least by some plants, wanted in greater quantities than can be supplied by "dust, &c.," unless the *et cetera* has a greater store of it than the common dust of our fields and gardens.

I fear that the statement that nearly all plants require the same sub-constituents may prove misleading. It is quite true that a table of elements might be written of all the elements found in, and it is quite true that these elements would invariably be found, in the majority of plants. But in one plant a certain element will be found to play a most important part, while the same element in a different plant—sometimes in different portions of the same plant—may be very subordinate. Thus, lime is the main substance found in the ash of Potato haulm, while it is very subordinate in the ash of the tuber, while with potash it is just *vice versa*.

It seems to me that we want to know is, not just what are the elements which will grow well in, but what substances they will produce the best results. In the case of vegetables which are grown for the sake of the leaves only, such as Cabbage, Spinach, &c., whatever promotes the most rapid succulent growth is about all we want to know; but the case is very different in the case of plants cultivated for their fruits or flowers. We all know how to produce good growth in the case of Apples, Pears, and Plums, &c., but nobody has told us yet how to ensure fruit even when the season is favourable. We know that in certain soils fruit trees are perennially fruitful, and in other soils, with the same healthy trees, the crop comes biennially or triennially.

Are we justified in assuming that something is supplied in the case of the perennially fruitful trees which is not forthcoming in sufficient quantity in the case of those only biennially fruitful? And, if so, have we any right to ask our scientific men to solve the difficulty for us, and tell us what causes the difference? Mr. Rivers and others have taught us to produce flower-buds, will somebody tell us how to cause fruit to invariably follow? *Alexander Honeyman, Hope Park, Denby, N.B.*

THE COCOA-NUT IN QUEENSLAND.

MR. BARNES' garden is one of the sights of Mackay. It is situated on the north bank of the Pioneer River, facing the town, and is accessible by ferry. A short walk brings you to the cottage and garden, which is partly hid by the trees fringing the river, when a miniature Eden is presented to the enraptured spectator. Groves and avenues of Cocoa-nut planted in most tasteful manner, with beautiful clean sandal walks, first attract the eye. As you wander through the garden, attention is distracted by the call to look at this plant or that of some rare fruit-bearing tree richly laden.

The area of land under cultivation is 13 acres, containing 1200 Cocoa-nut trees, the cost of which up to the present time has been £70 for nuts alone, not more than 25 per cent. of those planted having germinated; and as yet no return worth mentioning has been made. The plantation is the result of ten years' labour, performed solely by Mr. Barnes. The first nuts planted were fifty procured from the first labour vessel arriving at this port. Many of these cost as much as 5s. a-piece, on account of their having a long shoot growing out; but these eventually proved not to be the best adapted for producing good trees. Those just budding, or nuts with plenty of milk, are far superior for seed.

Mr. Barnes commenced planting the nuts where he wished the trees to remain, but found this system defective, as the plants had a tendency to grow to the surface of the ground, and many may now be seen apparently on top of the soil, affording but slight resistance to strong winds. The best method is to set the nuts about 2 feet apart, and when the plants are four years old to transplant them deeply into permanent places, at distances of 18 feet apart. At this age, or older, they may be removed with perfect safety. Mr. Barnes says that had he adopted this plan originally he might have saved himself four years' great labour, as an acre of land would have grown all necessary for the plantation.

Experience indicates that sandy soil, kept continually moist, without allowing water to be about,

is best adapted to the growth of the Cocoa-nut. After the plantation is once formed, but little care is needed beyond keeping the land clean. Peaches and other fruits are grown successfully between the Cocoas without apparent injury to either. The trees begin to bear at six years old; some have blossomed at three years, but did not produce good fruit; and others have blossomed up to the present time, being ten years old, and have borne no fruit. Mr. Barnes accounts for this by the rapid growth of the tree, it going all to wood, but believes that they will eventually bear; many of the trees average 20 feet in height, and about 4 feet at the base.

In addition to Cocoas there are about 400 very fine Date trees in the garden, some of which had a nice lot of ripe fruit of a most delicious flavour. Enormous Melons and magnificent Pines were ripening and rotting in abundance. Grapes, Apples, Oranges, and other fruits, apparently of all climes and seasons, are seen thriving together. But I do not enumerate all I saw and tasted in this garden. *M. C., in the "Queenlander."*

WYCOMBE ABBEY.

We recently had the pleasure of paying a flying visit to the Buckinghamshire chair-making town of High Wycombe, for the purpose more especially of seeing the Apple trees in bloom in Lord Carrington's kitchen garden at Wycombe Abbey. This kitchen garden is unlike any other that we have seen in almost every particular. It is walled in, with five sides, and is surrounded by large strips of ground for vegetable growing; it lies very low, has a small stream fed by numerous springs running through it, and, lastly, contains a collection of Apple trees which, when we saw them, were for the most part literally covered with blossoms.

THE APPLE TREES.

Many of the trees are at least fifty years old, and average about 6 feet in height, with flat, table-like tops, about 10 feet across, having been kept to this size by judicious pruning of the roots and tops, the latter yearly, the former according to the vigour of their growth. The trees lie the sides of the walks, several of them having been brought hence from another part of the kitchen garden many years ago by Mr. Miles, who succeeded in transplanting them with singular success, considering their age at the time. Young trees of new sorts have also been planted and trained in the same style, and many of these have attained the extreme dimensions allowed, as is also the case with others that have been cut back and grafted with better sorts. The trees at first sight have a rather odd effect, but whether we look at them singly or as a whole now that they are in blossom, the floral picture, if formal in outline, is wonderfully rich in the warm and pale rosy tints peculiar to Apple blossoms. The rugged sturdiness and severe formality of these old trees, would, to our thinking, be objectionable features in those gardens which are climatically favoured, and where a due regard for the ornamental is not considered incompatible with more useful requirements; but it is easy to see that, for low ground like this, with water near at hand, and late spring frosts always in prospect, that this is the style, *par excellence*, for the situation. These trees, as Mr. Miles informed us, never fail to carry a crop, except when the trees and flowers are thoroughly wetted with rain or snow, and are then frozen. They are too dense and too heavily laden with blossoms for an ordinary dry spring frost to injure all, and, consequently, it is very seldom indeed that anything like a failure has to be recorded. Amongst the varieties grown are all the best sorts for dessert and culinary purposes, and that being the case it would be useless to name them.

THE KITCHEN GARDEN.

Having feasted our eyes on the Apple blossoms, we had a look round the kitchen garden, and then through the houses, finding all in neat and excellent order, as they should be under a man of Mr. Miles' standing. In the kitchen garden Mr. Miles is a thorough master of his business—as witness his many victories at vegetable exhibitions; and, of course, there are many points in his practice which would be very interesting to our readers, and which we shall hope to lay before them during the coming summer. In the meantime let us remark on the healthiness and cleanliness of the wall-fruit trees, excepting Peaches

and Nectarines, which are very much blistered this year, though we are sorry we cannot speak in such favourable terms of the promise of fruit—the blossoms on Apricots, Cherries, and Plums especially having been cut off wholesale. The trees on the walls of Morello Cherries are very fine, and bore a rich promise of abundance, but the crop will be very small. The growth of these trees is kept in due bounds by the heavy crops which they usually bear; and it is a practice with Mr. Miles not to dig the Cherry borders, off which he takes a crop now and then of such flowers as *Parthenus*, *Pinks*, &c. The cleanly appearance of the trees is due to their having been washed, as it were by anticipation, with a decoction of quassa-chips and soft soap, all the trees being washed just before they come into flower, and again as soon as set. The dressing liquid can be made very cheaply, and is most effectual for the purpose.

The growing crops in the vegetable quarters looked exceedingly well, considering the backward season, and we heard Mr. Miles speak in high terms of praise of the new Queen Onion—a thoroughly good and useful early variety which every gardener should grow. After growing many different sorts for several years, Mr. Miles has weeded the list of Onions down to three, and now grows only the Queen, just mentioned, Early White Naples, and the Giant White Tripoli, which come into use in the order named. Another novelty which Mr. Miles has a high opinion of is the Standard Pea, one of Mr. Laxton's seedlings but little known as yet, and which grows about 3 feet high, has handsome pods, and is a remarkably free bearer. Judging by two seasons' experience, Mr. Miles thinks this must become very popular with the market growers. Most of the new varieties of Peas have been tried in this garden, and it has been found that the cream of the marrow-fat section consists of *Supplanter*, G. F. Wilson, *Velith's Perfection*, and *James' Prolific*, all growers of medium height, rare croppers, and of unexceptionable quality.

FORCING HOUSES.

Coming now to the glass department, which is somewhat extensive, we enter a lean-to range 173 feet long and 12 feet wide, divided into four compartments. In front of this is a lean-to range of pits 200 feet long, devoted to the cultivation of Asparagus, Potatoes, French Beans, Carrots, &c. It is on a southern aspect, and Figs occupy the first division; a grand old tree of the Brown Turkey variety trained to a trellis under the glass was carrying a fine crop of fruit; and a shelf on the back wall was occupied with pots of *Selaginella uncinata*, whose long metallic blue pendent branches are found very useful for decorative purposes in connection with the town manure. The next compartment contains Peaches and Nectarines, including a very fine fan-trained tree of the *Stirling Castle* Peach, now quite ripe, and a beautiful crop. The other trees are of the *Erluge* Nectarine and *Violette Hative* Peach, the latter of which is found to be not early enough, and is to make way for the more certain *Royal George*. Two other compartments in this range are also occupied by Peaches and Nectarines, the first containing trees of the *Royal George* and *Belle Bauce* Peaches, the last named being a very fine variety for such work, and the *Violette Hative* Nectarine; and the second *Erluge* Nectarine and *Royal George* and *Noblesse* Peaches, the latter being the light-coloured variety in cultivation, so remarkable for its grand flavour. At the top of the range of Peach-houses is another, 70 feet long by 10 feet wide, unheated, which contains Peaches and Nectarines, including a tree of the *Salway*, a desirable variety for such a house.

Range No. 2, also lean-to, 130 feet long, and with a south aspect, is devoted exclusively to Grapes, and is undergoing the process of rebuilding on a larger scale by easy stages. When finished this will be a grand range of houses, being constructed on sound principles, and with good lengthy rafters. The actual dimensions of each of the new compartments that have been finished are, length, 20 feet; width, 18 feet; and height at the back 15 feet; and the wires on which the Vines are trained 17 inches from the glass, this space allowing a free current of air between the glass and the top of the foliage, which almost entirely prevents the leaves from being at any time burnt or scalded. The first compartment we entered was the earliest, and occupied with Black Hamburg and Muscat of Alexandria, very old Vines, in fine health and carrying good crops of useful sized, well-coloured bunches of fruit.

The Muscats were particularly good for a first house, and fully ripe. The second compartment, which is undergoing renewal, contains a capital lot of Muscats only; then comes one of the new set, in which the permanent Vines are of Buckland Sweetwater, Foster's White Seedling, one of the very best white Grapes in cultivation; and much more certain than the Buckland; the White Tokay, Black Alicante, Barbarossa, Trebbiano, and Black Hamburg. The young canes are doing well, and already carrying a few good bunches of fruit. This is followed by a division in which are planted Black Hamburg, Golden Hamburg, Foster's Seedling, Buckland Sweetwater, and Venn's Muscat, all in flower; and lastly, an old house containing a dozen canes of Lady Downe's, old Vines, which are making a strong growth, notwithstanding that they were last year root-pruned. Standing in this house were also a dozen or more good-sized specimens of that exceedingly useful Orchid, the old *Dendrobium nobile*, the flowers of which are in demand for cutting, and also a number of pots of Canadian Wonder Beans, which are very fine in the pods from this time onwards, but are not trusted for early work, the old Black Negro doing this duty well.

A fine sized half-span house, lately erected, 50 feet long, 20 feet wide, has been planted with Alicante and Lady Downe's Grapes, and with Figs on the back wall, the available space being occupied with a very strong lot of plants in pots of the Stamfordian Tomato, a free fruiting and large-sized variety—a great improvement on the old red. Near to this is another compact half-span-roofed structure, 42 feet long, 12 feet wide; and in front of this a lean-to Strawberry pit, the same length, and 7 feet wide, with Melons in the centre bed. These have succeeded winter Cucumbers. This is the second crop of Melons, and the varieties grown are *Reid's Scarlet-flesh*, *Strathfieldsaye Green-flesh*, and *Cox's Golden Gem*. Melons, like Pines, are grown by express here. They must grow quickly and ripen quickly, a regular succession rather than a heavy crop being the requirement; and with this in view only from three to four fruits are allowed on each plant, and as soon as these are set all others are pinched off and the plants pushed on to a successful termination of their duties.

In the same house as the Melons are several plants, with ripe and ripening fruit of great size, and plenty of them, of the old red and the improved Stamfordian Tomatoes, grown in pots with unbranched stems, from 4 to 5 feet high. The next house, a similar one to the last, contains a few good Queen Pines, to ripen next month, more Tomatoes in pots, and a crop of Melons coming on in front. Amongst the Tomatoes we noted a seedling differing from all the others in the extra size and grand form and colour of its fruits; a much improved selection, the seed of which should not be lost.

In addition to the foregoing are several small but very useful half-span-roofed structures, all of the same size, viz., about 26 feet long, 10 wide, and rather low pitched. One of these contains Pines, chiefly Queens, which were potted into their fruiting pots on July 3 last, being put in as suckers in the previous month of May. They are a fine sturdy lot of plants, showing fine sized fruits, which will average about 5 lb. Mr. Miles expects them to be ripened and cleared off in two months' time. They are potted in a good strong loam, mixed with a few half-inch bones, with wood ashes thrown over the drainage, and occupy 11-inch pots. The plants do not make a large growth, but it is short and sturdy, and only one sucker is allowed to develop on each plant. At the back of the house are a set of Cucumber plants in full bearing, the variety being the *Hedder Winter Prolific*, a medium-sized smooth variety of the *Syon House* type, raised by Mr. Lynn; and standing on one of the retaining walls are several plants of the Hungarian Pepper plant, *Paprika*—a *Capsicum* of fine size and rich deep crimson colour, growing for its ornamental appearance, leaving the usefulness of its fruit out of the question.

The Pine-house is followed by one containing a stock of young fine-foliated plants for table decoration, and a few useful Orchids for cutting from; and this is succeeded by another Pine-stove, the plants in which were only potted a few weeks ago. The sorts are Black Prince, Enville, Smooth Cayenne, Prince Albert, and Lord Carrington. Another Pine-stove contains Queen only, half of which were potted into their fruiting pots last autumn, and some of them are showing their fruits

now, the remainder having been kept in 5-inch pots through the winter and potted in the spring. Next comes a fruiting Pine stove, in which is at present a sort of scratch crop of Melons and Cucumbers. The Melons are the first crop, some of the fruits having been cut. For this crop Mr. Miles grows the Easton Castle, Victory of Bath, and Cox's Golden Gem varieties. As with the others, early and quick is the order of the day, consequently only from two to three fruits are allowed to ripen on each. The Cucumbers, Hedges Winter Prolific again, are growing at the back. In other Pine pits proper are a mixed lot of fine plants to fruit in the autumn, including four very strong ones of Lord Carrington. The last of this series of houses is devoted to early Vines, which ripened a sort of fluke crop in January last, since which they have been cut entirely back, and are fast breaking again, and has since been used for forcing Strawberries, being occupied at the time of our visit with Presidents, carrying a splendid lot of fruit. The plants were put in here just after they went out of flower, and they have had plenty of time to come on without driving, the result being fine-sized fruit of unexceptionable flavour.

Amongst other things which Mr. Miles always shows remarkably well are Cherries, and the Cherry trees grown under glass in a house 55 feet long are three in number, the varieties grown being Elton and Black Cerasium. These are all large trees, growing against the back wall of a narrow structure with an upright front, with ventilators at the bottom and movable lifts at the top. The two largest trees were carrying a fine crop of large, beautifully coloured, and delicious fruits. Mr. Miles considers these one of his most useful fruits. He began to gather about May 10, is almost certain of a crop every season, and considers that they cost but little or nothing to grow. He has lately introduced a plant of Governor Wood, which gives great promise of proving a valuable acquisition.

Space forbids our alluding to the grounds and plant-houses, which, with the vegetables, must form the subject of another paper; and, concluding now, we can only say that any one going to Wycombe Abbey to see good fruit and vegetable growing will not come away disappointed, but like ourselves, pleased with what we saw, and quite satisfied that Mr. Miles is able to maintain the high position he has won in the gardening world.

THE ODONTOGLOSSUM-HOUSE AT TRENTHAM.

No one can form the slightest idea of the beauty of *Odontoglossum*, and especially of white *Odontoglossum*, without seeing them in quantities. To talk of *O. Pescatorei* for instance, with maybe a score of flowers, may be all very well until the talker is brought in contact with possibly a host of them, combining in all not far off a thousand blossoms. This is no mere stretch of fancy, but a reality which the visitors who may be privileged to see the Trentham *Odontoglossum*-house can now or within the next week or two see. The house into which I was ushered (which by the way is a different one from that old double house in the outer half of which the *Lapageria* also grows to such perfection) was a low, sloping, lean-to, with a path up the centre and a table in front extending to 85 feet lengthways wholly covered with cool Orchids, and chiefly with *Odontoglossum Pescatorei* and *O. Alexandræ*. The racemes were bending gracefully from partial supports, and completely covered the vista from one end of the house to the other. I confess I never saw such a sight in this way, and no more lovely bridle Orchid house, I venture to submit, is to be found in England.

Well, these *Pescatoreæ*—I mean, *O. Pescatorei*—ranged from branching racemes of sixty-nine to shorter ones of twenty flowers; and as some of them are distinct varieties, and as varieties are the chief objects catered for now by all Orchidophiles, I would submit four out of the forty in bloom as being worthy of varietal distinction.

O. Pescatorei grandiflorum.—Fine close-racemed sort, with great individual flowers; segments overlapping each other like a good *Phalænopsis amabilis*, each segment shaded pink and white, more pronounced in the division next the column; an occasional crimson spot marks the segments, and it is bearing now sixty flowers to a spike.

O. Pescatorei formosissimum.—Very long racemed variety, too heavy to bear its own weight without a stout stake; sepaline and petaline segments of each flower white, with an occasional tint of soft pale

purple and also a soft purple shaded blotch; labellum of the usual formation, also white ground correspondingly spotted and blotched. Altogether a most beautiful variety, with twelve subsidiary branches, totalling up sixty-nine flowers to a spike.

Odontoglossum Pescatorei elegantissimum.—Sepals white and soft pink in almost equal divisions, and as if partitioned by square and rule; petals pure white; labellum pure white, which with a prominent yellow callus renders this a most striking variety; the labellum, too, instead of being saddle-shaped like the normal form, is roundly ovate, and, from a florist's point of view, will be all the more admired.

Odontoglossum Pescatorei picturatum.—Sepals pale rose pink and white, suffused as if washed together on a palette; sepals white ground, with stains of crimson, chiefly in the centre; labellum white, with crimson spots on either side of calli, the most sanguineous-looking of the whole family, and of the finest formation.

One other variety of distinguished excellence, this time *O. Alexandræ*, is roseum.—Sepals and petals very heavily suffused with rose on white ground; the petaline segments a little torn at the upper margin; labellum cordate acuminate, with yellow blotch on calli, and a great Indian-red blotch in centre of the lip, with subsidiary spotting crowding around it: a most distinguished variety from a colour point of view, and totally distinct from most of its competitors. It is not so long in the branchless raceme.

There were many other good things in flower—one, *Odontoglossum Hallii*, in particular—and two or three *Masturbalis*, but nothing could touch the maiden-like beauty of this wealth of white tooth-tongue Orchids; and of course a word of congratulation and praise is due to Mr. Stevens for being the curator of so excellent a batch. *James Anderson, Madocwank Nurseries, Uddington.*

DRUMMOND CASTLE.

UNFORTUNATELY for us the time at our disposal, when we paid a hurried visit to Drummond Castle in September last, was so brief, that we had no time to accurately note all its contents, but thanks to the valued assistance of Mr. McDonald, who has been gardener here for nearly forty years, we are enabled to present our readers with a plan of the magnificent flower garden (fig. 111), which was barely alluded to our last issue. According to our guide-book, *The Beauties of Upper Strathclyde*, by Dr. Charles Rogers, which we prefer to quote rather than trust our memory, "the far-famed flower-garden is immediately under the southern part of the Castle rock, and is approached from the esplanade by flights of steps communicating with three architectural terraces, beautifully formed out of the steep bank, and adorned with the most delightful shelves of shrubbery. Viewed from the esplanade, the fairy scene beneath has been well compared to a piece of the richest natural embroidery; the garden, which is of an oblong form, and includes about 10 acres, being here seen at one view, with all its statues, vases, verdant and gravel walks, beautiful parterres and enchanting shrubberies.

And what adds to the gratifying feeling is the satisfaction that no boisterous breeze can injure or affect this lovely Eden, sheltered as it is on every side by the Castle rock or lofty tower. With the most exquisite taste it is made to combine in highly harmonious union the first-rate qualities of three great styles of European landscape decoration—the picturesque grouping of the Italian, the Dutch method divested of its fantastic distortions, and the gaudy elegance of the French. So successful, indeed, have been the efforts of the noble proprietors to make it the *beau idéal* of horticultural beauty that competent judges have pronounced it according to its scale the first garden in Britain, and not surpassed, when the highly interesting nature of its situation is considered, by any garden in Europe. Two broad walks of verdant sward run diagonally across the garden from the north-west to the south-east angle, and from the north-east to the south-west angle, intersecting one another in the centre, and thus throwing the general plan into the form of a St. Andrew's cross. A walk encompasses the four sides, and three others run directly across the breadth, one passing through the centre. The whole is then divided into parterres laid out in every conceivable form of beauty, and containing every floral treasure known in our climate. . . . The walls of the terraces are decorated with beautiful creepers . . . and antique

statues and vases—all of which at great expense were sent from Italy by the present noble proprietors—are tastefully erected in every part of the garden, and serve to produce the most imposing effect. In the centre a sun-dial, about 15 feet in height, and containing about fifty faces, indicating the hour in every direction, is an interesting object. It was erected by John, the second Earl of Perth, who originally laid out the garden, and whose death took place in 1662."

We believe we are correct in saying that the design of the garden was considerably improved many years ago by Mr. Kennedy, of the old firm of Lee & Kennedy, of Hammermill. Referring now to the plan, with a view to indicating the nature of the planting in general terms, we may say that the large circles at either end are filled—1, 2, 3, 4, 5—with different species of hardy Herbs; the two beds numbered 6 are filled with flowering plants in summer; and No. 7 are designs of the family arms in Box; No. 8 is the sun-dial above alluded to; and the four triangles around it, as well as the spaces marked 10, 11, and 12, are devoted to bedding plants. The large spaces numbered from 13 to 17 inclusive are occupied by Rhododendrons, which have grown to a great size; the large spaces at each end, numbered 18, 19, and 20, are devoted to Portugal Laurels; the sections immediately in front of the dial, numbered from 21 to 24 inclusive, are occupied solely with Ghent Azaleas; while on either side of the diagonal walks, and that numbered 25, are long borders of herbaceous plants, and the two oblong borders 26 are filled with Roses. The most prominent feature of all is the tall, closely-clipped pyramidal Box, Junipers and Holly trees, which are dotted along the sides of the grass-walks.

Foreign Correspondence.

SPRING IN THE BALEARIC ISLANDS.—*May 16*.—My annual Mediterranean excursion has led me this year to the Balearic Islands, situated on the coast of Spain, between 39° and 40° latitude, which I have long loved to explore. I left Barcelona Monday, May 7, at 4 P.M., in a good sized steamer, which makes the passage to Palma (the capital of Majorca) weekly, and arrives the next morning at 6. The distance is 130 miles. The steamer being good and large—800 tons—the passengers did not suffer much, although the sea was rough. Since then I have been perambulating the islands of Majorca and Minorca in every direction, with great pleasure and interest.

MAJORCA.

Majorca is the largest of the Balearic Islands, as its name implies. It has an irregular bay-indent coast, the north side running from north-east to south-west; the greatest width is 45 miles, the greatest length 60 miles. Its distance from the nearest point of the mainland of Spain is about 120 miles.

Along the northern coast, from north-east to south-west, runs a ridge of mountains, principally composed of limestone, which rises to a height of from 1000 to 5000 feet, with a depth of from 10 to 15 miles. These mountains protect the interior of the island to a considerable extent from north-west winds, but it is entirely open and exposed to the north-east. At the east extremity of the islands, north, there is another block of mountains, which cannot be of much use as a protection from the north-east or the south-east winds, but must serve to precipitate rain in abundance from the moisture-bringing sirocco, or south-east wind, after its passage across the Mediterranean Sea.

Between these two ranges of hills there is a vast fertile plain, nearly on a dead level, but slightly elevated above the sea.

Such are the elements of climate at Majorca. It is an island situated in the very centre of the Mediterranean Seas, with two ranges of mountains, not very high, and not very deep, running from east to west on the north, and a block of mountains at the east, enclosing an interior level area, or plain, with all the characteristics of a limestone soil. In other words, the soil is adapted for grain crops of all kinds, to fruits, and to Vine cultivation. The mountain ranges ensure a heavy fall of rain in autumn and spring; in autumn when the north winter winds set in, and laden with the moisture collected in passing over the sea, impinge on the cooler mountain elevations; in spring, when the warm moisture-laden winds from

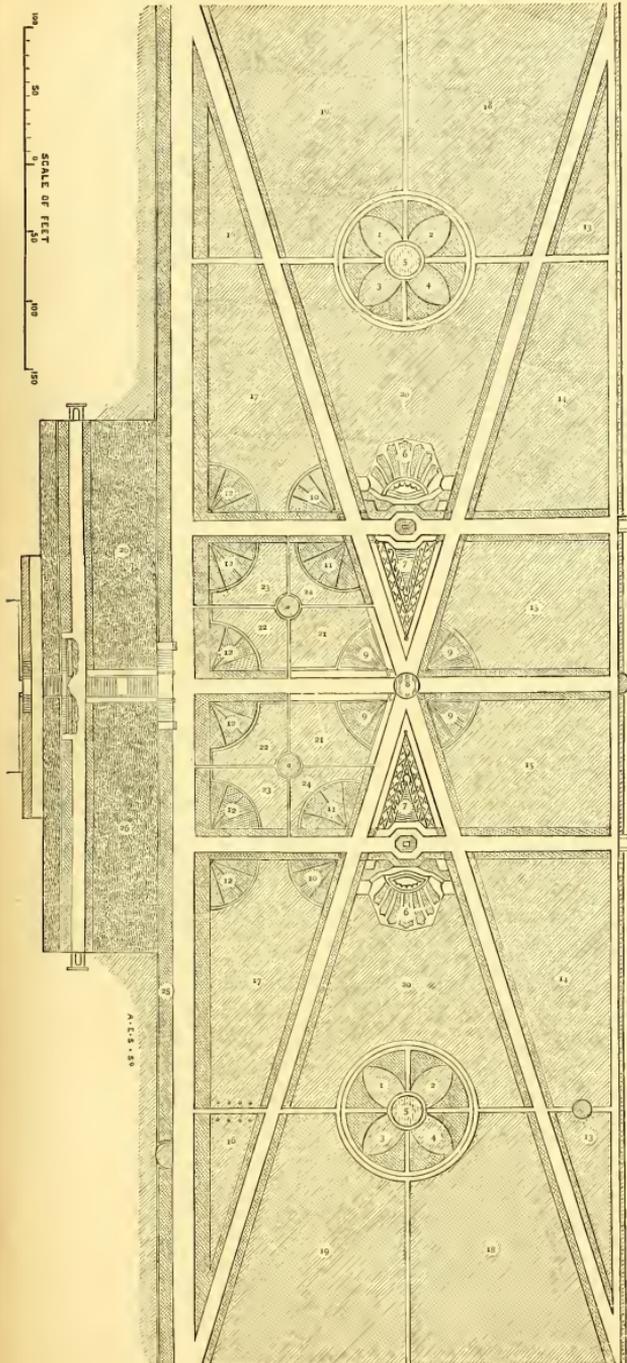


FIG. III.—PLAN OF THE FLOWER GARDEN AT DRUMMOND CASTLE.

the south-east and the south-west replace the north winter winds, and bring summer weather with them. In summer there is little or no rain, for the mountains become too hot to precipitate the moisture contained in the winds, either north or south.

The power of the sun being great, from latitude, the heat is intense during the summer months, notwithstanding a gentle sea breeze which extends far into the interior. Already (May 15) the sun is all but perpendicular above our heads, and its rays are unbearable, as we feel it where I am writing, without protection—seated on a rock in the shade, 200 feet above the sea, on the outskirts of the beautiful bay of Soller, looking north, the temperature is 75°. Throughout my excursion this was the average temperature by day—about 70° at night. The above meteorological elements contain all that is required to make Majorca an exceptionally favoured specimen of the Mediterranean insular climate, both as regards agricultural, horticultural, and botanical products. They may be resumed in a few words—abundant autumn and spring rains, moderate protection from northern winds, intense heat and dryness in summer from April until October, with, no doubt, heavy dews at night, owing to a marine atmosphere.

Majorca is thickly populated, its central plain being studded by villages and towns, the inhabitants of which are maintained by the product of the land. Every inch of the plain is cultivated. It is divided into fields, or separate properties, large and small, by thick stone walls some 3 feet high, made of the limestones collected out of the fields in the process of cultivation.

FRUIT TREES, &c.

The tree products of the soil are Olive, Carouba, Fig, Almond, and Apricot trees. They are planted at 20, 30, or 40 feet distance one from the other, so that the sun reaches the soil around and under them. The soil is also everywhere cultivated with cereals—bearded Wheat and Barley, occasionally Beans, with Potatoes and other green crops, principally Oats. I saw but few Vines, but was told that they exist in numbers, and that a good deal of wine is made in some districts.

The system of cultivation, I was told, is to grow cereals one year, the next green crops, the third the ground is allowed to remain fallow. Sheep or cows are pastured on the natural grasses during the fallow winter, the land being broken up by the plough in the spring previous to re-cultivation with cereals in autumn. This is the system followed all over the Mediterranean area. The cereal crops seemed to me generally poor and meagre, both as to height and ears, but the general product must be considerable, as every crevice and cranny is cultivated, even including holes amongst rocks bursting out of the soil.

The fruit trees seem to constitute a very important part of the produce of the land in every region. The Olives are innumerable, and more remarkable for their extreme age than for their size. We have larger Olive trees on the Genoeze Riviera, but they can hardly vie with the Majorca ones in the outer evidence of age. They seem to be old as the Flood, and are rent, twisted, divided, broken, torn in every conceivable and inconceivable shape, representing demons, monsters, dragons, and reptiles. They often only leave one, two, or three healthy young branches, like young trees growing out of a hideous mass or wreck of misshapen roots and timber, the remains of a noble tree one or two thousand years ago. These young, fair branches reminded me of old men's children—fair to look at, but with no hold on life. The produce of oil is immense, but it is carelessly prepared, and is anything but savoury to outsiders.

The Carouba or Locust trees are fine, vigorous, large trees, as large as fifty or eighty years' Oaks, covered with an abundant dark green foliage; many are very old, and twisted like the Olives. Their presence in such vigour is another evidence of intense heat and dryness in summer, as they are only found growing luxuriantly in the hottest and driest parts of the Mediterranean, such as Syria and Palestine. They produce abundantly a large bean, contained in a pod which grows directly on the trunk and branches in a very odd manner. This bean is most valuable for feeding horses and cattle in general. Carouba trees are very numerous in Majorca, interspersed among the Olive trees, and are grown for their produce, not for ornament, which is little if at all thought of in the Mediterranean.

The Fig trees are also very large and very numerous. They are often quite timber trees, and as large as those which I saw at Aidin, near Ephesus, in Asia Minor, from whence are gathered the Figs we receive from Smyrna. These Figs must be an important article of diet as well as of export. One large Fig tree, with its double crop and abundant produce, suffices for the wants of a large family. A few Figs, or any fruit, with a piece of bread, make a luxurious meal for the poorer inhabitants of Southern Europe.

The Apricot trees are large, beautiful timber trees, often as large as forty or fifty year Oaks, covered with dense luscious foliage, and produce fruit in profusion. It is just beginning to ripen, but is small and flavourless. The Apricot is clearly suited to a very warm and dry climate. I found it, on former occasions, growing as a timber tree in Murcia, in the driest and sultriest part of Spain, and also in Algeria, near the desert. In these regions it grows to a size, and to a beauty of which we have no idea. No wonder that its branches constantly die off in our hyperborean climate; the wonder is that it lives at all in the open air. These trees, however, are not very numerous in Majorca, and are generally planted near farmhouses and villages, no doubt for the personal use of the inhabitants. As the fruit does not keep they can have little or no trade value.

The Almond trees are also very numerous, and Almonds must form an important item of export. They are principally grown in groves or orchards in some localities. They form large, often fine trees, although their habit of dividing into two or three large branches near the ground is not conducive to tree beauty.

Cereals grow and flourish in the sultriest climates, merely because their growth is over and the harvest is garnered before the sultry weather begins. Thus on May 12 I found that the cutting of Barley was becoming general in Majorca, and it was evident that in a week or two the "bearded Wheat" would be ready for the sickle, which, by-the-by, is the only harvesting implement used. A few ears of Barley are held in the left hand, and cut with the right. In the Mediterranean basin the spring rains generally end early in April, but by that time the cereals have their roots deep in the ground, and can conclude their vegetative career without any further supply of rain. The grain is ready for harvesting by the middle, the end of May, or by the first week in June at the latest, by which time, only, the very hot weather of the South begins. Thus it is that bread is always good in these regions of Europe, the grain crops never being spoiled by untimely rain, as in the North. Thus it is that cereals can be grown successfully in the hottest parts of the earth, as in the oasis of the desert of Sahara. Thus it is, also, that in dry summers in England, when pastures fail, there is generally a good grain crop.

MAJORCA ORANGE CULTURE.

All over the western Mediterranean splendid large Oranges are sold as Majorca Oranges. They appear earlier than those grown on the Genoa Riviera or at Valencia and other parts of Spain, and are more expensive. One of the objects of interest in my excursion to Majorca was to investigate the Orange groves, and I expected to find the island stocked with them. To my great surprise, after passing several days in travel—after crossing it in various directions, from north to south, and from east to west—I had scarcely seen an Orange tree. I inquired, therefore, whence all the Majorca Oranges could possibly come from, and was told that they all came from one region, the valley of Soller, situated in the north mountain range, about 30 miles from Palma. To Soller, therefore, I determined to go, taking a carriage, as the road is good.

For the first 12 miles, travelling due north, we merely passed through a portion of the central plain already described. We then reached the base of the northern mountain chain, ascended a series of zig-zags, and crossed the ridge at an elevation of 1500 feet. On looking down at our feet we saw a marvellously beautiful amphitheatre, formed by mountains from 2000 to 4000 feet high, which encircled a beautiful valley, teeming with vegetation. This was the celebrated valley of Soller, all but entirely occupied in its lower area by groves of Orange trees, whilst up the sides of the surrounding mountains crept a forest, first of Olive trees, up to an elevation of 1200 feet, when they were succeeded by a forest of Ilex and Aleppo Pine, which nearly reached the summit.

Thus did I learn, by ocular demonstration, that the far-famed Oranges of Majorca, instead of being the produce of the entire island, as generally supposed, are merely the produce of a natural orchard-house, occupying an area similar to the bottom of the crater of an extinct volcano, with sides several thousand feet high, and with only one small outlet northward to the sea. Indeed, I should have thought that the Soller valley was really an extinct volcanic crater, had it not been that the mountains, as far as I saw, were entirely limestone.

It was much warmer at Soller than at Palma, or in the centre of the island, or than at Minorca, which I had recently visited, and it soon became evident to me that this valley in summer must be a natural oven, stove, hothouse. The rays of the sun being nearly perpendicular in summer penetrate just as directly into a crater valley as they would on a plain, while the heat is confined and increased by refraction. Orange trees are tropical trees, which rejoice in tropical climates, so that the intense summer heat of this shut-up valley no doubt agrees thoroughly with them and accounts for the excellence and precocity of the fruit.

Unfortunately the glory of this once happy valley seems about to depart. Nearly all the oldest and finest trees, and many of the younger ones, are dying, gradually but assuredly, of a fell disease which I found a few years ago in the Orange forest at Mellis, in Sardinia, and to which the name of "Secco," or dry disease, is given. The terminal branchlets become dry and brittle, and die. The drying and death extends to the larger branches, and eventually to the trunk, and the entire tree dies. I was told at Mellis that this disease only attacked non-grafted trees—trees grown from seed, and never or scarcely ever trees that had been grafted. I have examined many of the Orange trees here, diseased and healthy, and can find no trace of their having ever been grafted. Can this explain the death of the trees here, which threatens to ruin the country? I am told that the value of the annual export of Oranges alone amounts to above £30,000. Not knowing Spanish, and getting no questions with the natives at Soller, a Palma gentleman, however, who owns an Orange orchard at Soller, told me that the Sardinian statement holds good in Majorca, the diseased trees are non-grafted.

I would mention that it appears the universal custom here to cultivate the ground under the Orange trees up to their trunks, principally with vegetables. May not the ground be thus exhausted during the summer growth of the trees, and may not subsequent heavy dressings in winter, with a view to remedy the exhaustion of the ground by the superficial crops, still further injure the trees?

From my experience in very many parts of the Mediterranean shores and islands I think I am warranted in saying that the Orange tree cannot stand wind at all, from whatever quarter. It certainly is only successfully cultivated between four stone walls, as at Malta, or in folds, depressions, cavities—sheltered, protected from the wind, as in Sardinia, Corfu, and Majorca. Its wonderful fertility, the immense number of fruit it produces, evidently enables a very small but sheltered locality to play a great part in the commercial production of Oranges. I have often thought that good Oranges might be produced commercially in England. Certainly the Orange tree, as many call it the Vine, and bears confinement equally well, only it must be submitted to a great summer-heat to bear good fruit, and the expense of the necessary summer-heating might destroy profit, which, however, is great. The Soller Oranges were sold this winter at 16s. the thousand.

THE SOLLER VALLEY.

The really magnificent Soller valley and mountain amphitheatre is connected by a narrow pass with a second amphitheatre, still grand and majestic, although on a smaller scale, which forms the port and harbour of Soller, about 3 miles from the town. The mountains which form the sides open to the extent of about a third of a mile, to let in the sea, which forms the port. The latter presents about a mile and a half in circumference. The sea entrance completes the circle. In this beautiful little port there is a small jetty, deep water, and all but perfect shelter.

The mountains slope up gradually all around to a height of about 1000 feet, and from the lighthouse which limits the western sea angle the view is inde-

scribably beautiful; indeed, I have scarcely in any part of the Mediterranean seen anything as beautiful as the view looking landwards. The two amphitheatres of mountains rising one above the other into the clouds, the smiling, quiet, little lake-port at our feet, with its rocky channel winding towards the sea, fill the mind of the observer with admiration. Seaward the entrance to the port widens out, and is protected by bold, frowning, precipitous headlands, which terminate abruptly in deep water. The mouth of the harbour channel is wide, and smoothly offered, and a protection, which betwixt the ship that went astray and struck on the adjoining rocks. It would be heard of no more.

I spent two days on these rocks with a companion, I am happy to say, and recognised the vegetation of the warmest regions of the Mediterranean, several species of Ephedra, including the detroides, Cneorum tricocum, Juniper, several species; Aleppo Pine, Rosemary, Lentiscus, Smilax aspera, Alaternus, wild Olive, &c.

In concluding this brief sketch of the spring vegetation of Majorca, I would add that I saw but very few flowers cultivated or wild. The wild ones were, no doubt, things of the past, burnt up by the sun, for it had not rained for a month. I only saw a few patches of the commonest cultivated garden flowers at Palma, and in the garden of a nobleman in the interior Corcaera, which are not cultivated and cultivated all over the Mediterranean for winter decoration and for placing in the hair of the young women; Nasturtium, Stocks, Delphiniums, Hollyhocks, Bengal Roses, garden Poppies, Marigold, white Lilies, Fancies, and that is all. There are a few Date Palms here and in the interior, but I do not think they are not cultivated. *Th. Henry Bennett, M.D.*

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—The Fern-house should now have more air, in order to solidify the young growth as it is made. The almost incessant rain and wind had so long through the spring has prevented the admission of air in sufficient quantities to such plants, and where the precaution has not been taken of keeping the atmosphere somewhat drier than usual, so as to counterbalance the effects of an over-sufficiency of air, the ground assume a wet and spongy condition, and draw. More shade also will now be required than at any other time of the year, not only on account of the sun attaining its maximum power, but the young fronds that have through the spring, and in the case of many species are still being, freely produced, are less able to bear direct sunlight when they get older. In the cultivation of Ferns generally there is nothing more common than to see them grown too soft by keeping the atmosphere too moist and over-shading. So treated the plants usually have a taking appearance, by the deep green colour of the fronds, assume a wet and spongy condition, but if required for a conservatory, room decoration, exhibition, or cutting, they cannot possibly receive a worse preparation than by being kept too moist and over-shaded. A very useful occurrence is to see Ferns on an exhibition stage fall of languant growth, yet so tender and fragile as to suffer to an extent that seriously disfigures them even by the friction of their own matured fronds, or shivering up by the effects of the air. The same thing occurs, after being so grown, when they are used for home decorative purposes, but its injurious effects are never so clearly seen as in the case of Ferns required for cutting for bouquets and other floral arrangements, where they have often flag and have a miserable look before they have been cut many hours—than which there are few things more tantalising, for instead of adding elegance to the bouquet, in which they are associated, they spoil the effect of the whole. This is more particularly the case with Adiantums, the five best of which for cutting are tenerum, formosum, and pubescens—for vases and baskets, and cuneatum and gracillimum for bouquets; for the cutting of a bouquet of the latter kind, when they are grown so as to stand without flagging. The best way to deal with these plants is to grow them up from a small state until they get to a useful size under ordinary Fern-house treatment, after which put them in a shady corner in the warmest and driest part of a greenhouse, or in any other situation where they will not receive more warmth with a much drier atmosphere than in the Fern-house. Here the fronds will not grow to above half the size that they attain in a Fern-house, but they will keep as fresh and plump when cut with their stems in water for a week as when growing. So grown the fronds are a much lighter green.

Tree Ferns that have fully completed the growth of their first lot of spring fronds may have some of the old ones cut away, which will be an advantage if they are at all affected with scale or

thrips, but in this matter the operator should be guided by the strength of the plants; any that are weak, or have been recently imported and not yet got fully established, should never so much as have a single removal, and the same may be said of them as the removal whilst all green has a weakening influence that tends to diminish the size of the fronds that are produced afterwards. For this reason, with rampant growing species, either planted out in pots or tubs, in houses where there is a deficiency of room, if the same is used freely in thinning the mature fronds more or less the plants can often be kept within the required limits; this particularly applies to such vigorous-growing kinds as *Cyathus medullaris*, *Alphospha excelsa*, *Cibotium Schiedei* and regale, or any others that are outstanding in the same in which they are placed. A very great mistake is often committed in planting Ferns out. With the unlimited room thus given them it is next to impossible to keep them within bounds, and prevent their smothering the weaker-growing kinds. Much root-sprouting in these plants is totally unnecessary, as by a liberal use of manure-water they may be kept for years in a vigorous condition, and the size of their fronds be regulated by the frequency and strength with which it is used.

To grow Ferns with any degree of satisfaction there must be a special attention to the soil. The worst pests that afflict them are thrips and brown-scale, and for the next three months, where these at all exist, they will increase apace, especially where more heat is applied than the plants require. Many of the most elegant species of Ferns, such as the *Chalcidiales* and *Polypodium*, and very *Adiantums* and *Aspleniums*, are often grown much warmer than they should be; where these plants are confined in stove heat, frequently much too dark and with insufficient air, the growth is long and weakly, and the plants are so predisposed to the attacks of thrips, that the next to be done is to keep this pest down upon them, whereas if grown cooler little difficulty would be experienced. Nothing contributes more in giving an elegant finished appearance to a vase of cut flowers than a few long pieces of the old *Asplenium* or *Polypodium* continuing to have this condition, to stand well, the plants should be grown in pots or baskets hung up to the roof, where the pendent growths they make are thus sufficiently hardened to stand for days in water, and independent of their being so used the plants afford the look of any house in which they are so placed. *T. Baines.*

FLOWER GARDEN, ETC.

As this is the most important time of the year for the arrangement and planting of the flower garden for the season, considerable thought is required so to arrange the beds as to give the greatest amount of satisfaction, in all cases. The blending of colours depends upon the nature of the artist, and the stock of plants at his disposal has also considerable influence in guiding him to certain ends. Planting must now be persevered with, beginning as far as possible with those plants that are best established in their pots, and most able to resist drought and cold, and being the most tender kinds until all their first finish. Opportunity should be taken of dull days for planting the more delicate-rooted things, which has a marked effect on their future well-being. As all hands will be occupied with the planting the regular work is very apt to fall behind at this busy time, but the planting must have especial attention until all is finished, after which the general work must have its due amount of care. Lose no opportunity of keeping the grass regularly cut, for it always grows fast at this time of the year. Any spare time may be well employed in looking over the *Rhododendrons* that the worm-*tree* has had is getting troublesome, and, like all other pests, the sooner they are got rid of the better. Any climbing plants that require nailing or tying will need to be looked over, as the high winds which we have lately had, and may have at any time, are apt to break over the tender shoots. *Dahlia*s had better have their stakes put in as soon after planting as time can be found for the purpose, as the roots then are not so likely to receive injury as they are after having been in the ground for some time. Keep the place as tidy as circumstances will allow, until time can be found to get the put in regular order again. *T. Blair, Strathland Park.*

FRUIT HOUSES.

STRAWBERRIES IN POTS.—Another season's experience with these subjects confirms us in recommending the following kinds as being still unsurpassed for the purpose: *Keens*, *King of the Pyramids*, *Joseph*, *Paxton*, *Sir Charles Napier*, *Dr. Hogg*, and *British Queen*. *Vicomtesse Hericart de Thury* is also a commendable sort in many respects; while *La Grosse Sucrée*, to which we have adverted in the Calendar last year, as being a desirable kind for early work, has increased its reputation for that respect. Still owing to the acidity of the fruit, which likewise possesses a soft texture, it is not likely to become a general favourite, or ever to supersede the *Keens*' *Scudling*. The

reputed character of Garibaldi, if it be distinct as a setter, even under adverse conditions and at an advanced season of the year, is such as to outdo all others in this respect, and therefore it is worthy of being put forward as the most vigorous and the best runners will be obtainable at an early date; as these plants cannot be secured too early either for pot cultivation or for planting-out into beds or otherwise, they should therefore be layered immediately they are fit; for this purpose a sufficient number of the pots or cuttings should be ready, and a quantity of well-ripened soil should be run through a medium-sized sieve and be placed together where it will not become dry. Water the plants at once after layering, and if this matter is well attended to by all means let the pots be put in a moderately lumpy condition. Continue to plant out the best of the plants which have fruited which are required at the earliest moment, and those which have not yet fruited will succeed in frames or pots far better than in any dry house. *G. T. Miles, Wycombe Abbey.*

THE CHERRY-HOUSE.—The main point in this department, when the Cherries are ripe, will be their preservation in the best condition for this object. They should be freely ventilated at all times without suffering the fruit to become wet, and if any sunny weather prevails, if a shading can be applied it will be an immense advantage, and if the borders in the house are sprinkled occasionally under such conditions it will be a beneficial measure. Recommended to dry the trees when the fruit is gathered, and employ any other means which may be necessary to keep insect pests in check; this is especially necessary in order to keep the foliage healthy as long as possible, so as to prevent a premature growth in the trees in the autumn, which is liable to a subsequent crop of fruit. *G. T. Miles, Wycombe Abbey.*

VINES.—It is now generally admitted that inside borders which have been properly drained and constructed can hardly receive too much water when the Vines are in active growth, and as the occupants of all houses, from the earliest to the very latest, are now in a growing state, particular attention to watering and mulching must be considered one of the main points in successful culture. Vines on which the crops are ripe or ripening must not be allowed to suffer, and if the house is kept clean and well ventilated the fruit and foliage will derive benefit rather than injury from a nicely moistened border. Maintain a sweet growing atmosphere in all houses well watered, and if the Vines show signs of weakness let them have good supplies of tepid liquid manure up to the time of colouring, when stimulants may be discontinued and moisture gradually reduced with just sufficient artificial heat to admit of a free circulation of air, and the plants must be kept cool. Late houses in which shy setters are in bloom will also benefit by a circulation of dry warm air, with a maximum temperature of 90° on sunny days and a minimum of 70° at night. Remove all small berries as soon as the Vines are out of flower, and follow up thinning when those properly fertilised begin to swell. Early houses from which the fruit has been cut must be copiously syringed, to cleanse the foliage of dust and red-spider, and if the old foliage is good the laterals may be kept in check by moderate pinching-in of the points. Let the inside borders be well watered, and ventilate freely. *Messrs. and Lady Downe's* finishing the stoning process will require close watching when we have a change to bright weather, and if they show signs of scalding increase the night temperature, to prevent condensation on the berries, and remove early and in the morning any light weight, when the usual routine may be resumed. Young Vines struck from eyes this spring, if intended for planting out towards the end of the month or early in July, should be potted into 10-inch pots and kept steadily growing. Those intended for fruiting next year will now be getting forward. Finish out the points when they have made growth suitable to the place they are intended to occupy, and encourage early maturation of the canes by the reduction of atmospheric moisture and increased ventilation. *W. Coleman.*

MELONS.—Early Melons now ripening will require great care in watering to prevent the fruit from cracking. Atmospheric moisture must also be reduced by an excess of air, as few plants grow so quick after a sudden check than heavily-laden Melons, and fruit which ripens after the foliage is always deficient in flavour. The best practice, particularly where the plants are grown in a small quantity of soil, is to water moderately until the fruit shows signs of change, and then to mulch with 4 inches of dry horse-dung from an exhausted Mushroom bed. Have a good stock of plants established in fruiting pots for following the earliest when the crop is off. We generally have them

18 inches high when they are taken in, and by adopting this plan three crops may be grown in one season, or two crops in time for winter Cucumbers to follow. If a mixed collection of Melons is grown in one compartment varieties which ripen very much together should be selected. A cold, sultry May has not been favourable to rapid growth in frames, but where attention has been paid to linings and covering at night the fruit will now make good progress. Pay regular attention to watering and syringing before the foliage becomes crowded, and keep a supply of quicklime and sulphur ready for use in case of canker. Elevate the young Melons on flower-pots turned up on their rims, which the beds after the final earthing, to prevent rapid evaporation; and up with abundance of manure in the autumn, and the plants will be able to stand the autumn. Delicate-skinned kinds, like *Easton Castle* and *Victory of Bath*, require shading with tissue-paper when they begin to change colour, as they are liable to scald if fully exposed to bright sun. *W. Coleman.*

HARDY FRUIT GARDEN.

The severe frosts and the cold antipropitious weather that prevailed during the greater part of last month has rendered the present season the most disappointing and discouraging as regards the fruit crop and condition of the trees that gardeners have experienced for a long time past, and unless the most unremitting attention is bestowed on Peaches, Nectarines, and Apples, to keep them clean and render them all the assistance possible to help them in recovering from their present crippled condition, the chances of a crop next season will be very small indeed. As regards Appriots, the only insect enemy to contend with is the grub, which with the slow growth of the trees will be likely to prove more usually troublesome. The trees should therefore be looked closely over, and any curled leaves squeezed between the thumb and finger, which leaves from the soft nature of the insect will be quite effectual in killing them and much more expeditious than it is to do them in any other way. In the case of Peaches and Nectarines, I always depend more on the garden engine and clean water to keep them free from aphides, red-spider, &c., than on any of the many forms of insecticides now so commonly in use, and if applied at the time referred to above, the results are so beneficial themselves, it is seldom necessary to resort to the use of the latter or to adopt any other means of eradicating them. The present season, however, being so exceptional, from the absence of sun and lowness of temperature both day and night, it has not been so successful, and it is necessary to resort to the operation, and greenfly are therefore making the most of the short respite. It frequently occurs that only a few shoots in certain parts of the tree are tadly infested while the others are free, and when that is the case a puff or two of tobacco-cut from a proper distributor is generally sufficient to prevent them from spreading, if followed up as it should be on the first favourable opportunity with a good drenching either from the garden engine or syringe, and as the weather improves one or the other of these ought to be plied freely at least once or three times a week. The apples that infest Plums and Cherries are not so easily dealt with, and take a strong solution of tobacco-water to destroy them, but if all the young shoots-wood is at once pinched back, and only such buds-left as are required for laying in to fill vacant places on the wall, it is an easy matter to keep the trees clear, as they rarely attack the fully grown leaves, the tissues of which are too hard for them to penetrate. What few leading shoots there are after the removal of the breast wood can then be easily dipped in any insecticide of sufficient strength to be effectual, and afterwards nailed in to the positions in which they may be required to be. Following out the above practice I never have any trouble with either Plums or Cherries, and it is the only way to keep them closely spurred back and the trees and fruit in a healthy satisfactory state.

From press of work it is often that Gooseberries and plants get much attention after their winter pruning, and yet there is nothing that makes a better return for any extra attention by way of stopping the side shoots than they do, as they form more spurs up the main branches and it assists in developing the best fruit of three times a week. The apples, Plums, &c. In season like the present, when greenfly is in the ascendant, this stopping is absolutely necessary, as it is impossible to obtain fruit from red or white Currants fit for use unless some means or other be adopted to hold them in check; and it is from this cause that the trees, and the apples, and the excess of discolor and damage the fruit. Raspberries should at once be looked over, and have the suckers reduced to four or five of the strongest and best situated, unless it is in contemplation to make any fresh plantations in the autumn, in which case the present number may be retained by being cut down to a sufficient number to grow into young canes for the purpose. If a mulching of half-rotten manure is now put on, the yield of fruit will be considerably added to it, as it will shade the roots. *J. Sheppard, Woodstone Park.*

THE
Gardeners' Chronicle.

SATURDAY, JUNE 2, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, June 5. Royal Horticultural Society's Meeting of the Fruit and Floral Committee at 4 A.M. and Scientific Committee at 4 P.M.
 WEDNESDAY, June 6. Sale of the new Catalogue and Greenhouse Plants at Lee's Nursery, Hammondsmith, by Stevens (four days).
 THURSDAY, June 7. Linnean Society's Meeting at 8 P.M.

GARDENERS, we fear, will have cause to remember the present spring. After a mild wet winter, in which many plants scarcely stopped their growth at all, there has come a bitter spring, with frosts and winds enough to carry despair to many a gardener. The growing shoots of such things as common Laurels, Aucubas, Weigelas, are in many places near London blackened and destroyed. The ripe berries of the Aucuba have changed their gay livery of brilliant red for the mournful black. Roses show crippled and curled leaves, many of which conceal a worm 't' the bud, and promise badly for the season's display. The beautiful *Dielytra spectabilis*, usually a model of grace and elegance, scends up its spindly flower-stems—a mere mockery of its usual state. *Myosotis dissitiflora*—a plant which generally excites the enthusiasm, not only of our floral scribes, but of those who have less experience and weaker appreciation of spring flowers—was this year blasted in its beauty by the cruel frosts. Where spring frosts have been, *per se*, powerless to retard or injure, the fierce winds have too effectually done their work. Tender-leaved Limes, Norway Maples, and some of the choicer Aceres, such as *Schweidleri*, have had their young leaves torn to shreds. The prudent Ash has scarcely opened its buds this year, long behind the tardiest Oak, at least in the district from which we write; *Robinia Pseud-Acacia* is even later—its buds have only now begun to move; and the same may be said of those of *Ailantus glandulosa*. *Euconymus japonicus* is not much hurt, but *Elaeagnus japonica* is sorely crippled. The species of *Philadelphus* are unharmed, and the beautiful *Nepalense Buddleia glabra* is fortunately quite unharmed. The common Mahonia has not suffered, but the lovely *Berberis stenocephala* has been hardly the ghost of its usual self. Lilacs and Laburnums have offered mere suggestions of their usual beauty, while the blossoms of the Horse Chestnut are small and have an unusually starved appearance. Pear blossoms lie scattered on the ground, withered, blackened, dead. Cherries are not much better. Plums have made a better stand. Peach blossoms are nowhere, and their leaves are shrivelled and screwed up in some places, and swollen and reddened in others, as if they had rheumatic gout; but no, it is only Peach blister in an aggravated form; so that, though there will be plenty of blister, there will be no Peaches. Gooseberries and Currants are not hurt, and Strawberries promise fairly. Of early Peas and Potatoes, the less said the better; indeed, there is not much left to be spoken of. Nor is our experience singular. From various parts of the country we get similar unfavourable reports. We select one illustration, from a western county, which will have a special interest for those who put their trust in orchard-houses:—

"When I wrote you last, I mentioned that we had 7° of frost here the previous night, but the following night we had 10°, and the Apricot-house not being heated the crop of fruit is most seriously damaged. Never before have I met with so disheartening a reverse, for a finer promise could not have been—by far the best crop we ever had; the plants and fruit were in the most luxuriant health, and therefore very tender. There are

plenty of wall Peas, but very few on the pyramids. Strawberries will be abundant, and so will Grapes, Figs, Pines, Peaches, and Melons, but other fruits will be very scanty. Of Plums there is certainly not a peck in the garden."

We are induced to publish the foregoing letter in the hopes of eliciting from some of our correspondents their experience under like conditions. In the case above cited Apricots have been grown in an orchard-house heated when required, but as the crop was never satisfactory the trees were transferred to an unheated house, with the result above mentioned. Heated orchard-houses require the most delicate management, and are a frequent source of failure, but it is evident that an unheated one with 10° of frost is an equally dangerous place to grow fruit trees in when in bloom.

Dr. BENNETT's letter on the conditions under which the Apricot and other fruit trees grow in Majorca, published in another column, has a special bearing on the subject now under consideration, and should be perused by all who have to grow fruit trees.

—A CORRESPONDENT has sent us, from the neighbourhood of Caterham, a fine specimen of the *HELIIX POMATIA*, that large white-shelled snail of which the Romans were so fond, and which it is supposed they introduced from Italy to our Kentish downs. Be this as it may, the species is rarely found far from the chalk downs. The specimen before us is nearly 2 inches across in its longest diameter. The snail in question is considered a delicacy in France, being fattened in special snaileries on the Burgundian hillsides, warmed with the sun that beats on those limestone downs, and fed with the delicate young foliage and tendrils of the Vine. Fortunate snails! How different your lot from that of your English brother, the humble aspers, and yet may they say, too. "All is vanity" for whether it is better to be cranked or to be eaten is a question for the anti-vivisectionists to consider. Any way, let those visitors to Paris who may be tempted, as we were, by the dainty snails exhibited in the best restaurants reposing in a basket of green moss, garnished with tempting Parsley, pause ere they put the seductive-looking morsel in their mouth. We are willing to believe that when fresh they will challenge comparison with any other delicacy, but they may not be fresh—the butter or fat with which they are served up may be rancid, and there may be too much garlic chopped up with them. We say no more, only—Beware!

—One of the prettiest greenhouse plants at this time of year is *VERONICA HULKEI*, a New Zealand species of semi-scandent habit, and with dense panicles of lavender flowers. Though it has been introduced for some years, and was figured in the *Botanical Magazine*, it does not seem to have been at all generally distributed.

—We learn that Professor BOULGER, the Professor of Natural History at the Royal Agricultural College, Cirencester, is preparing a *Flora* of Gloucestershire, and will be glad of any information as to rare species, localities, &c., that our Gloucestershire correspondents can give.

—From Mr. GLAISHER's quarterly report we take the following remarks on the weather during the quarter ending March 31, 1877:—

"The weather during the quarter has been for the most part exceptional, the readings of the barometer have been usually below their averages, with frequent stormy weather; the temperature of the air was high both in January and February, rain fell almost continuously and was excessive in January, and there has been very little sunshine throughout the quarter.

"The high temperature which set in on November 13, 1876, and continued with the exception of six days in December to the end of the year, was also prevalent throughout January and until February 19, 1877, the average daily excess of temperature for the fifty days beginning January 1st and ending February 19 was 6°.1; and for the ninety-nine days beginning November 13 and ending February 19 was 5°.4; the winter, therefore, of the year 1876-7 has been exceptionally mild. On February 20 a period of rain which was distinguished by several days of temperature below their averages, and then followed by a smaller number of days of temperature above their

averages, and this variation of temperature, alternately warm and cold, continued till March 23; the average daily deficiency of temperature for the twenty-six days ending March 23 was 2°.8. From March 24 to the end of the quarter the weather was uniformly warm, and the average daily excess was 2°.9.

"The fall of rain in January was excessive; at about London and its neighbourhood it fell during the first half of the month on nearly every day, and during the whole of the month it fell on six days out of seven days. The amount at Greenwich was 4.35 inches; back to the year 1815 we have no instance of so large a fall of rain in January; and but two instances which are closely approximate, viz., in the year 1828 when the fall was 4.3 inches, and in the year 1868 when it was 4.2 inches. The average rainfall of sixty-two Januaries is 1.85 inch, so that more than double the average fell in January; this is the more remarkable, as the fall in December, 1876, was 3.0 excessive.

"The fall of rain in the three months ending January was 13.00 inches, being more than half the mean annual fall of sixty-two years, viz., 25.2 inches. The average fall for the three successive months, November, December, and January, is 6.24 inches; therefore, for these months, the fall of rain has exceeded in amount twice the average fall.

"The fall of rain in January was large everywhere, and it fell on every day in the month at one or other place; the day of least fall was the 22d, on which day it fell at a few places only, and to a small amount; on the 12th, 13th, 23d, and 26th, the falls were less than a quarter of an inch; all the other days the falls exceeded a quarter of an inch at one or more places; on the 2d, 3d, 4th, 6th, 7th, 8th, 10th, 11th, 17th, 19th, 23rd, and 30th, the fall was one or more stations was nearly 1 inch, or it exceeded 1 inch.

"The mean temperature of the air for January below that of December over the whole country was very nearly alike, and averaged 1°.3; that of February above that of January was nearly the same everywhere, the average being 1°.1; and that of March below that of February was nearly uniform, and averaged 2°.8.

"The mean temperature of the air for January was 42°.7, being 0°.2 and 0°.1 above the averages of the preceding 106 years and thirty-six years respectively. In the preceding 106 years there are but five instances of so high a mean temperature for the month of January, viz. :—

In 1796 it was 45.3	In 1846 it was 43.7
1804 " 43.3	1875 " 43.4
1816 " 44.4	

"The mean temperature of the air for February was 42°.5, being 4°.9 and 4°.3 above the averages of the preceding 106 years and thirty-six years respectively. In the preceding 106 years there are only eight instances of so high a mean temperature for the month of February, viz. :—

In 1779 it was 45.3	In 1859 it was 44.7
1784 " 44.7	1859 " 44.7
1809 " 44.1	1859 " 45.8
1844 " 44.9	1877 " 44.8

"The mean temperature of the air for March was 46°.7, being 0°.4 and 1°.1 below the averages of the preceding 106 years and thirty-six years respectively; it was higher than the values in 1874 and 1876 by 3° and 0°.4 respectively; but 0°.5 above that in 1875.

"The mean temperature of the air for the quarter was 42°.3, being 3°.6 and 2°.5 above the averages of the preceding 106 years and thirty-six years respectively. In the preceding 106 years there are but six instances of so high a mean temperature in the quarter, viz. :—

In 1846 it was 42.4	In 1846 it was 43.6
1822 " 43.5	1863 " 45.5
1834 " 44.9	1872 " 49.6

—Advices from HOLLAND refer to the fact that the *HYACINTH CROP* is passing through a crisis that is causing some anxiety to cultivators. The blight which exercises such a peculiar withering influence on the Hyacinth is sadly affecting some of the crops, and it may lead to a scarcity of certain sorts and an advance in their prices. Tulips promise well, so do Crocuses, and the bulbs are expected to be good and cheap.

—We are informed that the late MANCHESTER NATIONAL HORTICULTURAL EXHIBITION proved a decided success, notwithstanding the unfavourable opening days. During the Whitweek the number of visitors was upwards of 50,000.

—The new KIMBERLEY PARK, at Falmouth, presented to the inhabitants of that town by the Earl of KIMBERLEY for their use and benefit, and as a recreation ground, was opened on the 24th ult. by his Lordship, in the presence of the borough Members

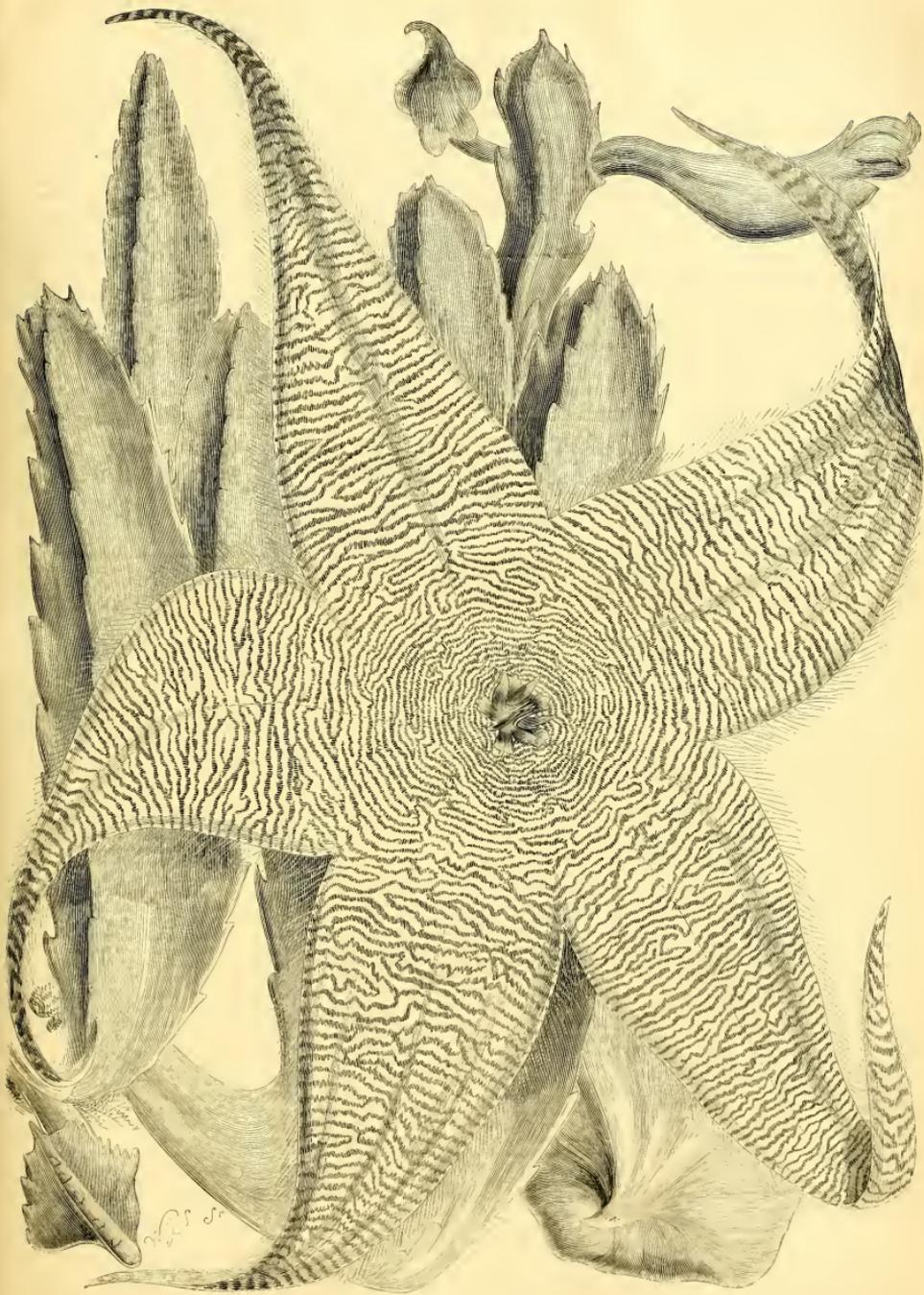


FIG. 112.—STAPELIA GIGANTEA. (FOR DESCRIPTION, SEE P. 684.)

and Corporation. The park is picturesquely situated in Berkeley Vale, diverging from the centre of the town westward, and has been planted and beautified by Lord KIMBERLEY, who was accompanied on this occasion by the Countess and the Hon. ARMYN and Lady CONSTANCE WOODHOUSE. A public dinner followed, at which Lord KIMBERLEY was present.

— We have received the following note from Mr. DAY, of Tottenham:—"Your account of *DENDROBIUM TRIVICORNIS* in the *Gardener's Chronicle* of May 26 is not correct. It was sent to Messrs. HUGH LOW & Co. first in 1856 by their correspondent, the Rev. Mr. PARRISH, to whom Orchid growers are indebted for many fine things. I flowered it here in 1866, and have a drawing of it dated May of that year; and it is figured in the *Botanical Magazine*, July, 1869, t. 5780, under the name of *Dendrobium densiflorum* var. *alto-luteum*." [We had overlooked the circumstance related by Mr. DAY, and therefore apologise to Messrs. LOW for unwittingly giving to another firm the credit due to them. Eds.]

— The proprietor of the *Darling Downs Gazette*, the oldest provincial newspaper in Queensland, who offered several valuable prizes for competition at the late annual show of the Drayton and Toowoomba Agricultural and Horticultural Society, has favoured us with a photograph of several of the bunches of Grapes shown on the occasion, and which are stated to be those which carried off the prize for the largest three bunches, and some others.

"The weight of the heaviest bunch amounted to 8 lb. 2 oz., and it must be remarked that none of the bunches were the result of any forcing process. That the prizes would be given was not announced until a week or two before the show, and consequently competitors had simply to overhaul their vineyards and select the largest bunches which Nature had produced. The Darling Downs, an elevated table-land of rich volcanic soil, enjoying a climate more temperate than any other portion of the colony, is known in the colony as the garden of Queensland. What is extensively grown, as well as Maize, Barley, and Oats. Nearly all English fruits grow to perfection, as well as Oranges—the remarkable success of which fruit has encouraged several settlers to lay out extensive orchards. The Vine also flourishes on this tract, giving splendid results, and the wine-making industry—although yet in its infancy—promises to attain a very great importance."

— Mr. MACKELLAR, gardener to Sir JAMES WATTS, Kt., Abney Hall, Cheshire, has sent us a very beautiful cut spike of *DENDROBIUM FORMOSUM*, bearing four fully developed blossoms, and one yet to open. The flowers measure from 4 to 5 inches across, and are white, with the exception of an irregularly outlined bright yellow blotch on the lip. This must be the variety of *D. formosum* named *giganteum*; and, as by rate, as Mr. MACKELLAR observes, it is a very beautiful evergreen species, and can be grown by any one who has a stove; in which, in the absence of an Orchid-house, it has been cultivated at Abney Hall.

— A local paper records the occurrence recently at Cockermonth of a Good Templars' FRUIT BANQUET, at which about sixty persons were present, and four courses of fruit were distributed.

— Mr. A. J. TEMPLE, gardener to J. SHUTTEWORTH, Esq., Hartsholme Hall, Lincoln, has favoured us with a good sample of *CHENOPODIUM BONUS-HENRICUS* (English Mercury), or, as it is popularly called in Lincolnshire, "Markary." When this subject was being discussed in our columns a few months ago Mr. TEMPLE stated that no labouring man in his locality considered his garden completely stocked without it, and by rich and poor alike it is highly prized—a circumstance that can surprise no one who has partaken of it at the dinner-table. Mr. TEMPLE mentions as a fact worth recording that his father, when gardener at Falkland Palace, in Fife-shire, gathered the *Chenopodium* nearly fifty years ago, and sent it, instead of Spinach, for the use of the kitchen.

— Owing to the wanton destruction of flowers, shrubs, &c., by a pleasure party who visited Lord STAMFORD'S famous gardens at Enville during the Whitsun holidays, his lordship has ordered them to

be closed to the public. A number of persons who were found committing the damage were turned out of the grounds at once.

— In a congregation held at Oxford on May 24, a series of resolutions were proposed, the object of which was the establishment of DEGREES IN NATURAL SCIENCE, corresponding to the B.A. and M.A. degrees, and permitting candidates for such degrees to substitute at the earlier examinations either French or German for one or other of the classical languages, but at the same time increasing the quantity of mathematics required of them. The title of the degrees was to be Bachelor and Master of Natural Science. The Council draw attention to the fact that these proposals will not in any way interfere with the existing arrangements as to degrees in Arts. The B.A. degree, in other words, will still be qualified for by the study of theology, or mathematics, or law, or, finally, natural science; but by its side will be a degree for Natural Science students possessing a definite meaning and value. After much discussion the resolution was carried by sixty-three votes to forty. The University of London established such degrees some years since.

— According to *Nature*, LOCUSTS were so numerous early in May in ALGERIA, as almost to stop the trains running from Blidah to Algiers.

— The Society of Arts has convened a special meeting of agriculturists for Tuesday next to discuss the question of STAMPING OUT HURFUL INSECTS, which was raised by a recent circular from the Lords of the Privy Council to the different agricultural societies throughout the kingdom, in which circular certain propositions made by Mr. ANDREW MURRAY, F.L.S., were brought under notice. The Duke of BUCCLEUCH has consented to preside, and the discussion is to be opened by the reading of a short paper on the subject by Mr. MURRAY.

— We learn that the LESSONS TO THE YOUNG GARDENERS at KEW, and about which there has been some correspondence lately, are divided into those given in the summer and those in the winter months respectively. From May till August practical lessons in botany are given twice a week, as also demonstrations in economic botany and the uses of plants, in the museum. In the winter months lessons on the geographical distribution of plants, microscopical demonstrations of the structure of plants, together with lessons in elementary chemistry, physics, and meteorology. Each student is expected to attend regularly and to take careful notes. It is quite evident that a great deal is done in a quiet way, without fuss or ostentation, and at a trifling cost.

— At the anniversary meeting of the Linnean Society on the 24th ult., the President, Dr. ALLMAN, delivered an address on the Foraminifera, tracing the history of their gradually increasing complexity of structure from the simpler forms to those of higher organisation. He showed how these creatures, which are undoubtedly animals, have the power of forming starch in their tissues, and how in some cases the extremely minute germs by which they are propagated are capable of resisting a heat of 300° F. with impunity, a fact of the greatest importance in the question of spontaneous generation. It has been supposed that all germs would be killed by such a temperature, and that any which made their appearance in duly closed vessels after such exposure must have been developed as entirely new creations in the fluid; but if the germs in question are not killed by such a heat the old doctrine "*omnium ex ovo*" is still upheld.

— Among spring flowering plants at Kew we noticed lately that the deepest coloured *ADERBITIA* known to us is *A. conspiciua*. Its flowers are of a dark violet-purple; *A. tauricola* is a very free flowerer, with flowers of a pale lavender, larger than those of *A. deltoidea*. They may be seen now in the herbaceous ground at Kew. The best of the species of *Trollius* is *T. Fortunei*, the flowers of which are of a deep orange colour. *Alyssum saxatile* is not to be deposited from its place as the best yellow of its class. *Iberis gibraltarica* is the best of the half shrubby species of *Iberis*, though *I. Priviti* and *semprerviana* are by no means to be despised. *Convulvulus Cneorum* against

a wall is a charming plant, its silvery leaves and large, white, funnel-shaped flowers giving it a very striking appearance.

— Here is an alleged fact for the members of the Pelargonium Society. M. HICKEL has been experimenting with the leaves of the *PELLARGONIUM ZONALE* by wrapping them round small pieces of meat. After some time an acid secretion was observed, which produced on the meat the same effect as has been observed in the so-called CARNIVOROUS PLANTS. The Pelargonium leaves, it must be remembered, are clothed with sticky glandular hairs. When meat was wrapped in leaves destitute of such glandular hairs—such, for instance, as Ivy leaves—no such effect was produced. Even where the leaf was covered with hairs not of a glandular character, such as *Glechoma hederacea* (ground Ivy), no effect was perceived. It is the glandular hairs then alone that are endowed with the property of dissolving nitrogenous matter. It remains to be seen, however, of what use the property is to the plant. At present it would seem as if the carnivorous property were a mere luxury, which the plant could do perfectly well without.

— From Mr. DAVID INGLIS, Howick Gardens, Lesbury, Northumberland, we have received some LARGE MUSHROOMS, which were taken from an old *Melon-pit* which has stood all winter full of bedding plants. Eight specimens weigh exactly 3 1/2 lb., and the two largest 1 1/2 lb. It is nothing unusual to see Mushrooms growing on old *Melon* beds, but we do not remember to have seen any so large and at the same time of such good quality before. Mr. INGLIS states that he has had a large supply from the pit, and to all appearance it would have continued in bearing much longer had it not been required for other purposes.

— Seed growers are often puzzled at the varying times required for SEEDS of the same description to come up. For instance, seeds of *Primula japonica* sown at the same time and under the same conditions, come up very irregularly. This has been made the subject of inquiry and experiment at the agricultural station of Tharand by M. NOBBE and HAENLEIN, who attribute the differences in question to the varying anatomical conformation of the skin of the seed. In the Handbook of Seeds, *Samenkunde*, numerous observations of a similar kind are made chiefly from German sources, the researches of MEISS, TUFFEN, WEST, and other English observers, being apparently, however, not known.

— Baron VON MUELLE writes that he has lately determined that the *PHYTOL*, a stimulant said to be of marvellous power, and known to be in use by the aborigines of Central Australia, consists of the leaves of *Duboisia Hopwoodii* (*Frax. Phytol. Austr. iii.*, 138). "This bush extends from the Darling River and Barcoo to West Australia, through desert scrubs, but is of exceedingly sparse occurrence anywhere. In fixing the origin of the *Phytol* now a wide field for further inquiry is opened up, inasmuch as a second species of *Duboisia* (*D. myoporoides*, R. Br.) extends in forest land from near Sydney to near Cape York, and is traced also to New Caledonia, and lately by me also to New Guinea. In all probability this *D. myoporoides* shares the properties of *D. Hopwoodii*, as I now find that both have the same burning acid taste. Though the first known species is so near to us, we never suspected any such extraordinary properties in it as are now established for the later discovered species. Moreover, the numerous species of the allied genus *Antheoceras*, extending over the greater part of the Australian continent and to Tasmania, should now be tried, and, further, the many likewise cognate *Schwenkes* of South America should be drawn into the same cycle of research, nothing whatever of the properties of any of these plants being known. The natives of Central Australia chew the leaves of *Duboisia Hopwoodii*, just as the Peruvians and Chilians masticate the leaves of the *Coca* (*Erythroxylon Coca*), to invigorate themselves during their long foot journeys through the deserts. Those living near the Barcoo travel many days' journeys to obtain this, to them, precious foliage, which is carried along about by them broken into small fragments and tied up in little bags. It is not improbable that a new and perhaps important medicinal plant is thus gained. The blacks use the *Duboisia* to excite their courage in warfare—a large dose infuriates them."

— The seventeenth anniversary festival of the ROYAL AGRICULTURAL BENEVOLENT INSTITUTION will be held at Willis's Rooms on Wednesday next, under the presidency of the Right Hon. the Earl of DUNMORE.

— Our excellent contemporary the *American Agriculturist* (one of the best serials, by the way, that comes before us) tells its readers that spring in England begins in February and summer in May. We doubt the accuracy of this in any season, but we think this year winter began about the middle of April.

— A remarkable collection of HERBACEOUS CALCULARIAS is now in bloom in one of the plant-houses of Messrs. SUTTON & SONS, London Road Nursery, Reading. The house, which is of good size, is even inconveniently crowded with specimen plants, but it serves to show off their great beauty and attractiveness *en masse*. Each plant is a specimen, but some are much larger than the others; a few are in 10 and 12-inch pots, the smaller in 24-size pots, but in each case the growth is dwarf, stocky, and healthy, and each plant is densely laden with large flowers. The first sowing was made on July 16 last year, the second sowing on the 31st from seed just harvested. The *Calceolaria* is naturally a free bloomer, but many of these plants are so densely laden with bloom that the flowers may be said to be heaped upon them. The colours are very varied, from creamy white, handsomely spotted on the body, to rich dark maroon, and between these there are many intermediate shades. A considerable amount of attention is required in keeping the plants clean and healthy, but they are well cared for, which is abundantly evidenced by their condition.

— On May 25 and 26 a successful floral exhibition was held in the beautiful grounds attached to the Orleans Club House, at Twickenham. The show was held under the management of Mr. J. K. ROLLISON, in two large marquees erected in a meadow on the banks of the Thames, and the competitions in the various classes were generally very good, the specimens staged being mostly of high-class quality.

— The *Cumberland Packet* states that the annual "RADISH FEAST AT LEVENS HALL," a custom dating from time immemorial, and supposed by some to be a relic of feudal times, was held as usual on Saturday, May 12, at Levens Hall, the seat of the Honourable Mrs. HOWARD, and adjoining the high-road about midway between Kendal and Milnthorpe. May 12 is also the fair day at the latter place, the fair being opened in the presence of the Mayor and Corporation of Kendal, who afterwards dine at one of the hotels, where they are joined by a number of gentlemen from the surrounding district, and tradition hath it that the Radish feast (which is held after the fair) originally rose out of a rivalry between the families of Levens Hall and Dallam Tower as to which should entertain the Corporation with their friends and followers, and in which Levens eventually carried the palm. The grounds are thrown open on the return from Milnthorpe of the Corporation, who are the first to enter, and admission to the public is by ticket given gratis on application. The "feast" is provided on the bowling-green in front of the Hall, where several long tables are plentifully spread with Radishes and brown-bread and butter, the tables being repeatedly furnished with guests. The liquors comprise two very potent extracts of barley-corn—one, which is called "morocco," being of reputed great age. After the repast comes an important feature of the proceedings, when the "colts," or new visitors, are brought into a ring as they are captured, and are compelled, each pointed upon one leg, to drain a quantity of "morocco" from a glass of unusual and antique make, and to give the pledge—"Lack to Levens as long as the Kent flows." Failing this achievement, as many do, a money forfeit for the benefit of the attendants is incurred, and the whole affair occasions considerable diversion.

— We notice from an advertisement that Mr. WILLS is about to offer for sale by auction, at Stevens' Rooms, TWENTY-FIVE of his best and most distinct DRACENAS, the cream of the whole collection. As Mr. WILLS' business does not exactly lie in the direction of distributing new plants, he has probably acted wisely in coming to this determina-

tion, the more so as the number of really fine kinds is more than it is reasonable to suppose should be sent out from one establishment within any reasonable limit of time. At any rate the public will now have a better chance of obtaining them, and as they are so extremely varied in character and colouring there are varieties to suit all tastes. To Mr. BAUSÉ belongs the credit of showing us unmistakably that we need not go to the South Sea Islands for Dracenas, if we only know how to set about "creating" them nearer home. The sale is to take place on the 26th inst.

— Some ripe seeds of *Adenium obesum* were lately brought to me by my son, Surgeon-Major R. W. BERKELEY, from Aden. As the surface of the seeds, with their short, obtuse, reflexed hairs seemed curious, I was induced to examine them with the microscope, and I was surprised to find that each of them contained a very broad double spiral thread, ending in a loop at either end, reminding one closely of what occurs in the elaters of *Jungfermannia* (SCHACHT, *Pflanz.*, tab. iv., fig. 13). In most cases it is like a loop of tape simply twisted, but occasionally there is a slight inclination to further complication by branch-

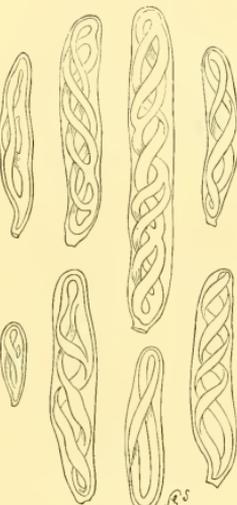


FIG. 113.—HAIRS FROM SEED OF ADENIUM OESUM. (Enlarged 165 diam.)

ing. The arrangement, however, varies in each cell, as will be seen by the drawing by Mr. SMITH (fig. 113), which exactly agrees with my own observation. I do not recollect having seen precisely the same appearance in hairs before, but previously observed or not, it appears quite worthy of record. M. 7. B.

— We have another DOUBLE-FLOWERED CINERARIA from Messrs. DICKSONS & Co., of Edinburgh—a large and superior variety to any of those mentioned last week, and the colour being a deep magenta-purple. This has been named *Pilgr Beauty*. As we understand the plants are of dwarf stocky habit, they must do much towards making the double-flowered varieties of this flower popular amongst those who grow plants for decorative uses.

— The ROYAL HORTICULTURAL SOCIETY'S GREAT SUMMER SHOW, to be held on Tuesday, June 19, promises to be a very good one. The schedule is very elastic, and will afford room for a more varied display than usual. There will be a regular competition for the medals or money prizes in each class. The prizes for fruits and vegetables are especially good, and ought to bring out a good display. New plants will no doubt be well represented in the com-

petitions for Mr. BULL'S cups; and as in addition to the above subjects the annual show of the Pelargonium Society will take place at the same time and place, the attractions to be offered to visitors will be extensive enough for the greatest floral gourmand. As the show is likely to be largely attended by both exhibitors and horticulturalists generally, may we suggest to the Council certain improvements that might be made in connection with the show, with a view to affording greater comfort to those most concerned. First, owing to the exceedingly limited space in the yard, either at the arcade entrance or in the Albert Road, the accommodation for exhibitors' vans is specially inconvenient, and matters are rendered much worse because, as there is no one in authority to make the most of the limited space, the vans are set—to use a vulgarism—"all over the shop," one blocking up the way to another, taking up the space in which several might conveniently stand. If a policeman were detailed off for the purpose of arranging these things properly it would be to the advantage of all the exhibitors. Second, a proper lavatory, in which any one who has borne the heat and dust of arranging plants for several hours may get a wash and brush-up, and thus be presentable for the rest of the day, without having to go goodness knows where for the desired accommodation. Surely the Council can secure, either in some part of the buildings or in a tent, this simple requisite for the exhibitors' comfort. Lastly, a cheaper refreshment bar, buffet, or room is sadly needed by the many exhibitors' employes who desire to be at the show and yet are driven out to remote beer-shops or elsewhere to get needful refreshment. It would be worth while seeing how far a tent devoted to the supplying of ale, tea, coffee, lemonade, and good edibles at a cheap rate would be a success, and leave the buffet in the arcade to those who are rich enough to pay for luxuries that are beyond the reach of poorer men. The Council have the power for doing good in this direction at little trouble to themselves, and we are sure that they would earn the hearty thanks of those most concerned if they would treat exhibitors and their employes as valuable allies, rather than as necessary evils.

— Some two years since or more, Mr. FLEMING, gardener to R. HOUGHTON, Esq., Sandhays, Waterloo, Liverpool, sent us specimens of a seedling Fern, to which we then gave the name of *ADIANTUM CONCINNUM FLEMINGII*. It had, of course, many of the characters of *A. concinnum*, but these were so veiled by other features that the relationship with *A. concinnum* was rather questioned at that time, though it has since been settled by the plant itself, which produces from its spores, not the variety *Flemingii*, but true *concinnum*. Its chief peculiarity, from the gardener's point of view, is its upright and dense habit of growth, and its comparative dwarfness, since it does not exceed some 18 inches in height. The fronds want altogether the lax, drooping character which belongs to the typical *A. concinnum*. Since that time it has been exhibited at one of the Royal Horticultural Society's meetings (July 21, 1875), when it received a First-class Certificate, a similar award having been recently made to it by the Royal Caledonian Horticultural Society. The fronds are ovate in outline, tripinnate, or sometimes quadripinnate, the pinnae and pinnules thickly set and overlapping, bright green, and having the usual characteristic of the lowest pinnules lying along the rachis, the same peculiarity being more or less evident in the pinnae themselves. In the original specimens sent to us the larger pinnules were half an inch wide, and rather deeply lobed; but in specimens recently forwarded by Messrs. IRELAND & THOMSON, of Edinburgh, by whom the plant is being sent out, the pinnules are somewhat smaller, and rather more deeply lobed, thereby increasing the elegance of the plant, which is certainly one of the prettiest of the smaller-habited Maiden-hairs, ranking in this respect with *cuneatum*, *decorum*, and *amblye*. Mr. FLEMING states that this Fern is sufficiently hardy in constitution to thrive in an intermediate house, and that all the plants of it propagated up to this time have been obtained by division, since the spores produce only the typical *concinnum*.

— We have been favoured—shall we say deceived?—by the inspection of some grey-looking fragments of flowers, which at a casual glance we took to be those of the soft grass, *Holcus lanatus* or *H. mollis*. More careful examination, however, showed them to be

cultivation from the contrast they afford. Trilliums increase readily by division made any time during the spring, before they get much advanced in growth; and in order to do this without injury, the best way is to plant them in a moist soil. Let the soil be so deep where the separation can be made to the greatest advantage. Any moist, sheltered, shady place will do to grow them; and if the soil is not naturally loose and rich in decomposed vegetable matter, it should be made so by working in plenty of leaf-mould or refuse peat. In either of which I find they grow freely. As their flowering satisfactorily depends on the growth they make, every encouragement should be given to induce healthy foliage, and care taken that it is not interrupted by frost. If the plants are not otherwise the crowns get weakened considerably, and do not come to maturity. Besides being propagated by division they may likewise be raised from seed, which should be sown under haillights on a moist, sandy soil, and the plants when up nursed on a similar situation. Trillium grandiflorum has been so much admired with us in pots that I am working up a stock to try it for forcing, but whether it will succeed or not under artificial heat remains to be seen. Certain it is, however, that taken up and potted, and allowed to come on in a moist soil, they will naturally afford more satisfaction or that make a better return for the time and attention bestowed on them. S. W.

The Ivy and damp Walls.—The late Mr. Lindsay Carnegie, Kilmblethorn, Forfarshire—a most enthusiastic horticulturist—was very fond of Ivy, and at one time, whilst I was partner there, he had nearly every house within the hollow walls examined by me for Ivy. The kitchen of the house in which I lived was covered with Ivy, and during damp weather the plaster on the inside walls could have been taken off in handfuls. About two years before I left I cut down the Ivy, and the house was naturally free of it. My nephew of Mr. Rust lives in that house at the present time, but I believe Ivy has not again been allowed to grow on the walls. When I entered the service of my present employer, the Earl of Southesk, the front and one end of the gardeners' bothy and one end of the gardener's house were covered with the same roses, which as the foliage always got brown with red-spider and thrips, his lordship wished to be rooted out and Ivy planted instead. Strong plants were put in, and in the course of four or five years the walls were closely covered. Previous to this the bothy walls had been quite dry, but they became damp both upstairs and down, and, like my old kitchen, you could have scraped the plaster off in handfuls. The damp in this case was the cause of much annoyance, as his lordship, while anxious to retain the Ivy, was equally concerned about the comfort of the young men. After several consultations I then held we examined the end of my house, that was planted and had become equally as well covered as the bothy, but found no damp. This we concluded was owing to the roof projecting about 18 inches over the wall, and so must do so for the means of keeping the dry. I immediately got eaves put up to conduct the water away and not let it run off the slates amongst the Ivy; that is about ten years ago, and we have never seen a damp spot on the walls since. Ever since I have been an advocate for Ivy on walls. V. Crudden, *Kinnaird Castle Gardens, Brechin*.

—A lady, on reading your last week's number, exclaimed, "I am certain that Ivy growing on the walls of a house protects it from damp;" and, on inquiry, I found that she at one time resided in a place where two rooms at the side of the house were specially damp. On the damp in one of the rooms at the expiration of a fortnight quite spotted with mould, and the walls in wet weather were perfectly moist, and the paper fell off. Mrs. — was advised to plant Ivy. She did so. It grew quickly (it was the largest), and it had before she left entirely covered the walls. She had, however, the most miserably dark and objectionable closets the most dry spots in the house. Other friends of mine have experienced the same beneficial results from Ivy culture. *Helen Watson*.

—I can with confidence second Mr. Rust's remark about Ivy-covered walls. A farm-house in North Walls, in a somewhat exposed position, was up to twenty years ago about as damp a dwelling as could be found on the estate. The present tenant planted Ivy against the south and west walls—the sides most exposed, and by dint of care the walls were kept covered. On the damp in the estate has ever since been about the driest on the estate. This is one of many instances I could name, but one which more particularly occurs to me, as I had occasion to inspect the house carefully about a week since. Of course care should be taken to trim the Ivy every year, and to cut down the stems that are allowed to interfere with the eaves, gutters, or roof. *Meryon*.

—So much has been written for and against the Ivy, that I daresay many of your readers are somewhat perplexed as to whether Ivy makes walls damp or not. Now as I have had considerable experience, and have given this subject much attention,

it will possibly be gratifying to some of your readers who have walls covered with this beautiful creeper, to know that without the slightest doubt I can assert that Ivy does not make walls damp, but on the contrary, it keeps them dry. Let me give you an instance. A wall covered with Ivy got and examined after a heavy rain, and I warrant none has penetrated through this grand covering. I can well understand how the Ivy has got the character of making walls damp—viz. in this wise: a wall is covered with Ivy which has been allowed to grow at will and not properly trimmed, and has consequently got so heavy at the top that the wind has forced it from the wall; then of course the wall may become damp, as the rain will run down between the Ivy and the wall, but this is entirely owing to the wind forcing it down again. If this fine old plant is not properly trimmed he will sometimes peep into your spouts and, like many of his countrymen, he cannot resist the temptation and he sips a little of the real mountain dew; and this gives him the power of invading his frame (I hope Sir Wilfrid does not read your paper), he gets a little boisterous, does not lose his head, but in point of fact gets more head, and in his hilarious fun blocks up your water conductor. However, you cannot blame him for this either, but rather his masters, who, knowing that he would keep the spouts open. But should your spouts be blocked from this or other causes and the water run down the wall, the Ivy is blamed for making the walls damp. Yet in no case does the fact of a wall being covered with Ivy make it damp, but where a wall is exposed to heavy rains Ivy is almost sure to cover it to keep it dry. I submit, tingly assert. The attention required to keep Ivy in proper order is to clip it close to the wall, in April or May, according to the season and locality, choosing a time before the young shoots have grown much. The walls will then rather care for a very short time, the first being the best, the fresh appearance. In the autumn, should any branches get detached from the wall they should be nailed close, or, what is sometimes better, cut close off, also cutting off any branches which may be intruded into the spouts. These instructions followed the Irish Ivy, the most inexpensive and the most easily managed of all creepers, therefore I defend from calumny that "rare old plant, the Ivy green." *J. H. C., Ivy Cottage*.

—In answer to Mr. Goodacre I am not aware that I have ever said that Ivy will make damp buildings. What I have said is that instead of making buildings damp it is quite the opposite tendency. Every gardener knows that ground heavily cropped is drier than land which is lying idle, and so in like manner the soil at the base of a building will be drier with a greasy plant like Ivy growing in it, and if the shoots and large leaves are annual cut off in April it will soon put forth a fresh supply of leaves, and that the wall from all ordinary rains. Where, then, is the destructive damp to come from? Our rainfall in this neighbourhood is heavy, and as I stated before three-fourths of the Castle is covered with Ivy, and the walls are kept so well covered that the walls in every year and been all this century covered with Ivy, yet there are no signs of it causing the building to "decay and turn damp." How can he, in the face of such evidence, speak against this beautiful plant?—and during that long period our Ivy has been the admiration alike of the peer and peasant, painter and poet. There is an excellent article in the *Globe* of May 22, which to my mind so thoroughly clears the subject up, that I will copy it and ask you to find space for it.

"Two or three of the horticultural and scientific journals have lately been discussing the momentous question of the covering of ivy with a house-damp. Of course, the ivy clamouring the more that a house cannot make the house damp, any more than a topcoat can make a man's underclothing damp; on the other hand, it is urged that, if the rain is heavy, ever, the rain is sufficiently heavy to penetrate the covering of ivy and to wet the wall, the fact of the ivy keeping out wind and sun will, of course, tend to keep it wet, just as topcoat would keep underclothing wet if the rain had drenched the wearer to the skin. Ivy is undoubtedly very bad in this respect, in positions where the wet from any special cause is liable to flow in, but so is a faulty spout or an awkward bit of roof may sometimes be found to shoot the water down at the back of the ivy. In this case the covering of green would do for the wall very much what a topcoat would do for underclothing, if the umbrella poured all the rain down inside his coat collar. The leak in the spout, or the faulty construction of the roof, which might only stain the outside of the ivy, is not sufficient to completely saturate and permeate the wall covered with ivy. In such a case the wiser plan would be to stop the downpour of water; the more obvious plan, however, is to strip down the ivy, and to have the wall covered with a good drying of external wall, the interior dampness will disappear also, and the ivy will be debilitated with the mischief. All this seems so obvious as to be scarcely worth saying, but it is owing to the prevalence of these obvious considerations that common prejudice has arisen against this beautiful parasite, which Nature seems so kindly to have provided for the special purpose

of hiding the dreary ugliness of what Mr. Ruskin calls our packing-cases. With roofs and spouts in good condition, and especially with a projecting eave over it, ivy is beneficial as it is beautiful, and is not used as a tenth part as much as it should be." *J. Rust, Bridge Castle*.

[This question has often been discussed, and always with this result—that, provided proper care be taken, and the walls kept in good repair, the Ivy does no harm whatever, but may do good. Eds.]

Vanda teres.—I have succeeded in flowering two small plants of Vanda teres just now; one is growing on a stick of deal, and the other on a stick of Oak, 2 feet long or so, stuck in pots of crocks. The heads last autumn had grown beyond the length of these sticks, and I tied them down, in order to make them more comestible, and no doubt this heading down has induced them to flower. Others with these long straggling Vandas in their possession would do well to try this mode. Our plants are about 3 feet long, 1 foot of which is bent down, and in this the flower-pike is, each of which has four flowers; each flower measures over 3 inches each way. *Henry Knight, Floors Gardens*.

Dendrobium suavisissimum.—We have just now in flower, amongst many other Orchids, a plant of the beautiful *D. suavisissimum* lately introduced by Messrs. Low & Co., and it proves to be the same exactly sought after by ardent collectors. I think when this variety gets thoroughly established it will prove a great acquisition. It will also be highly prized on account of the fragrance of its flowers, which are very sweet. *Odontoglossum Alexandræ* is with us just now making a nice display; a plant of the beautiful *Odontoglossum novium majus* has also just flowered, bearing fourteen fine spikes, with a total of 119 flowers. Good plants of this variety are, I believe, still scarce in collections. *J. Mill, The Gardens, Roshleigh Hall*.

Paraffin for Protecting Seeds.—Having read in the *Gardeners' Chronicle* for May 10 of "R. W.'s" unsuccessful trial of soaking Peas in paraffin, I beg to say that I also tried the experiment of soaking mine for twenty-four hours instead of two minutes, and I never had a better plant. I feel certain every Pea germinated although I sowed them in November for my early crop. Therefore I must come to the conclusion that "R. W.'s" seed was bad. *J. G.*

Taking a great interest in my cottage garden, I was anxious to try the effect of paraffin, and having obtained a quantity of the Market Favourite Pea from Messrs. Stewart & Meek, Kilsno, in May, before sowing, steeped them in strong paraffin oil for one hour, and now (May 28) I have a row of Peas 16 yards long and 6 inches high, which neither birds nor mice have interfered with. On the same piece of ground I have sown the same Peas, which were not steeped in paraffin, and the birds and mice have nearly spoiled the crop. Living within 13 miles of the Border, and taking the severe winter into consideration, some of your readers will perhaps be surprised to hear that at the present time I have a Gloire de Dijon Rose, with upwards of 100 buds on it, ready to break. It is against a wall and a south aspect. *Richard Beaman, Middleton Cottage, Belford, Northumberland*. [We should be obliged to any of our correspondents for information as to the effects of paraffin in the case of other seeds. Eds.]

Pilocereus semilis, var. longistylus.—This very remarkable and interesting plant, as I think, rarely in collections, and is most especially associated with P. semilis, but the great difference is, that it produces very long spines; the long needle-like spine is upwards of an inch long, and the hair-like spines are of a great length, especially near the base of the plant upwards—some of them as long as the plant itself, and are curled and twisted round the plant and in the pot, giving it a very venerable appearance. Even in youth it looks aged, and from its slow growth it never occupies much room, and is at all times a very attractive and interesting plant, painting admiration as it often does from non-interesting individuals, and many remarks from the casual observer. *J. S. C.*

The Renovation of the Camellia.—In a floral and pecuniary sense, perhaps no plant pays better than the Camellia, for it is a favourite, robust, and free-flowering subject, easy to manage, and amenable to treatment when it has become impaired. Debility manifests itself by a searching frost, or by the withdrawal of the sap from the lower branches, paleness of the leaves, and also blooms which do not thoroughly expand, and are soon shed. These symptoms seem to follow from exhaustion of the soil, long restriction of the roots to the liability to over-crowding, or from a high and dry temperature, inattention to watering, which impedes healthy leaf-action, such as dust and insects, constant subjection to shade, but the most injurious practice is an insufficiency of moisture at the roots during their activity. A weakly collection may in one

season be restored to strength and beauty by the following measures, which were tried in one of the Camellia-houses here two years ago, with some plants which had become almost unproductive. Prepare a bottom of ashes or gravel, say 6 or 9 inches thick, on which arrange the pots and tubs, so that the drainage water passing through the holes be stumpy, and they under roots in a time of rapid evaporation. Then from the return of spring sunshine till it wanes in autumn encourage nutrition by a regular supply of liquid manure diluted with rain-water of a sooty tinge. The stimulant may consist of any of the several sorts of liquid manure, but the chemical salts, besides other fertilising ingredients, a salt-like substance called urea, which is rich in nitrogen, and when the liquor ferments this appears in the form of carbonate of ammonia, and exercises an immediate and beneficial influence on vegetation. At first weak applications supplied once a fortnight, will suffice, but when the bloom is over, and shoots begin to develop, the allowance may be increased to one-third, in proportion to the water, and administered weekly while the soil is moist to receive it. An objection to the use of this fertilizer is its small quantity. The plants had soon show a determination to enlarge at the points and break from below, the leaves will become broad, leathery, of a dark green hue, and brightly polished, while clusters of buds will form on the extremities of the branches. When these are plump enough to separate the strongest should only be retained, and the operation performed without delay. As the plants go out of flower shift such as are bound into pots or tubs 3 inches wider, giving them a mixture of good fibry loam and sand, with ample drainage, and press the soil rather firmly. Apply a heavy top-dressing of fine manure, and watering and tamping back; then, if frequently syringed, they will send out new buds from the old wood. Unless the roots have refused to spread it is injurious to reduce the ball of Camellias, for anything in the way of a check weakens it at a time and in a state in which it is unable to do so. A little guano-water may now be substituted for the manure previously recommended; and if other matters of routine are attended to in the management the plants will gain a new lease of life. *James Scott.*

Reports of Societies.

Royal Horticultural of Ireland: May 24—This Society's second exhibition for the present season took place on the above date at the Exhibition Palace. The show was of more than average merit in almost every department, except in that of fruit and vegetables. The show of plants was of a high and green-house plants was thoroughly good. The cup for the best group of twelve pot Roses was won by Mrs. Herbert Manders, who had a splendidly grown collection, all the plants being well handled and profusely bloomed. Mr. Fry came next in merit with a group a little inferior to that of his twelve exotics (in pots of wax) was cleverly won by Mr. Westby, and did infinite credit to his gardener, Mr. Bracken, whose group comprised exceptionally fine examples of *Rhynchospermum jasminoides*, *Bougainvillea glabra*, *Pachyrhizus sectionis*, *Chamaecrista scherzeriana* (profusely bloomed), *Croton Veitchii*, *Demonorops perianthus*, and *Croton variegatus*. Lord James Butler's fine group, which was placed 2d, included well grown plants of *Clorodendron Balfourianum*, *Rhynchospermum jasminoides*, *Dicksonia squarrosa*, *Asplenium macranthum*, and *Asplenium variegatum*. Mr. Westby also carried off the cup for a group of exotics in 12-inch pots with a splendid collection, all his plants being carefully handled and in first-rate condition. Amongst the *élite de la cérémonie* of his lot we noticed *Bougainvillea glabra*, *Aphelocera macrantha*, *Clorodendron Balfourianum*, *Erica Cavendishiana*, *Lomaria gibba*, and *Draecena excelsa*. A very nice lot of Orchids was staged by Lord James Butler, including a good *Oncidium sphecelatum*, *Phaius Wallichii*, and a good plant of *Acrides Fendleri*. In the class for specimen Orchids Mrs. White took 1st place with a well-flowered plant of *Cattleya Mossie superba*. Ferns were not so largely shown as usual, but the groups staged in the several classes were of more than average merit. In Mr. Riall's group of exotics in 12-inch pots, the most noteworthy well-grown plants were *Asplenium Veitchii*, *Adiantum gracillimum*, the beautiful *Hymenophyllum demissum*; and the lot exhibited by Miss Power, of Temple Hill, a new and spirited exhibitor, included a splendid plant of *Todes superba*. There were two nice collections of British Ferns, that belonging to Mr. Riall, which was placed 1st, com-

prising fine specimens of *Osunda repalis cristata* and *Trichomanes radicans*. Mr. Waters, as usual, brought out a refreshing lot. Variegated plants were capably shown. Mr. Westby's six (in pots of any size) included remarkably well-handled plants of *Dracaena Shepherdii*, *Croton Veitchii*, *Asplenium*, and *Clorodendron Balfourianum*. In Mr. Watson's group (in pots not exceeding 12 inches) we noted beautifully-grown specimens of *Croton Youngii*, *Dracaena ferrea grandis*, and *Croton majesticus*. Azaleas were only represented by one group, but that a really good one, exhibited by Mr. Riall. A capital group of exotics was staged by Miss Power. The several classes of stove and greenhouse plants were well represented. Mr. Boyle's lot of six in pots of any size included a first-rate *Anthurium Scherzerianum* and well bloomed plants of *Cyrtopodium venustum* and *Erica Cavendishiana*. In the class for six in 10-inch pots Lord James Butler was placed 1st, his lot comprising well-grown specimens of *Ixora coccinea* and *Aphelocera humilis*; Mr. Manders taking 2d with a bright looking group, including nicely flowered plants of *Azalea Souvenir du Prince Albert*, *Azalea sinensis*, *Erica Cavendishiana*, and *Clorodendron Balfourianum*. None a nice collection of twelve stove plants was staged by Messrs. Campbell.

In the way of Pelargoniums we have seldom seen anything better at a May show than the lot of six show varieties exhibited by Mr. Boyle. The plants were all well bloomed, and in the best of health and condition, his specimens of *Forget-Me-Not*, *Lilacium*, and *Rose Celestial* being remarkably good. Mrs. Manders took 2d with a well handled six, including well-flowered plants of *James Odier*, *Magnifica*, and *Forget-Me-Not*. The competition for the cup for a group of Palms has of late years become very keen, and in the second exhibition of the season, and if the number of competitors on Thursday was not so large as last year, the quality of the specimens staged showed no sign of deterioration. The cup was on this occasion most deservedly awarded to the very best and most numerous group, comprising *Draecena* and which included capital examples of *Araucaria Verschaffelii*, *Kentia Fosteriana*, *Latania borbonica*, and a truly beautiful plant of *Cocos Weddelliana*. Miss Power took 2d with a splendid nine, comprising, amongst others, remarkably good specimens of *Latania borbonica*, *Kentia sinensis*, *Cocos Weddelliana*, and *Chamaecrista humilis*. Both groups were exceedingly bright and fresh-looking, and reflected every credit on their several exhibitors. In the way of new plants the most remarkable novelty was a nice specimen of the beautiful pink-flowered *Oleandra axillarium*, exhibited by Mr. Bracken. A good miscellaneous collection of stove and greenhouse plants forwarded (not for competition) by Mr. Jamieson, Montrose, included well-flowered plants of *Erica Cavendishiana* and *Aphelocera macrantha rosea*, and a splendidly-handled specimen of *Adiantum farleyense*.

In the florist flower section there was a very interesting display of Tulips, and the numerous admirers of this old favourite flower had no reason to be displeased with the quality of this department of the show. The best stand of twenty-four varieties was shown by De Contomerey, the stand exhibited by Miss Plant taking 2d; while in the class of twelve the competitors changed places. In both classes good stands were staged by Mr. Berry and Mr. Greenwood. Pansies, Ranunculus, and Fancies were well shown, some of the stands of which were very fine, being in the best of health. The show of cut Roses was first-rate. For twenty-four blooms Mr. Riall took 1st with a grand stand of *Maréchal Niel*. In the class for twelve blooms Messrs. Campbell were placed 1st with a splendid box, including magnificent blooms of *Madame de France*, *Comte de Chambord*, *Alfred Hamberg*, *Marquis de Castellane* (very fine), and *Paul Neron*; the 2d place being taken by Rev. Frederick Tynons, whose stand included first-rate flowers of *Charles Lefebvre*, *La France*, and *Jules Margotin*. The show of fruit was, of course, good. The principal features were *Golden Bunch*, *Blanc Hamburg*, *Grapes*, exhibited by the Hon. Mrs. Dunlop; a good dish of Early Beatrice Peaches, shown by Mrs. Miller; a fair dish of President Strawberry, and some dishes of well-kept dessert and baking Apples. Condensed from the "Irish Farmer's Gazette."

Blackburn Horticultural: May 24 25 26—

The annual exhibition in connection with this Society was held on Tuesday and Wednesday, and took place at the grounds of the East Lancashire Cricket Club. Falling as it does when the grand floral display is being held in Manchester the competition in some classes is not so keen as might be desired, and as probably (considering the very liberal list of prizes offered) it is somewhat unfortunate that the show took place sooner or later than the one just named. The managers, however, have not only to look to the display and get this as varied and extensive as possible, but they must also have a care to the receipts, without which few such exhibitions can be regularly kept up,

and Whittow week being in all respects a holiday week, and a greater number of visitors obtained than at any other time, the managers wisely deem it advisable, in their desire to spread and foster a love of flowers and encourage the cultivation of them, to hold the show on a week-day, and to accept of such prizes as are likely to be obtained. The plants were exhibited in a large tent, the tall plants being stood in the centre on the ground, and smaller ones on stages round the side. In the class for ten miscellaneous plants (amateurs) not less than five in bloom, the 1st prize was taken by R. B. Dodgson, Esq., who was followed by Mr. Dodgson, in whose collection were to be seen a fine *Clorodendron Balfourianum*, a well-flowered *Adenandra fragrans*, and a finely coloured and densely bloomed *Fragaria calycina*. J. Thompson, Esq. (J. Swan, Gr.) was placed 2d, with a very nice group, in which were also a fine *Adenandra* and a plant of *Achyrocline venosum*. For ten stove or greenhouse plants, not less than six in bloom, the same gentlemen again competed—the prizes in this case, however, being reversed. In the class for six stove or greenhouse plants in bloom Mr. Dodgson was again to the front, having in his group a fine *Adenandra*, and a well flowered group of *Erica verticosa coccinea minor*. Mr. Thompson again exhibited a good *Clorodendron Balfourianum*. In the class for four stove and greenhouse plants in bloom the competition was very keen, four collections being staged, and the first prize falling to Mr. Dodgson, who had taken the same exhibitor—the 1st prize was awarded to F. Yates, Esq., whose plants, though small compared with the other collections, were well flowered, very fresh, and nicely staged. The plants in this collection were *D. densiflorum*, twelve spikes; *D. Dalhousianum*, *Acerides Fendleri*, two spikes; *O. Pescatorei*, two fine spikes; *Oncidium Marshallianum*, 5' capital spike, 4 feet long; and a splendid variety; and a nice plant of *Phalenopsis Ludemanniana*. The 2d, 3d, and 4th prizes were awarded to Mr. Dodgson, amongst whose plants were *D. densiflorum*, *C. villosum*, *Cattleya*, *Asplenium*, and *Warneri*, and *Saccolabium ampullaceum*, in very good condition. In the class for four Orchids Mr. Dodgson was placed 1st, having *D. Schröderi*, with twelve grand spikes; *C. Warneri* and *Mossie*, and *Cyp. barbatum*; Mr. Yates was 2d, who had small but nicely bloomed plants of *O. Russellianum*; and Mr. Dodgson, 3d.

For ten exotic Ferns only one lot was staged, the prize falling to R. B. Dodgson, Esq.; while for six exotic Ferns, W. Thompson, Esq., was 1st, who showed *Adiantum excisum multifidum* and *farleyense* in good condition. For eight British Ferns the 1st prize was taken by Mr. Dodgson. Amongst the plants shown by Mr. Dodgson and Mr. Dodgson, and the class, as a whole, was very creditable, the former-named gentleman being 1st for six, and the latter being placed 1st for four. Zonal Pelargoniums were shown by W. Thompson and J. Thompson, the prizes being awarded in the order of the names. W. Thompson was again 1st for six *Tricolor Pelargoniums*—a very even lot, and of good colour. *Caladiums* were shown by W. Snape, who was 1st, and W. Thompson 2d, and were well-grown plants, not very large, but of good colour. Mr. C. Ryland, of Sunningdale, exhibited a very nice and well-grown specimen of *Pelargonium*, for which he is justly famed. They were in fine condition, and a very attractive group; awarded a special prize. Mr. B. S. Williams, Holloway, and Mr. Walton, Burnley, exhibited collections of miscellaneous plants. In the collection of the last-named gentlemen were some capitally flowered half-specimen *Ericas*, which were awarded an extra prize. Black Grapes were shown by Major Starke, who was 1st, and F. Yates, who was placed 2d. For white, the 1st prize again was awarded to Major Starke. A collection of wax fruit and six, and a collection of wax fruit and six, were much admired, and was awarded a special prize. S.

Reading Horticultural: May 24—

A dull heavy morning, with occasional light showers and a general aspect of uncertainty in the behaviour of the clouds, is not favourable to the chances of success in a flower show. It is solely a question of weather, and if up to noon or thereabouts it looks murky and threatening, with a dull, drizzly, and slow moving sky, the managers are often obliged to resolve to stay at home. Such a disadvantage of unpropitious weather beset the meeting of the Reading Society on the above date, and its inevitable accompaniment—a deficit in the exchequer. There is scarcely a more cosy place in which to hold

having three or four plants of the same species pruned together—the effect contrasted strongly with Mr. Mackenzie's group, which consisted of single plants very small and evidently not over well grown. Mr. Todd's group considerably eclipsed both, and contained some good plants of *Macranis plumosa*, *Phlox paniculata*, *Brabea filamentosus* and *Aralia filicifolia*, &c.

The collection of fruit was small, being confined to four entries for two bunches of black Grapes, the 1st prize falling to the lot of Mr. J. McConnachie, gr. to A. Smollet, Esq., for Black Hamburgs; the 2d to Mr. David Provan, Wardhead House, Stewarton, for Madresford Court; a dish of Peaches, shown by Mr. A. Crosbie, gr., Buchanan House, and a dish of Strawberries by Mr. Hogg, gr., Aikenhead. Collin Campbell, Esq., of Stourfield, Tarbert, sent for exhibition eight splendid trusses of the much-neglected *Rhododendron arboreum album*, also very fine and all grown and gathered from the open air at Tarbert, and which were highly commended. The only new plant sent for exhibition was *Hydrangea Thomas Hogg*, introduced from Japan. The trusses being large, white, and freely produced, it will be found well worth the attention of growers for market. It was sent by Mr. B. S. Williams, and was awarded a First-class Certificate. In the afternoon Mr. A. B. Stewart entertained the judges, directors, and several friends of the Society to dinner. *Robert Bullen*.



FRUIT CROPS.—If the experience of other Villa gardeners is at all like our own, then there is much reason to fear that but small fruit crops will be realised this year. There was a rich promise of fruit, but crops of all kinds appear to have gone wrong. The gardening times are out of joint, and as a witty writer remarks, "the weather suggests that March and November have stayed out too late one evening and have lost their way and found themselves in May. The look of the trees alone makes a fellow miserable. What was Pear blossom is now ugly blackness, and the leaves that had thought of coming out have changed their minds. No respectable tree could get up any enthusiasm towards such a season." Things have a little changed for the better, but there is too much reason to believe that the fruit crop to a considerable extent is hopelessly lost.

The Peach crop is a general failure. There happened two or three severe frosts in March, that fell just as the trees were in bloom, and these wrought sad havoc. The same gardeners say that the wood of the Peach trees never got thoroughly seasoned and ripened last autumn, and that it was constitutionally incapable of bearing fruit. There is no doubt something in this. Perhaps it may be in consequence of this very failure of vigour, but it is a fact that the blister is laying hold of the leaves, and many trees are presenting a sorry appearance. The best thing to be done is to keep the trees as healthy as possible, and by occasional syringings, by mulching, and by waterings at the roots in dry weather, to endeavour to so get the trees to a healthy tone as that they may make a favourable growth, and properly ripen their wood at the end of the summer. "Mulching" is a term much employed in gardening matters, and perhaps imperfectly understood. It consists of placing a layer of dung or fertilising material of any kind, in a half decayed state, about the stem of a tree and over its roots. It is constantly applied to newly planted trees, and to any growing on shallow, gravelly, or drying soils, and the object of the cultivator may be said to be twofold—to keep the surface-roots cool and moist, and, further, to supply an invigorating influence to encourage growth. If water be poured on to manure lying round the stem of a tree some of the particles will be carried down into the soil, and thus materially assist in feeding the plants.

It is more particularly in the case of gravelly and light soils, from which moisture soon clears away, that mulching is required. Where the soil is a retentive clay—that is, cold, clammy, and sticky—if plants grow in it at all, they are scarcely likely to suffer much from drought; but the roots would be pretty certain to do one thing—they would come to the surface for something to subsist on. In the case of such a clay subsoil as that above mentioned, the moisture in it, if it does not pass away below, will rise upward, and evaporate through the surface. If the escape of

this moisture be prevented by mulching, there will be the absence of ground-heat, and the effect will be injurious to the trees.

He who plants intelligently will not fail to provide drain a border likely to be retentive of moisture; but in the case of hundreds of villa residences planting was done at haphazard by unskillful planters: holes were dug in the soil—and that, too often, compounded of mere rubbish—and the trees placed in them. It has thus fallen to the lot of many Villa gardeners to have to do with trees planted under conditions so unfavourable to healthy development that they are constantly in a kind of chronic ill-health. If the subsoil be antiseptic—as too often happens—the best thing to do is to lift the trees in autumn and replant them, taking care to have a proper bed constructed, so that a perfect drainage and a congenial bed of soil be provided. But in the case of a tree having a fair crop of fruit, and yet showing signs of ill-health, the best thing to do would be to incite the roots to healthy action near the surface by slightly stirring the soil, and then adding some other good soil, and there keep them moist, without materially arresting evaporation.

On dry soils, wall trees bearing fruit will require a good deal of attention during the summer. Here mulching is absolutely necessary, for trees recently planted, and those on soils comparatively shallow and thoroughly drained, require a steady supply of root-moisture; and where a period of drought, accompanied by much heat, or even of drying winds, occurs, trees thus situated are sure to suffer, some extra attention be not paid to them. Watering, of course, immediately suggests itself, but this is an operation frequently requiring an inconvenient amount of labour; and, moreover, unless the water has been subjected to the action of the sun, or is in a tepid state, its utility, as sometimes applied, is somewhat questionable.

Under such circumstances it is that mulching is advocated. As to the matter of the temperature of the soil, little harm need be apprehended from applying it in the course of the month of May, for the ground has by that period (so we are informed on high authority) acquired a sufficient amount of warmth from the atmosphere to carry on the purposes of vegetation, promote health and well-being in the plants, and a proper fructification of the crops.

Mulching need not, then, be done till May, and just when a time of drought impends. All trees carrying unusually heavy crops may be mulched at this time, in order to prevent any sudden and injurious vicissitudes. Sudden droughts are most injurious in their action, and may lead to the sacrifice of a crop of fruit.

Syringing is also to be commended; it cools and cleanses the leaves, and keeps insects in check. It is a valuable invigorating influence in times of drought, especially where applied of an evening; and mulching is so beneficial to many strong-rooting and growing plants, such as Roses, Clematises, Holly-hocks, Dahlias, &c., that it can be used in the case of many plants with considerable advantage. The beautiful summer-blooming Clematises are so much benefited by it—it so adds to the lustre of their flowers and the duration of their bloom—that its application cannot be too warmly commended.

Obituary.

FEW of the present generation can date from the year 1777, yet there has just passed from amongst our midst a man whose manhood was spent amidst the stormy period of '98, and who might in his infancy have witnessed some of the stormy scenes of the French Revolution and shaken hands with Robespierre or Danton; or, still further back, might have embraced the knees of the hero of American independence, George Washington himself. JAMES DERHAM, whose humble career was spent in the service of Hans Hamilton, Esq., of Sheephill, as gardener for many years, has just passed away at Blanchardstown, Co. Dublin. Few incidents are worth recording in the life of the poor, but it is gratifying to know that the latter years of his life were spent at Sheephill, where, by the kind benevolence of Mr. Hamilton, he was enabled to spend the last 18 years of his life free from labour or anxious care; and what he might still appreciate more, by the occasional visits of his kind and benevolent landlord, Ion Trant Hamilton, Esq., M.P., and the amiable ladies of his family. Most of his children being dead, he was followed to the grave by a numerous train of grand and great-grand children,

as also by the numerous retainers of the Sheephill estate, and was interred in Mulhuddart churchyard amidst the sympathies of a large portion of the surrounding tenantry. *Freeman's Journal*.

— We regret to have to record the death of Mr. FREDERICK MOORE, on May 1, at Newcastle-on-Tyne. Mr. Moore was for some years gardener to the Earl of Auckland, at Eden Lodge, Kensington; and subsequently for twenty-five years was gardener to Earl Grey, at Howick Hall. He was held in high esteem by his employer, and his kind and unassuming manner procured him the respect of all with whom he came in contact. He was likewise an excellent gardener, and did much for the improvement of the gardens and grounds at Howick. About three years since he retired on a pension given him by Earl Grey, and since then has been residing at Newcastle, where, however, his health soon began to give way. He had attained the age of seventy-five years.

— We also record with deep regret the death of Mr. JAMES BARNES, so well-known as "Barnes of Bicton," who died at Exmouth on May 23, aged 71. Mr. Barnes was born at Farnham, Surrey, in 1806. How he laboured with his father in various gardens in Surrey; how he came to London when about twelve years of age, and was employed by Mr. Moore, a florist at that time residing in Chelsea; how he engaged afterwards in the service of Mr. Stone, of Peckham, a great Grape and Mushroom grower, and subsequently took the superintendance of a market garden at Bermondsey; then successively took charge of the gardens of Crawford House, Hford, and of those of Sir Herbert Jenner at Chislehurst, from whence he entered the service of Lord Rolle, at Bicton, in 1830, is told by himself in the account of his life, furnished by his own pen, to accompany his portrait which was published in our series of British Gardeners, in 1874 (vol. ii. n.s., p. 655). Mr. Barnes continued to manage the gardens at Bicton with great credit to himself, and to the edification of his brethren of the horticultural fraternity by the detailed accounts of his practice which he published from time to time in the periodicals of the day, up to 1869, when he was compelled to resign his appointment under circumstances which attained a painful notoriety at the time. Since leaving Bicton, where his unremitting attention to his duties, early and late, seriously undermined his health, Mr. Barnes has lived in retirement at Exmouth, but was from time to time a great sufferer from a bronchial affection.



STATE OF THE WEATHER AT BLACKHEATH, LONDON FOR THE WEEK ENDING WEDNESDAY, MAY 30, 1877.

MONTH AND DAY.	BAROMETER.	TEMPERATURE OF THE AIR.	HYGROMETRIC DUCTILITY.	WIND.	RAINFALL.
	Mean Reading for the Month.	Range.	Mean for the Month.	Direction.	
May 24	30.00	56.1 to 66.0	66.0	N.E.	1.00
25	30.03	56.4 to 66.2	66.2	N.E.	0.00
26	30.05	56.5 to 66.3	66.3	N.E.	0.00
27	30.04	56.5 to 66.3	66.3	N.E.	0.00
28	30.02	56.5 to 66.3	66.3	N.E.	0.13
29	30.07	56.6 to 66.4	66.4	N.E.	0.00
30	30.07	56.6 to 66.4	66.4	N.E.	0.00
Mean	30.04	56.6 to 66.4	66.4	N.E.	0.13

- May 24.—Fine, but dull, very cloudy and cold. Slight shower of rain at 0.30 P.M.
- 25.—A very fine pleasant day. Cold.
- 26.—A very fine bright day. Light clouds.
- 27.—A fine bright day. Strong wind.
- 28.—A fine day. Occasional showers of rain. Strong wind.
- 29.—A fine day. Cloudy, with slight showers of rain at times. Windy.
- 30.—A very fine bright day. Windy.

LONDON: Barometer.—During the week ending Saturday, May 26, in the suburbs of London, the reading of the barometer at the level of the sea increased from 29.93 inches at the beginning of the week to 30.24 inches by the evening of the 22d, decreased to 30.20 inches by noon on the 24th, increased to 30.28 inches by noon on the 25th, and decreased to 30.07 inches by the end of the week. The mean reading for the week at sea level was 30.19 inches, being 0.34 inch above that of the preceding week, and 0.25 inch below the average.

Temperature.—The highest temperatures of the air observed by day ranged from 65½° on the 26th to 51½° on the 23d; the mean value for the week was 56½°. The lowest temperatures of the air observed by night varied from 38½° on the 25th to 46½° on the 26th; the mean value for the week was 42°. The mean daily range of temperature in the week was 14½°, the greatest range in the day was 25½°, on the 25th, and the least 7°, on the 20th.

The mean daily temperatures of the air were as follows:—20th, 47° 5'; 21st, 48° 3'; 22d, 44° 8'; 23d, 44° 2'; 24th, 46° 2'; 25th, 48° 7'; and 26th, 53° 7'; and the departures in defect of their respective averages were:—6° 2', 5' 6', 9° 3', 10° 1', 8° 4', 6° 3', and 1° 5'. The mean temperature of the air for the week was 47° 6', being 6° 8' below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 122° on the 26th, and 113½° on the 26th; on the 22d the reading did not rise above 56°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 34° on the 25th, and 41° on the 23d; the mean for the seven low readings was 41½°.

Wind.—The direction of the wind was N.N.E., and its strength moderate. The weather during the week was generally dull and cold.

Rain fell on two days during the week, to the amount of 0.26 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day varied from 67° at Bristol, and 66½° at Cambridge, to 59½° at Wolverhampton; the mean value from all stations was 63½°. The lowest temperatures of the air observed by night varied from 33½° at Bristol to 41½° at Brighton; the mean value from all stations was 38°. The range of temperature in the week was the greatest at Bristol, 33½°, and the least at Brighton, 20½°; the mean range of temperature from all stations was 25½°.

The mean of the seven high day temperatures was the highest at Bristol, 59½°, and the lowest at Wolverhampton, 52½°; the mean value from all stations was 56°. The mean of the seven low night temperatures was the lowest at Bristol, Wolverhampton, and Eccles, all 40½°, and the highest at Truro, Plymouth, Norwich, and Manchester—all 44½°; the general mean from all stations was 42½°. The mean daily range of temperature was the least at Norwich and Bradford, both 10½°, and the greatest at Bristol, 19½°; the mean daily range from all stations was 13½°.

The mean temperature of the air for the week from all stations was 47½°, being 3½° lower than the value for the corresponding week in 1876. The highest was 50°, at Truro, and the lowest 44½°, at Wolverhampton.

Rain.—Scarcely any rain fell during the week; at Norwich half an inch was measured, but at most other places the fall did not exceed two-tenths of an inch. The average fall over the country was one-tenth of an inch. No rain fell at Manchester. The weather during the week was generally dull and cold.

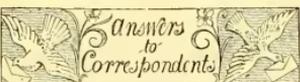
SCOTLAND: Temperature.—The highest temperatures of the air varied from 64° at Edinburgh to 56½° at Aberdeen; the mean value from all stations was 61°. The lowest temperatures of the air ranged from 35° at Dundee to 39° at Leith; the mean value from all stations was 37½°. The mean range of temperature in the week from all stations was 23½°.

The mean temperature of the air for the week from all stations was 49½°, being 2½° lower than the value for the corresponding week in 1876. The highest was 51½°, at Glasgow and Greenock, and the lowest 48°, at Aberdeen.

Rain.—The amount of rain measured at Greenock was six-tenths of an inch, at Aberdeen was half an inch, and at Dundee was two-tenths of an inch; at Glasgow, Paisley, and Leith no rain was measured; the average fall over the country was a quarter of an inch.

DUBLIN.—The highest temperature of the air was 67°, the lowest 32½°, the range 34½°, the mean 50½°, and the fall of rain 0.02 inch.

JAMES GLAISHER.



ANEMONES: S. B. D. The petaloid condition of one of the bracts is not unusual.

CARDAMINE FRATERNES: W. E. Many thanks. We will examine and report.

GRAPES: G. Harwood. The berries are scalded, and scalding is the result of the action of bright sunshine on leaves or fruits while bathed in moisture. A little air given early in the day would in all probability have prevented it. Your case is similar to a great many others this season.

INJURIOUS REPORTS: X. Y. Z. The persons who originate such reports are as guilty in their way as those who wantonly blow up their neighbours' houses with torpedoes; and those who thoughtlessly circulate them are to the full as culpable as are receivers of stolen goods.

INSECTS: Nurseryman. *Othiorhynchus notatus*, which seems to be doing a great deal of mischief this year. A remedy has not yet been found. *A. M.*—*M.* The beetle, so plentiful just now, is the common cockchafer or May-bug, *Melolontha vulgaris*, of which in fig. 114 we give an illustration, together with one of the July-bug, the smallest of the two. The largest figure represents a full-grown male cockchafer, and

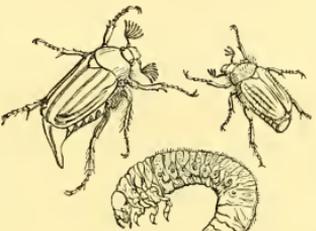


FIG. 114.—THE COCKCHAFER AND JULY BUG.

the lower figure is that of the curved larva from which it is produced. The larva is very destructive, but they do not appear to do so much mischief in this country as on the Continent.

MALFORMED PEARS: W. M. The changes seem to be dependent on the conversion of what should have been a flower-bud to a leaf-shoot. There are also changes in the individual flowers, upon which we may report more fully on another occasion.

NAMES OF PLANTS: The names of some specimens of Pines, sent to us without any indication as to whence they came, are:—1, *Pinus austriaca*; 2, *P. Pinaster*; 4, *P. Laricio*; 6, *P. pyrenaica*.—*T. B.* *Staphylea pinnata*.—*J. B.* The golden-leaved variety of *Lamium purpureum* (Dead Nettle), used sometimes for spring bedding.—*H. C.* The common Confrey, *Symphytum officinale*, not poisonous to cattle.—*W. J.* *Ajuga reptans*; 2, *Pedicularis sylvatica*; 3, *Galium bracteosum*.—*W. M.* *Saxifraga hypnoides*.—*J. C. H.* *Othiorhynchus prestans* (very rare), and *Dendrobium scaberrimum*.—*F. H. G.* Neither this nor *Maxillaria Harrisonia* are Lycopods at all. Both are Bifrenariads, and this one is the *B. Indora* of Lindley. It has sometimes a powerful odour. *H. G. R.*—*J. Brown*, 1, *Genera facialis*; 2, *Eriostemon buxifolius*.—*J. Morton*, *Valeriana Pha.*—*W. H.* *Abutilon Thompsonii*.—*W. W.* *Amelanchier botryspium* (the Canadian Medlar).

PEACH TREES BLISTERED: W. B. and A. W. The affection is extremely common in Peach trees, and is caused by a very minute fungus (*Ascochyas deformans*), which a figure has appeared in our journal. The only plan you can adopt is to pick off the affected leaves and burn them; but the spores are so minute that this treatment may not be effective. *Ed. T. W.*

ROYAL HORTICULTURAL SOCIETY'S MEDALS.—We are requested to state that a silver-gilt medal has been substituted for the silver Banksian, awarded to Messrs. William Rollison & Sons, of Tooting, on the occasion of the Society's great exhibition on May 2. The Society's silver-gilt medal is usually called a gold medal, and is the handsomest medal that the Society awards, and costing quite as much as the smaller gold medals. *Ed. T. W.*

SEAKALE: E. W. Many thanks; please do.

STRELITZIA REGINÆ: H. K. A branched inflorescence, indicative of an unusual degree of vigour.

TRAINING APPLE TREES: W. T. 7. The result of allowing the main central stem of an espalier-trained tree to grow up and form an independent head, is simply to make the tree an ordinary standard, and will in time completely ruin the original horizontal-trained branches.

VINE LEAVES: A. B. The leaves you have sent us are eaten by some insect—probably *Othiorhynchus sulcatus*; but we cannot tell by simple examination of the specimens. You must watch for and catch them in the evenings.

FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish us to see. *Letters relating to advertisements, or to the supply of the Paper, should be addressed to the Publisher, and not to the Editors.*

CATALOGUES RECEIVED:—R. B. Matthews (65 and 67, Victoria Street, Edinburg) General Descriptive Printed Catalogue.—**Messrs. F. A. Smith** (Park Road, West Dulwich, S.E.) Retail Catalogue of New and Choice Plants.—**Messrs. Ewing & Co.** (Edinburg, near Norwich), List of Climatic Plants, Grasses, &c. **Geo. S. Lee & Co.** (55, Bluffe Road, London, S.E.) Catalogue of Rollers, Mowing Machines, &c.

COMMUNICATIONS RECEIVED:—S. W. L. H. W. (next week).—**W. A. F. W. H. T. C. A.** (next week).—**J. W. W. W. W. D. P. J. S. J. W. G. W. H. W. F.** (next week).—**G. S. W. M.**

DIED, at 20, Warden Street, Newcastle-on-Tyne, FREDERICK MOORE, for twenty-five years Head Gardener to Earl Grey, Howick Hall, Northumberland.

Markets.

COVENT GARDEN, May 31.

Our market has again been quiet, and the recovery of last week has not been maintained. Large importations of early fruits are arriving from the Continent, such as Apricots, Cherries, and Strawberries. *James Webber, Wholesale Apple Market.*

FRUIT.	
Appicots, per box	2 s. 2 d.
Apples, per 1/2-bush	2 0 0
Cherries, per box	3 0 8
Cobs, per bush	1 0 6
Grapes, per lb.	3 0 10
Lemons, per 100	4 0 0
Melons, each	8 0 12
Oranges, per 100	12 0 0
Peaches, per doz.	8 0 25
Pears, per doz.	12 0 0
Pine-apples, per doz.	1 0 0
Strawberries, per doz.	0 6 10
Figs, per doz.	0 9 16

VEGETABLES.	
Artichokes, per bush	4 0 0
Eng. Globe, doz.	4 0 6
Asparagus, French, Giant, per bunch	8 0 20
English, per bunch	3 0 6
French, per bunch	1 6 0
Spruce, per bunch	1 6 0
Beans, French (new), per bush	3 2 6
French, Long, per bush	2 6 0
Beet, per doz.	0 2 0
Cabbages, per doz.	1 2 0
Carrots, per bush	7 0 10
New-Fresh, per bush	1 6 0
Carrots, doz.	1 6 0
Eng. new, doz.	8 0 0
French, doz.	4 0 6
Celery, per doz.	1 6 0
Chilis, per 100	3 0 0
Cauliflowers, each	0 2 0
Eodive, per doz.	0 2 0
Batavian, per doz.	0 2 0
Garlic, per doz.	0 2 0
Gooseberries, green, per quart	0 8 10
Herbs, per bunch	0 2 0
Horse Radish, per bush	4 0 0
Lettuces, Cos, per doz.	0 2 4
English, score	2 0 0
Blistered, green, per bush	0 6 0
Blistered, doz.	1 0 0
Onions, per bush	10 0 10
Parley, per bush	0 9 0
Pears, green, per lb.	1 0 0
Radishes, per bush	0 2 0
Spanish, doz.	1 0 0
New Jersey, doz.	1 0 0
Rhubarb, per bundle	10 0 0
Salsify, per bundle	10 0 0
Spinach, per bundle	1 6 0
Swedes, per doz.	3 0 0
Turpins, per bundle	4 0 6
new, per bundle	4 2 6
Turnips, doz.	1 0 0
Round, doz.	1 0 0
Essex Regents, 6 to 10 lb.	(New) Jersey Kidneys, 200 to 300 cwt.
Round, doz.	1 0 0

CUT FLOWERS.	
Analets, 12 sprays	4 s. 6 d.
Blue Bells, 12 bunch.	2 0 0
Bouvardias, 12 bunch.	1 0 0
Calceolarias, 12 bunch.	1 0 0
Carnations, 12 bunch.	2 0 0
Camellias, 12 bunch.	2 0 0
Calliopsis, 12 bunch.	1 0 0
Clematis, 12 bunch.	1 0 0
Crocuses, 12 bunch.	1 0 0
Daisies, 12 bunch.	1 0 0
Delphiniums, 12 bunch.	1 0 0
Hyacinths, 12 bunch.	1 0 0
Jonquils, 12 bunch.	1 0 0
Lilies, 12 bunch.	1 0 0
Marigolds, 12 bunch.	1 0 0
Narcissus, 12 bunch.	1 0 0
Pansies, 12 bunch.	1 0 0
Peonies, 12 bunch.	1 0 0
Roses, 12 bunch.	1 0 0
Tulips, 12 bunch.	1 0 0
Wallflowers, 12 bunch.	1 0 0

PLANTS IN POTS.

Ardisia, per dozen 2s. 0d. 0d.
Begonia, per doz. 6s. 0d. 10d.
Bougainvillea, do. 12s. 0d. 20d.
Cineraria, per doz. 6s. 0d. 10d.
Clematis, do. 12s. 0d. 20d.
Cockscomb, per doz. 6s. 0d. 10d.
Cypripedium, per dozen 3s. 0d. 9d.
Dianthus, do. 12s. 0d. 20d.
Eranthis, per doz. 6s. 0d. 10d.
Ficus elatior, each 2s. 6d. 10s.
Fuchsia, per dozen 9s. 0d. 18d.
Gaultheria, variety, doz. 12s. 0d. 20d.
Heliotrope, per doz. 6s. 0d. 10d.

SEEDS.

LONDON: To-day 30.—The attendance on the seed market was as might have been expected, meagre in the extreme, and the amount of business done was as nearly nil as possible. There is, consequently, no quotable variation in the value of any kind of agricultural seeds. Although prices are at present purely nominal, holders generally exhibit increased firmness, the values being there being above the views of speculators. There is some inquiry for the various seeds at unchanged currencies. As regards Canary seed, quotations are weaker, the demand for this article being just now very restricted. Mustard and Rape seed for agricultural purposes experience a good demand, and an advance must be noted. Blue blooming Peas and Haricot Beans move off on former terms. There is a fair request for English Black Seed, Feeding Linseed is steady.
Fisher & Sons, Seed Merchants, 37, Mark Lane, London, E.C.

CORN.

At Mark Lane on Monday the supply of English Wheat was short, but there were liberal importations of foreign, and the few sales concluded in either description were at a reduction of from 2s. to 3s. per quarter, as compared with the prices of last Wednesday, or say from 4s. to 6s. per quarter as contrasted with the rates of this day. The flour trade was also dull, and sales only effected by submitting to lower prices.—Average prices of barley for the week ending May 26.—Wheat, 68s. 6d.; Barley, 37s. 0d.; Oats, 28s. 1d. For the corresponding week last year.—Wheat, 45s. 3d.; Barley, 32s. 1d.; Oats, 26s. 1d.

CATTLE.

At Copenhagen Fields on Monday there was a much larger supply of beasts than on the previous Monday, 360 Canadians having unexpectedly arrived, and about 400 Danish. The trade was very slow, and prices fell considerably. There was a large increase also in the supply of sheep and lambs. Trade was worse than on Thursday week, especially for lambs, and it was difficult to effect a clearance even at the reduced rates. The few calves that could make a fair price. Quotations.—Beasts, 4s. to 5s. and 5s. 4d. to 5s. 10d.; calves, 5s. 6d. to 6s. 8d.; sheep, 4s. 10d. to 5s. 6d., and 6s. to 6s. 10d.; lambs, 7s. 4d. to 8s. 2d.; pigs, 4s. to 5s.—Trade on Thursday was dull. In the best market sales were difficult to close, and the tendency of prices was adverse. Sheep also sold very slowly, and did not in all cases support Monday's rates. Lambs went at prices in favour of buyers. The few calves on offer brought late value.

HAY.

At Whitechapel on Tuesday, with a full supply, trade was dull, and quotations dropped somewhat. Prime Clover, 10s. to 12s.; inferior, 8s. to 9s.; Prime Meadow hay, 9s. to 12s.; inferior, 7s. to 8s.; and straw, 4s. to 5s. per ton.—Cumberland Market quotations.—Superior meadow hay, 12s. to 13s.; inferior, 10s. to 11s.; superior Clover, 12s. to 14s.; inferior, 11s. to 12s.; and straw, 5s. to 6s. per ton.

POTATOS.

The Borough and Spitalfields markets reports state that the supplies of old potatoes are now perceptibly running out, and though no great demand exists decidedly higher prices prevail. Kent Regents, 12s. to 14s. per ton; Essex do., 11s. to 13s.; Scotch do., 9s. to 10s.; and 10s. to 12s. per ton.—The imports in London last week comprised 8026 packages from Lisbon, 2872 bags Anvers, 1803 bags Hamburg, 1148 sacks Brussels, 1201 sacks Bremen, 537 sacks Dunkirk, 250 sacks Paris, 130 sacks 45 bags Hongkong, 133 boxes Calcutta, and 140 casks 130 casks and 135 boxes Manila.

COALS.

There has been a steady business in the coal market at the following quotations:—Well End, 12s. 6d.; Tinstall, 17s. 0d.; Harlepool, 17s.; Kelloe, 18s.; South Harlepool, 18s.; South Kelloe, 18s.

GISHURST COMPOUND.

Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Insects, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces to a winter dressing for Vines and Fruit Trees. Has many other important representations to supercede it. Sold Retail by Seedsmen, in Boxes, 12, 3s. and 10s. 6d. Wholesale by PRICES PATENT CAN COMPANY (Limited).

SIMPSON'S RED SPIDER, THIRPS, &c., ANTIDOTE. Testimonials of the highest order on application. Per quart, contains the equivalent of 32 fl. oz. Supplied to Seedsmen and Chemists. Strongly recommended in the Gardener, and of many first-class Gardeners. Prepared by JOHN KILNER, Wortley, near Sheffield.

RUSSIA MATS.—A large stock of Archangel Mats, for Covering and Packing (price on application for Archangel)—Petersburg, 6s. to 10s. per 100; superior close-wove, 40s., 50s., and 55s. per 100; Packing Mats at 20s., 30s., and 35s. per 100; and all other descriptions of Mats at equally low rates, at J. BLACKKITH AND SONS, 4 and 5, Wormwood Street, London, E.C.

RUSSIA MATS, for Covering Garden Frames.—ANDERSON'S TAGANROG MATS are the cheapest and most durable. Price List, which gives the size and weight of each, delivered free to any Station in London. JAS. T. ANDERSON, 149, Commercial Street, Shoreditch, London, E.C.

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Rosher's Garden Edging Tiles.



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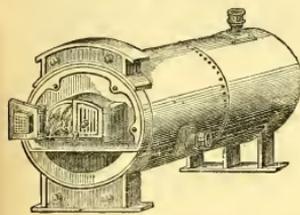


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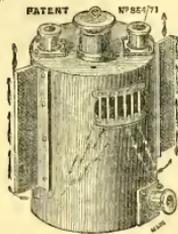
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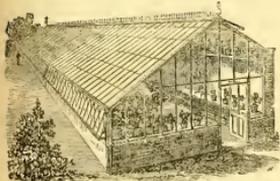
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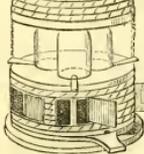
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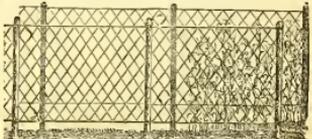
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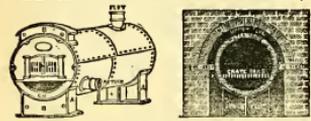
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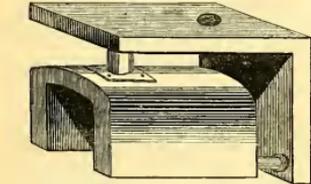
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These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-spout at back and over top of saddle increases the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about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

Sizes.		To heat of 4 in. Pipe.		Price.
High.	Wide.	Long.	Feet.	£ s. d.
20 in.	18 "	18 "	300	7 0 0
20 "	18 "	24 "	400	9 0 0
20 "	18 "	30 "	500	11 0 0
24 "	24 "	24 "	700	12 0 0
24 "	24 "	30 "	850	14 0 0
24 "	24 "	36 "	1,000	16 0 0
24 "	24 "	45 "	1,400	20 0 0
28 "	28 "	60 "	1,800	25 0 0

Larger sizes if required.

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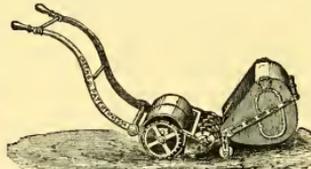
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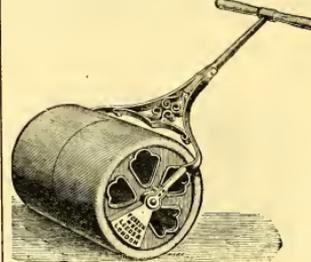
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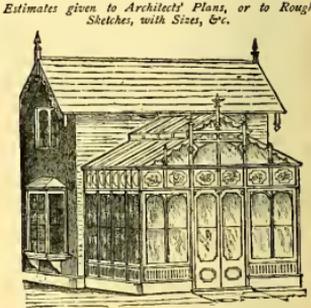
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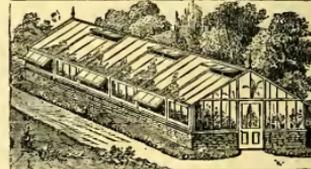
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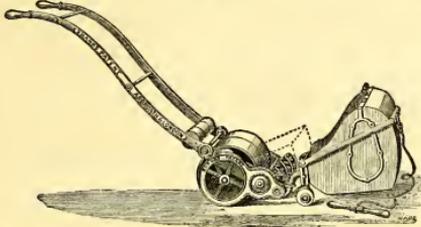
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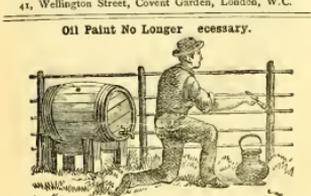
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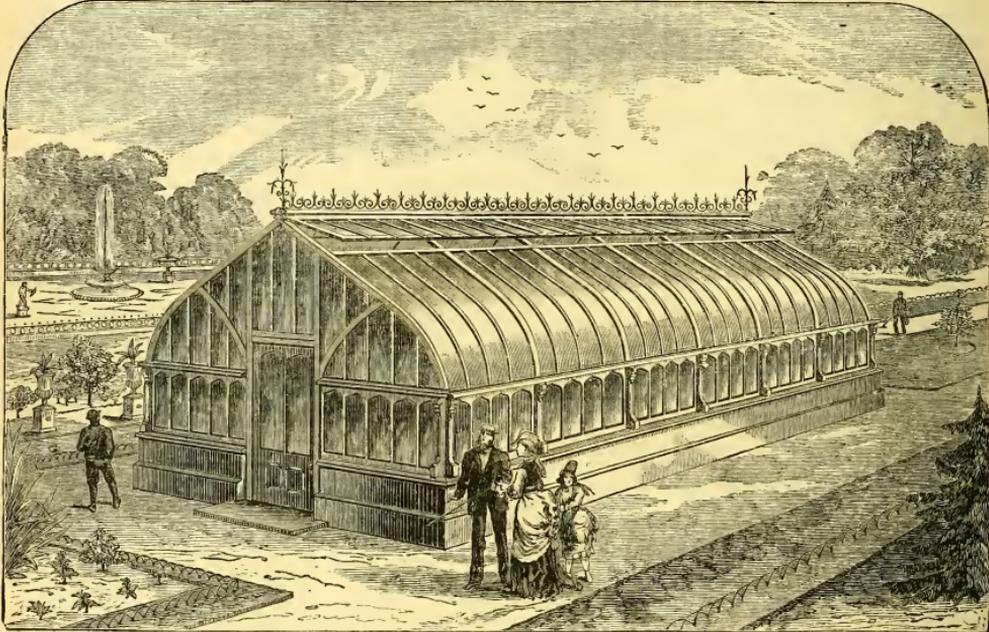
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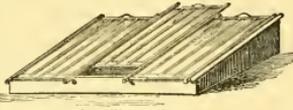
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1-light frame	4 feet	6 feet	1 17 6
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No. 1	4 feet long, 6 feet from front to back	3 0 0	..
No. 2	" " " " " "	4 7 6	..
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Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C. Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, June 2, 1877. Agents for Manchester—JOHN HAYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 180.—VOL. VII. { NEW SERIES. }

SATURDAY, JUNE 9, 1877.

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SPALDING HORTICULTURAL SHOW June 27 and 28. Prize Schedules on application to **GEORGE KINGSTON**, Secretary.

NATIONAL CARNATION and PICOETE SOCIETY, and CUT ROSE SHOW will be held at the Royal Aquarium, Westminster, **WEDNESDAY and THURSDAY**, July 18 and 19. Schedules and full particulars may be obtained on application to **Mr. E. S. DOWELL**, 14, Chatham Terrace, Larkhall Rise, Clapham, S.W.; or **Mr. E. BENNETT**, Rabby Nurseries, Barnet, Herts.; or **Mr. W. W. ROBERTSON**, Royal Aquarium, Westminster, S.W.

WESTON-SUPER-MARE and EAST SOMERSET HORTICULTURAL SOCIETY. (In association with the Royal Horticultural Society.) **THE ANNUAL EXHIBITION** in connection with this Society will be held at Weston-super-Mare, on **WEDNESDAY, August 7**, when Prizes amounting to **TWO HUNDRED POUNDS** will be offered for competition. Schedules and all particulars may be obtained on application to **W. B. FRAMPTON**, Secretary.

Presented (by post) on application, **NEW CATALOGUE for 1877.** For remarks and List of Plants offered, with prices, see last week's issue. Advertisement. Plants sent to name, well hardened off, low in price. See New Catalogue.

WILLIAM CLERAN and SON, The Oldfield Nurseries, Altrincham.

CATALOGUES.—His Excellency **Pierre Wolkstein** will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded to **S. E. PIERRE WOLKSTEIN**, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Petersburg.

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THE GREAT SUMMER FLOWER SHOW under the Large Tent and ANNUAL SHOW by the Pelargonium Society, and EXHIBITION of New Plants for Silver Cups offered by Mr. William Bull, F.R.S., &c. on **TUESDAY, June 19**. Schedules on application. Band of the Royal Horse Guards. Admission 2s. 6d.

N.B.—Their Royal Highnesses the Prince and Princess of Wales have signified their intention to honour this show with their presence.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
SUMMER EXHIBITION of PLANTS, FLOWERS, and FRUIT, WEDNESDAY NEXT, June 13, 2 to 6 o'clock. Tickets to be had at the Gardens only, by a Visitor from Fellows of the Society, price 2s. each, or on the day of exhibition, 7s. 6d. each.

THE EXHIBITION of AMERICAN PLANTS from the Nursery of Mr. Anthony Waterer, Knapp Hill, will be on view the same day.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
THE EXHIBITION of AMERICAN PLANTS, RHODODENDRONS, &c., by Mr. Anthony Waterer, of Knapp Hill, will be on view, Admission as on ordinary days, or by the Spring Exhibition Tickets. Gates open from 9 o'clock to sunset, daily, Sundays excepted.

CRYSTAL PALACE.—**THE GREAT ANNUAL ROSE SHOW** on **SATURDAY, June 23**. Dramatic Performance. Free of German Gymnastic Society.

ALEXANDRA PALACE.—**THE GREAT ROSE SHOW** will be held on **SATURDAY, June 23**. LAST DAY of ENTRY, June 23. Schedules and all particulars may be obtained on application to **JOHN A. MCKENZIE**, 1 and 9, Great Winchester Street Buildings, London, E.C.

LEE and BLACKHEATH HORTICULTURAL SOCIETY. **THE ANNUAL EXHIBITION** of the above society will be held on **WEDNESDAY and THURSDAY**, June 20 and 21, in the Grounds of John Penn, Esq., The Cedars, Lee, S.E. Schedules and full particulars may be obtained of **C. HELMER**, Secretary. 5, Boone's Road, Lee, S.E.

TORBAY HORTICULTURAL SOCIETY, Torquay, June 28.
SUMMER SHOW of PLANTS, FRUIT, VEGETABLES, &c. Prizes ONE HUNDRED POUNDS; and a Grand ROSE SHOW, Money Prizes upwards of SIXTY POUNDS, and Silver Cups. For 75 varieties, 1s. 6d. per 100, 15s. per Cup, value £85; 20 prizes, 4s. 3d. per 100. For 15 tea and Noisette Roses, one truss each (Amateur), 1st prize, presented by Messrs. Curtis, Sandford & Co., Cup, value five guineas. Entries close Thursday, June 21. Schedules, &c. ready. **W. FANE TUCKER**, Capt., Hon. Sec. T. H. S. Erddon Tor, Torquay.

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are now in bloom in my Nursery, including many of the greatest novelties in cultivation. Inspection invited. ISAAC DAVIES, Nurseryman, Ormskirk.

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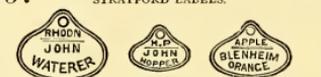
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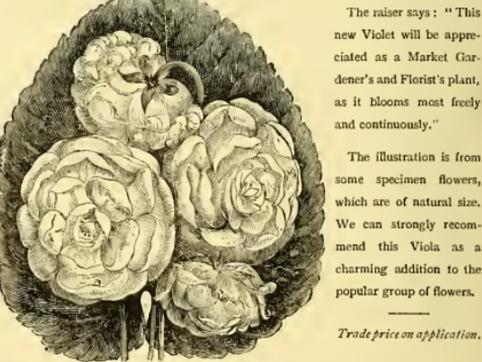


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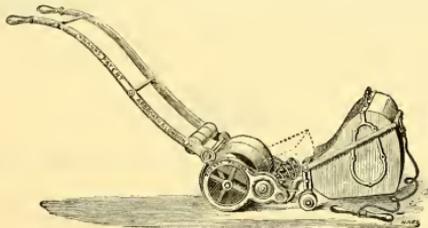
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GREENHOUSES—every description, } From £10
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Can be obtained in all sizes and quantities, of

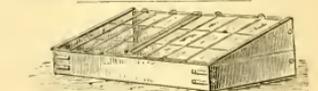
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9, LOWER THAMES STREET, LONDON, E.C.
B. & Son have always a large Stock of London of 20-in. by 12-1/2-in., 20-in. by 14-1/2-in., by 16-in., in 16-oz. and 21-oz.

MR. MECH'S ADDRESS
to his OLD FRIENDS and CUSTOMERS and to the PUBLIC:—

"As it has been erroneously supposed by some that I am no longer interested in my London business, I think it desirable to state that I continue to carry it on as energetically, and I trust as satisfactorily to the Public, as formerly, assisted by my only son, who will in due time succeed me. It is now fifty years ago since I first commenced business in Leadenhall Street, and what changes have taken place! Then everybody shaved, and my razor and razor-stop trade was immense; now moustache and beard are the order of the day, and the razor and stop trade is comparatively defunct. Then there were no railways, so people stayed at home and used wooden dressing-cases; now everybody goes by rail, and we have dressing-bags to suit the altered conditions. Fifty years ago the poor geese supplied our pens, and many a now rich merchant in the City will remember the quality of Mech's shilling pen-knives; but steel pens have extinguished the pen-knife trade and the penmaking machines, and the geese are in peace, except at Michaelmas. In fact, steam has altered, and I may safely say, improved everything, and has made us a nation of travellers both by land and sea. I wonder how much time is now occupied in reading the steam-worked press! and how much less time is occupied in sipping port wine, as we used to do fifty years ago, when we could not travel! Steam will make our 4s leaves cheaper some day, just as it has converted calico from 4s. 6d. to 6s. per yard. There, again, a letter which used to cost 6s. 6d. to Cork is now carried for 1d. Sir Rowland Hill richly deserves a monument. But to return to business; fifty years ago, when I first commenced on a small scale, I made it an axiom that what I sold should be good and useful, and I believe thousands who used the stop and paste, which I personally invented, can testify to this; it fact, it was sometimes complained of that I stamped on my razors 'E. changed if approved.' I have never, and shall never so long as I live, deviate from that principle, because it is the true means to retain and increase one's connection. I devoted my attention especially to the quality and convenience of arrangements in the dressing bag and dressing case department, and in the tasteful selection of articles suitable for presentation, as well as on the matter of dispatch boxes and writing cases. Although both razors and penknives have 'gone out,' our apartment remsan, and 'sporting knives' form one of our special departments. I feel firmly convinced that there is no fear of the departure of knives and forks, or dinners, so we make this an important department in quality and price. In conclusion, I ask no favours, but simply desire that my customers should compare the quality and price of my wares with those of other dependable establishments, and form their own conclusions. Most of my worthy assistants and workmen have been nearly forty years in my service, and long ago learned that civility and attention to our customers are as important as good quality in the articles sold. Illustrated catalogues will be forwarded post-free on application."

112, Regent Street, W., opposite Vigo Street.—1877.



Extra Strong Occomber or Melon Frames, With 8-inch sashes and 1 1/2-inch red deal frames, secured at each corner with two wrought-iron strap bolts. Glazed, without putty, with 21-oz. glass.

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

By Her Majesty's Letters Patent

WRIGHT'S ENDLESS-FRAME-IMPACT HOT-WATER BOILERS.

GUARANTEED

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

"The 'Boiler of the Future.' I have no doubt about this."—Wm. Thomson, *Trans. Inst. Mech. Engrs.*

From the "Gardener," March, 1877.

WRIGHT'S PATENT ENDLESS-FRAME-IMPACT BOILER.

"This boiler is attracting a good deal of attention in the horticultural world at the present time, and I as have just had one of my largest-sized ones fitted up here, and have now got well tested, perhaps a few lines from me upon its capabilities may not be without some advantage to some of your numerous readers. I have had some experience as to the annoyance and extra labour caused by badly-constructed boilers, and any improvement effected in these to save labour and fuel demands the attention of all interested parties.

"To give your readers a better idea of the work this boiler has to do, I may begin by stating that our hot-houses consist of ranges having a total length of 520 feet, a ridge and furrow-roofed greenhouse being in the centre, two lean-to Vineries on each side, with Cressella-house and general plant-hatch at each end; on opposite side of wall we have a Fern-house, partly lean-to and partly span, 95 feet in length, varying in width from 10 to 20 feet. Attached to end of boiler-house is our laundry, with a drying chamber fitted up with about 250 feet of stretch piping.

"The whole of the above houses are heated with hot water and have a total of about 300 feet of stretch piping. We had formerly two oval fire boilers, one being 4 feet 6 inches long, the other 4 feet long. With these two boilers kept hard fired during frosty weather, and had frequently to lose a night's sleep attending to the fires. On the last day of last year the larger boiler came to grief—the water from fire drowned out the fire; and in taking down some of the brick work it was found to have cracked beyond repair. To be thus left in the middle of winter with only the one boiler was no joke. I had to look out for another without delay. I have given a good deal of attention to the construction of hot-water boilers, and I must say I had never seen one that came up to my idea of what a boiler should be until some time ago my attention was called to a drawing of Wright & Co.'s Boiler, which appeared in the *Gardener*.

"After talking the matter over with my employer, W. S. Mitchell Esq., he at once granted permission to get the boiler I had formed such an opinion of. I at once put the order into the hands of Messrs. Menck & Philip, hot-house builders and hot-water engineers, Torphichen Street, and they have fitted it up and attached the piping in the most complete manner. I also got some additional tight valves attached, so that if anything should at any time go wrong it can be attended to without disturbing the piping.

"And now as to the capabilities of the boiler for the work. As formerly stated, I had considerable difficulty in keeping up the heat with the two oval fire boilers kept hard at work. I now find that with the remaining oval fire boiler idle, I can heat up the whole of the houses and the laundry to a degree they never were before, and that with much less coal than it took to fire one of the oval fire boilers.

"Our chimney consists of a fire 70 feet long, led horizontally through centre of back wall, with 16 feet of a perpendicular stack. Some doubt was expressed that, as we required a chimney pipe attached to boiler about 6 feet long, there would be deficiency of draught; but we have found the opposite to be the case. I attached a 6 feet length of stretch stove pipe, with elbow at boiler, and cleaning door on the angle, and as I found the draught very strong I got a throttle-valve damper fitted into the bend of the stove pipe, and an able man regulated the fire to a niceity, and by banking-up the fire at 10 P.M., and turning the damper half an hour, I had the boiler at work with the greatest efficiency till the usual time of commencing the work of the following morning; and instead of, as formerly, having to sit up till the half of the night at times, and sometimes whole ones, we can retire to rest at a reasonable hour, confident of sleep being undisturbed by unpleasant dreams of flames and frays going to ruin. In concluding my remarks I may say that not the least of the good qualities of this boiler is its portability. We had not the slightest difficulty in putting it down in our constructed stove-hole through a trap-door 4 feet long by 1 foot broad, and fitting it up in a recess 4 feet square, and I am confident that with the assistance of two men I could take the whole lot to pieces and have it again in full working order in two hours. I have no hesitation in saying that for rapidity of circulation, small consumption of fuel, portability, and cleanliness, it has no rival, and have no doubt this boiler will win its way; and where coals are high in price it will effect a considerable saving, and there is good fire space for a few more, and a good capital boiler for burning wood and other fuel."—J. CLARKE, *The Gardens, Pavilion Green, Edinburgh.*

"We have a very high opinion of this boiler, and predict that it will take a foremost place in heating hot-houses and all other buildings, and shall have some further remarks to make about the principles of its neatness."—Ed. Gowers.

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

For details and particulars as to the various sizes made, and prices, please see our pamphlet, entitled, "ONE BOILER AND TWO CHIMNEYS," which is sent on application to any of our Agents.

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

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

NEW ENGLISH-RAISED SEEDLING ROSES.

MESSRS. BELL & SON, THE NORWICH NURSERIES,

Are now executing orders for their TWO NEW ROSES, raised at their Nurseries, and described and announced below. They have been thoroughly tested here before being sent out, and can be recommended with confidence as really distinct novelties.

CLIMBING ROSE "CATHERINE BELL."

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

"Your Rose Catherine Bell is both *belle et grande*."—Rev. Canon Reynolds Hole.

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

COLOURED PLATES ONE SHILLING EACH.

HYBRID TEA ROSE "MRS. OPIE."

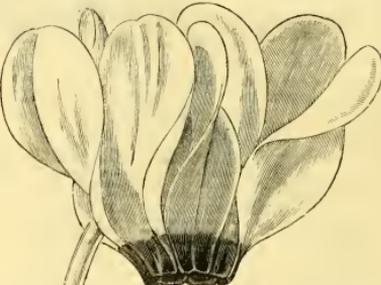
Bright salmon-rose, tea-scented flowers, with shell-like petals, a most distinct and novel shade of colour among Tea Roses. It will form a charming companion to Madame Falot, and will be as extensively cultivated as that variety when well known. In flower from May to November. Figured in the *Floral Magazine*.

Good Flowering Plants, in Pots 7s. 6d. each.

BELL AND SON, 10 & 11, EXCHANGE STREET, NORWICH.



B. S. WILLIAMS'



CYCLAMEN PERSICUM GIGANTEUM.

The variety now offered is a new and greatly improved type, having very broad, beautiful, mottled, coriaceous leaves and stout flower-stalks, throwing the flowers well above the foliage, each flower measuring from 2 to 2½ inches in length, with broad petals of great substance, pure white, with a fine bold violet-purple eye.

Per Packet, 2s. 6d. and 5s.

"May 17, 1877.

"Dear Sir,—Having the best of success during the time I have been here with your seeds, in the way of Primulas, Cyclamens, &c., I have, so far, carried the palm about this quarter, and have now, out of the last packet of your GIANT CYCLAMEN (containing fifty seeds), forty-four good plants."—From Mr. G. BOLAS, *Gardener, Hopton Hall, Derby.*

Please note that all packets are Stamped with my Registered Trade Mark.

VICTORIA AND PARADISE NURSERIES,
UPPER HOLLOWAY, LONDON, N.

STRAWBERRY, THE DUKE OF EDINBURGH (MOFFAT).

THE LAWSON SEED AND NURSERY COMPANY (LIMITED),
EDINBURGH AND LONDON,

Have made arrangements with Mr. Moffat, Coldwells, to send out, for the first time, the above-named splendid Strawberry. Fruit very large, firm, and of excellent flavour, bright scarlet colour. A most prolific bearer, and as a main crop for market purposes it is unsurpassed.

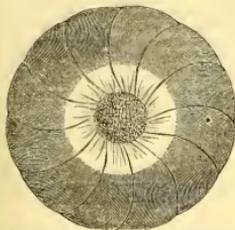
Strong Plants, 42s. per 100; 25s. per 50; 15s. per 25; 9s. per dozen.

Trade Price on application.

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April, 1877.

SUTTON'S
SUPERB STRAINS OF
FLORISTS' FLOWERS,
POST FREE.

The Finest Strain of Cineraria.



SUTTON'S SUPERB CINERARIA.

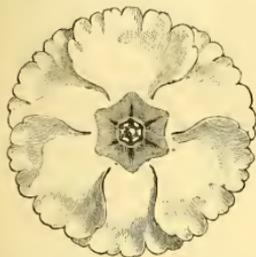
This will be found unequalled by any in cultivation, the seed having been saved from the finest named varieties only.

Price 2s. 6d. per packet, post-free.

From Mrs. A. ALLETON, *Frittillwell, May 8.*

"Our Cinerarias this year (from your seed) are splendid; they far surpass any I saw at the Botanical Gardens yesterday."

The Finest Strain of Primula.



SUTTON'S SUPERB PRIMULA.

This choice stock has been carefully selected from the largest fruited flowers of good colour. Habit robust, with bloom thrown well above the foliage.

Red, white, or mixed, 2s. 6d. per packet, post-free.

From W. EDWARDS, Esq., *Wellington, January 21.*

"I cannot help saying that the Primulas from your seed have always given great satisfaction, but this year more than ever."

The Finest Strain of Calceolaria.



SUTTON'S SUPERB CALCEOLARIA.

This splendid strain has been most carefully selected from the very finest collections in cultivation. The plants are compact in habit, with beautiful green foliage, and a profusion of blooms. The flowers are perfect in form and substance, and of every shade of colour.

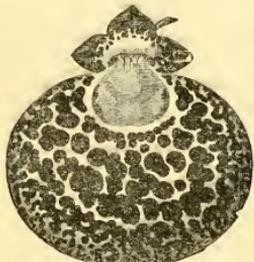
Per packet, 2s. 6d.

From A. E. RUSSELL, Esq., *Dalshabreck, July 10.*

"My Calceolaria plants, from seed purchased of you last year, are particularly fine, of very compact habit, and beautiful in colour."

SUTTON & SONS,
THE QUEEN'S SEEDSMEN, READING.

B. S. WILLIAMS'
NEW AND CHOICE
FLOWER SEEDS FOR 1877.



Per packet—s. d.
CALCEOLARIA, Williams' Superb Strain, 5s. 1 6
3s. 6d., 2s. 6d., and 1 6

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

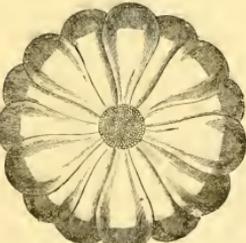
"The Calceolaria, from the seed Capt. Coons had from Mr. Williams last year, have been greatly admired—they leave nothing more to be desired."



PRIMULA, Williams' Superb Strain, Red, White, or Mixed 5s., 3s. 6d., 2s. 6d., and 1 6
PRIMULA SIENSIS FIMBRIATA COCCINEA (new) colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance 5 0

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

"Dear Sir,—I may inform you that at the Birmingham Chrysanthemum Flower Show, held last November, I took the 2d prize, with twelve Primulas, six red and six white, in the Gentleman's Gardeners' Class, with seeds supplied by you."



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

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

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

All the above choice seeds have my registered Trade Mark stamped on each Packet.

VICTORIA and PARADISE NURSERIES,
Upper Holloway, London, N.



SATURDAY, JUNE 9, 1877.

TERRESTRIAL HEATING.

THIS may be regarded as the *primum mobile* for the better class of exotics, and not for them only, but also in the forwarding process of raising plants from seed as well as from cuttings. Bottom-heat, too, has been applied to Grape growing with wonderful success. It may not be out of place then to trace some of the workings of this powerful agent.

The name and history of the man who invented the common three-light Cucumber and Melon frame is lost in dry antiquity; but we have his formula left showing how he sweetened his manure by frequent turnings before he made up his bed of Oak leaves, interarded with horse dung, built some 5 feet high, and say 9 inches wider than the frame all round; the linings were afterward applied as occasion required, also the essential covering of one or two folds of Russian mats during the dark and cold nights of early spring. This arrangement plainly showed that the earth was first heated, and it had to heat the air, with the sun's assistance by day, and without his powerful aid during the long cold nights. Well now, with all this clumsy arrangement by means of great labour and heavy dirty work, did our forefathers obtain satisfactory results? Unquestionably they did, and the atmosphere of the old Melon frame has never been equalled by any modern system of heating by steam or even by hot water. I recollect perfectly the elder Mr. Veitch, of Exeter, putting newly imported Orchids into a dung frame as the best treatment that that princely nursery could afford. I recollect perfectly striking cuttings of *Arbortvitæ* in phials of water in a Melon frame; and any one who has watched the growth of Cucumbers or Melons planted on the hill in the centre of the frame, and has seen the fine white roots striking right out of the earth into the air of the frame, must be convinced that as regards the formation of roots the moist warm air of the Melon-frame is one of the best mediums for striking cuttings. Other systems of heating, such as by hot-water pipes, give heat moist or dry, just as the means for supplying moisture may be provided, but in the Melon-frame the dry heat is impossible. The one heat is that of fire; the other that of the fermentation of vegetable substances slowly progressing to decay.

Supposing, then, that the hill or surface of the Melon-frame had got to the state of "the smoking Flax"—neither cold nor hot, but lukewarm—it is quite clear that the addition of cold water would chill just as warm water would heat such a medium. Now, our ancient blue-apron men would meet this state of things by having a glass-bottle filled with water and kept in the frame with which to water the tender seedlings, and this bottle, and a full-grown toad by way of poise, were the only occupants of the frame, besides the vine of the Melon. In this case, as the warm water descended into the soil it parted slowly with its heat, and thereby warmed the soil. We know that autumn-sown Wheat will take root, and extend the same, although the blade may not be able to extend on account of the frost and snow overhead; but this fact proves what a difference it makes to the well-being of the plant when the bottom is protected by the earth, and is thereby warmer than the blade exposed to every cold blast. If this were doubted we might argue that if there were no

other gain but calmness, that alone would be a great benefit. Again the unchangeable life underground is the very reverse of that in the atmosphere above it. Therefore, if Wheat has no bottom-heat, it certainly is many degrees warmer at one end than at the other.

The object of these remarks is not, however, to treat of Wheat but of Vines to which bottom-heat has been applied, and to show that the glass bottle in the Melon-frame, with its quill in the cork and its air-hole in the body of the bottle, was a miniature example, a kind of model for the benefit of all exotics; for water is so valuable as a carrier that it will not only convey food to the roots, but also heat, and any one who would leave out such an agent now after its character and abilities are so well known, would be expected to give his reasons for so doing.

I recollect the late Mr. Pince, of the Exeter Nursery, showing me a plant of *Nepenthes distillatoria* which had crawled along the hot-water pipes, and had so benefited by the bottom-heat that it flowered and produced perfect seeds, which, when sowed, produced plants with every leaf ending in a pitcher. I have elsewhere called attention to the fact that all Pine growers worthy of the name have made sure of a good brisk bottom-heat, notwithstanding what many have urged to the contrary. If I venture to say that the finest Grapes exhibited now-a-days surpass those of forty years ago, good though they were in their day, I shall be borne out by facts; but my present business is to cry up bottom-heat by the agency of hot-water, for it must be drummed into unwilling ears—since it is the newest phase of an old fact, for the Grape Vine has just as much need of warm drink as the Melon Vine.

Many years ago there was a case given in the garden periodicals of Melon roots getting to a warm-water tank, and thriving rarely with a supply *ad lib.* of tectotal beverage always warm. The largest Gooseberries I ever saw were grown by an amateur in Birmingham, and the secret of success consisted in the bushes being watered on washing days, once a week, during the growing season, with weak but warm soap-suds. Irrigation of pasture fields in certain localities produces extraordinary returns, especially where the water off the limestone comes charged with that mineral to the work, whereas in less favoured localities the wet land plants, Rushes, &c., tell too clearly of the cold bottom and sour clay soaked and saturated with ditch water. Here I would remark that it is well-known that grass, for instance, cannot attain perfection where the necessary supply of moisture is withheld from the roots, yet the plants will remain green and healthy as if biding their time, but wasting the sunny days for want of one ingredient.

Now, in the case of the Vine it has a heavy duty to fulfil, and requires much sun heat, or other heat, to accomplish its work; and to compensate that, it needs a corresponding quantity of water, for its time is short, and foliage and fruit must be matured quickly. If more heat is wanted than the sun can supply, the coal pit must put its shoulder to the work, and woo to him that stints the Vine of its strong, warm drink. I have forgotten in what Irish book it was that I read the sensible statement that "Fortune would never stick to a man that inveigled a piper's drink." Well, then, if this be true between the piper and his host, it is doubly so with the fruitful Vine; and as it tells no tales its likes and dislikes must be learned by its behaviour under different forms of treatment.

It is certainly the most generous plant we possess, for if we take 1 lb. of Grapes to yield nearly a pint of wine, a tidy bunch would give wine enough to fill a gallon bottle, and some bunches have been shown that would yield enough to fill two such bottles, and that for not

once and away like the annual wheat or barley, but year by year for generations.

In planning a Vine border then, the sunny slope, and the effectual drainage, have to be kept in view; but the Vine is a gross feeder and requires a good run to supply its sheet of foliage. In sultry weather when growth is lively how grateful must it be for the feeders to get what is to them warm rain, medicated with liquid manure, thereby not only breaking bread for the Vine, but also kindly warming its strong drink. Where fires have been made to burn weeds in fields or brushwood in woods, the earth gets warmed to some depth according to the amount of fire and the time it has been kept up, and it will take several days to get cold after the embers have been removed. When pasture gets burnt up in hot summers, one would think the grass would never come again, but this deceives the observer, and the great bottom-heat only waits for the water to send up the greensward.

All guess-work beforehand on horticultural subjects is to be received with caution. Even Nature is not always a safe guide, for Chickweed and Groundsel will thrive in a medium very little above freezing; and, on the other hand, Pine-apples will do well in a bottom-heat so strong, that the hand can hardly bear the heat of the brick-pot. Now, this is nowhere to be found in Nature unassisted, yet it is an established rule in practice.

Many Roses flower freely on walls and sheltered places, and any one judging from that that he could force, or rather forward, such in a glass structure, will find his cost that, unless he warmed their toes a little to start the root first, he will often find his labour in vain, but some may say, why all this straining after bottom-heat? Why, because it is within our reach, for it is truly said in Holy Writ that "the wind bloweth where it listeth," and, like the unicorn, it cannot be harnessed to our team, but it is far otherwise with that part of the plant below the collar. It has an underground life in darkness, and searches far and wide for its supplies, and we have the means of forwarding this part of the work by food and warmth. By means of water, used with knowledge and discretion, bottom-heat can certainly be maintained, for when the earth is heated to a moderate depth it takes several days to cool: for example, when peaty sods that have been pared and burnt have lain neglected the ashes will be warm for weeks. But when we see splendid Grapes exhibited, and are told what treatment had so raised their character above the normal standard, surely it is time to turn the attention of Grape growers to this topic, and leaving the corn to the care of the *Agricultural Gazette*, let us claim in the columns of the *Gardeners' Chronicle* an honoured place for grapes and wine. *Alex. Forsyth.*

New Garden Plants.

PTEROSTYLIS BAPTISTII, *Filix*; *Austral. Orch.*, Part I.

Beautiful it was, that miscellaneous group exhibited by Mr. Williams at Amsterdam. If it was not exhibited with so great courtesy as the Orchids, which lived in the Palace, while these miscellaneous plants were in a small extra glasshouse, the Orchids had to pay for the honour by starving from dry and cold air. Now this *Pterostylis* was not an Orchid (in a flower-show sense), but a miscellaneous plant amidst many other bright specimens admired by others, but I always returned to honour my slender green Orchid. It has basal, petiolate, oblong-cuneate leaves, not quite fully renate, but nearly so, the upper ones ascending the rachis, two wide sheaths, a single odd flower, whose stalked ovary is surmounted by the bract. The flower is green, with white and brown, and may be compared to the head of a Saurian, adorned with two beetle-like antennae. Mr. B. Williams finally deprived, to my great personal satisfaction, the visitors of the happiness of seeing the frog-green flower. I brought it home, and dissected and sketched it. The *banax rotata* are at hand. If I remember well, Mr. Williams, who did not appear exceedingly partial to

my pet, imported the plant from Baptist's garden, Sidney. Mr. Fitzgerald states it was discovered near Sidney by the late Mr. Baptist, and is probably a garden. In consideration of the assistance rendered by Mr. Baptist to horticulture, when in its infancy in the colony, it has been named P. Baptistii by Mr. Fitzgerald.

Comparing Mr. Williams' plants with the figures given by Mr. Fitzgerald, I have a few remarks to make. The flowers were a good deal smaller and for the most part less wide. There was much less white colour in them. The bristles of the lateral sepals were brownish. The bracts were larger and longer than the stalked ovaries. The petals had no cilia inside. There was no doubt credit of teeth over the appendage, but they were altogether marginal.

I do not make those remarks doubting the fullest accuracy of the author quoted, but only to show that the area of characters has to be widened.

As a species the plant is perhaps too near *Pterostylis lutea*, Lindl. (most probably this is *P. micro-mega*, Hook. f.) It would be most desirable to see whether there are such constant characters as would enable botanists to regard the two as what we call well-founded species.

It is to be regretted that Mr. Fitzgerald gave no numbers to his plates, nor any remark about the real time of the publication of the part of his work. *H. G. Rehb. f.*

THIRIXSPERMUM HARTMANNI, *Rehb. f.*

This is a nice small distichous Orchid, belonging to the category of "gems" from Toowoomba in Queensland, where it was discovered by Mr. C. H. Hartmann, of the Range Nursery. It was named *Sarcophilus Hartmanni* by Baron von Müller in *Frag. Phys. Austral.*, vol. viii., 1872, 74, p. 248. It would appear to bear generally four rather thick, ligulate, bidentate leaves, the teeth of which are equal or unequal, but rather sharp. The stem is short, and bears a few small, globose tubercles or warts. The inflorescence is a dense raceme. The flowers, though rather small, are exquisite in their beautiful cream-white hue. There are numerous, brick-red spots around the bases of sepals and petals on both sides. The staminate and oblong side-lacinia of the lip are richly painted with brick-red spots and streaks. The callus in the middle of the lip is yellow, with red spots. There are two yellow eyes with red margins at the front side of the solid spur, and the middle lacinia of the lip is yellow. It has been regarded as near *Saccolabium* and *Cleisostoma* ("one of our genera *optime ad Saccolabium reducenda*"), which I simply do not understand. I obtained a good fresh inflorescence from Mr. Bull, in whose establishment I saw healthy plants. Ours came with death at the heart, and soon starved. *H. G. Rehb. f.*

RHIZALIS PANDURIFLORA, *N. E. Br.*

Pendulous, much branched, branches fastigiate, short, articulate, joints 3-5 lines long, 1-1½ line thick (those which form the principal branches are longer, ½-1 inch long), quite terete, very minutely punctate; areole minute, each with a very minute deltidial scale, from the axil of which arise two white hairs half a line in length, accompanied by a few microscopic woolly ones. Flowers terminal, pendulous, ovary exerted, semiglobose, pale green. Perianth ½ inch in diameter, segments 9-11, spreading, linear-oblong, very obtuse, sometimes slightly emarginate, semitransparent, whitish with an apical reddish spot, the 3-4 outer segments shorter than the others. Stamens yellowish-white, salmon-coloured at the base. Stigma 4-lobed, white.

The Royal Gardens, Kew, received this plant from H. Fensholt in 1875, under the name *R. cribrata*, a name which seems to have no application to the plant; so, as I can find no description of it published I propose for it a name more suitable. As a species this ranks next *R. Saglionis*, to which it is closely allied, but is well distinguished by the following characters.—Habit more pendulous; branches more fastigiate (not divergent); the young joints as well as the old quite terete, (not angular as in *R. Saglionis*); areole less conspicuous, with fewer and shorter hairs; and lastly, the petals are much more obtuse. *N. E. Brown, Kew.*

SETTING PEACHES.

With one particular system or method of setting as adopted by one individual, and carried out to a successful end—be that system what it may—should by others be held up to ridicule is simply absurd. If one gardener douches his trees when in flower with a syringe charged with water, and has by this practice the best of results, he has a perfect right to practise it upon his own trees, and also to communicate to others or to the press the successful results of his practice. If another gardener succeeds in obtaining a good set of Peaches, and produces better fruit than his neighbours by submerging his trees altogether in

water or tobacco-water for a period of twenty-four hours, more or less, he also has a perfect right to do so, and also to proclaim on the "house tops" the excellent results of his practice. Another gardener may go in practice diametrically opposite to that described above, and keep his trees perfectly dry by withholding moisture from all the usual sources, even bringing to bear on his trees some newly invented method of dry blast, and also produce as good fruit as those who go to the opposite extremes of wet. Gardeners may also use the "bunch of feathers," the camel-hair brush, shake or vibrate the trellis, or any other imaginable resort, and all with good results, and, sometimes, it may be added, with very indifferent results. One system practised at one place may not do in another, as in many other things we could instance; so also with Peaches.

Healthy trees will bear any reasonable amount of exhibition without much hurt, and without giving sufficient proof that our pet treatment was exactly the right thing to do; when it might be proved that a similar experiment tried upon trees of less vigorous health would readily show that the experiment was not to be repeated, not even in the case of healthy trees.

Supposing a gardener has a failure with one or more of his Peach-houses, and that he has omitted to

for the live of bees was there and at work too all over the house. I watched them closely as they industriously passed from flower to flower, grasping the whole of the stamens with their fore-legs or arms, and clearing away what pollen there was at the time on the anthers; the work was soon done, and watching the return of the laden bees at the door of the hive, it was easy to observe that they were reaping a harvest quite as pleasing to them as their operations appeared to be both pleasing and useful to us. When the sun did not shine, the bees did not leave their hive, and if after enticing them from the hive, the sun suddenly disappeared, the bees were soon back to the hive. No warmth from the hot-water pipes had any effect in bringing forth the bees. The same hive was moved to the second Peach-house, and so on to the third and fourth. It is now out of doors, and I think none the worse for its early spring campaign amongst the Peach blossom. As to the set of Peaches in the early house, it was a decided success, and I may also say the same of all the others. Whether the same amount of success would have been attained without the assistance of the bees I am not prepared to say, but one thing I can say with confidence, and that is, if they did not go, I am quite sure they did no harm, and no matter how sages or ecologists may sneer, if I live I shall most certainly repeat the ex-

This is a small group, of which all the species of which the flowers are known belong to the subgenus *Euagave*, of which the leaves are intermediate in character between the *Marginate* and *Americanæ*. Here the border is not so distinct as in the *Marginate*, but merely consists of the terminal spine, decurrent with or without teeth down the margin of the top part of the leaf, whilst the lower half or two-thirds is toothed, without any border, just as in the *Americanæ*.

* PARVIFOLIA.

20. *A. (Euagave) Deserti*, Engelm., Notes, p. 22.—Acaulescent. Leaves few in a rosette, oblanceolate, 6—12 inches long, 1½—2 inches broad above the middle, thick, fleshy, very glaucous, deeply concave on the face, with a long (1—2 inches) slender end-spine decurrent to about the middle of the leaf; both the leaf and the unbordered lower part of the leaf furnished with crowded, strong, hooked, horny, lanceolate prickles, ¼—½ inch long. Spine 4—10 feet high, 1—2 inches thick at the base, furnished with distant lanceolate acuminate toothed bracts. Panicle thyrsoid, the branches very short, the lower horizontal, the upper ascending, the secondary pedicels ½—¾ inch long, the pedicels shorter. Perianth yellow, under 2 inches long, including the ovary; ovary trigonous, ¾ inch long; tube campanulate, ¼—½ inch long and broad; segments oblong, ¼ inch long. Filaments twice as long as the perianth segments, inserted at their base; anthers ¼ inch long. Capsule oblong-trigonous, 18—21 lines long. Seeds under ¼ inch broad.

Eastern base of the mountains of Southern California, and in the adjoining deserts. Discovered by Lieutenant Emory in 1846, and gathered later by Dr. Parry and others, and fully described by Dr. Engelm. We have young plants in the Kew collection, received from Messrs. Miller, Slevers & Co., of San Francisco.

21. *A. (Euagave) Shawii*, Engelm. Notes, p. 26, tabs. 2 and 3.—Acaulescent. Leaves 50—60 or more, forming a dense globose rosette a couple of feet in diameter, oblong-spathulate, 8—10 inches long, 3½—4½ inches broad at the middle, deep green, not villate, narrowed to a brown end-spine 1 inch long, ¾ inch thick at the base, ¼ inch thick in the middle, the upper third or quarter entire, the rest furnished with crowded up-curved lanceolate teeth 1—½ inch long. Spine 8—12 feet high, 2—2½ inches thick, covered with erect clasping deltoid or lanceolate deltoid bract leaves, with a brown scarioso margin. Panicle thyrsoid, about a couple of feet long and broad; branches stout, 4—9 inches long, 1—1½ inch thick; clusters dense, composed of 30—50 flowers, surrounded by large foliaceous fleshy bracts. Perianth, including the ovary, 15—18 lines long, greenish yellow, trigonous; ovary 15—18 lines long; tube broadly funnel shaped, ½—¾ inch long; lobes 12—14 lines long. Stamens inserted about the middle of the perianth-tube, exserted ½ inch beyond the segments; anthers above ¼ inch long. Style ½—¾ inch longer than the filaments. Capsules oblong-trigonous, cuspidate, 2½—2¾ inches long, not quite 1 inch in diameter. Seeds ¼ inch broad.

A native of dry hills bordering the Pacific at the south-west corner of California. Discovered by Dr. Parry, in 1850, and rediscovered from his memoranda and photographed by Messrs. Parker and Hitchcock, of San Diego. Dr. Engelm. gives a full description in his paper, accompanied by Mr. Parker's excellent photographs, and names the plant after Mr. Henry Shaw, "already so highly esteemed in St. Louis as the founder and donor of the Missouri Botanical Garden, grand at present, and promising a future as useful as it will be magnificent." I have seen it in a living state in the Kew collection, received from Messrs. Miller, Slevers & Co., of San Francisco, and have no doubt that in a few years' time it will be one of the favourite species of the genus in our European gardens, as it is a most distinct and handsome plant.

22. *A. applanata*, Lemaire; Jacobi, Mon., pp. 48 and 210; (fig. 115).—Leaves 20—30, or even 40, in a dense sessile rosette reaching a couple of feet in diameter, oblong-spathulate, 8—12 inches long, 3—3½ inches broad at the middle, narrowed to 2—2½ inches above the deltoid base, very glaucous, 1 inch thick at the base, ½ inch thick in the centre, the upper half of the face flat, the upper half concave, the lower part narrowed suddenly to a pungent brown channelled spine, above 1 inch long, which is decurrent as a border to the upper half at the middle of the leaf, the bright brown more or less curved lanceolate prickles ¼—¾ inch long. Inflorescence unkn.

A native of Mexico, long known and widely spread in our European collections. It is wrongly classified



FIG. 115.—AGAVE APPLANATA.

use some of the above usual precautions—because he has read somewhere that those practices are "obsolete." Would not that man's ears tingle when he thought of his failure, and would it not be very reasonable to believe that in conscience at least, this man would be a great deal more easy, if he felt that he had exhausted any, or even all the known common methods of setting. I should never for a moment think of throwing aside any of the well known methods of endeavouring to secure a set, notwithstanding what anyone may have to say to the contrary, and I hope I should never be found to be egotist enough to give forth any system of mine, or hold exclusively to the pet system of anyone else, as being the *sine qua non* system of Peach treatment during the time of setting.

We all know what sunless weather we had for Peach-setting during the first weeks of January of this year, and what an anxious time it was for gardeners who had anything to do with early Peaches. The young man in charge of my Vineyard and Peach-houses appeared to be quite as much alive to the jeopardy of the situation as I was, and he had already set to work to do what he knew lay in his power with the camel-hair brush. I was pleased to see the enthusiasm of the youth, anxious I have no doubt for his own reputation to secure a good set. I happened, in passing, to remark that if he brought in a live of bees they would save him a deal of labour, and do the work he was doing so much better. In passing through the next day I found the young man had taken me at my word,

perment another year. I had often heard of it being done, but never before saw it put to the proof.

Perhaps when all is said and done, the best way to ensure a good set is to see that the leaves throughout the season, or in other words, from spring to fall, are kept thoroughly healthy. To effect this no green-fly or red-spider must ever be allowed to obtain a footing. Prevention is better than cure, and by first keeping clear of fly, the leaves become healthy and robust, and in better condition as the season advances, to ward off or resist the attacks of red-spider. In our Peach-houses here, there is one rule which I always insist upon and see carried out, that is "to smoke or fumigate where there is no green-fly," and a similar rule is observed out of doors, which put together makes a very good garden complete. "Hoe where there are no weeds, and smoke where there are no green-fly." This maxim carefully carried out by young gardeners might be the means of steering them safely through and beyond many breakers a-head. *Wm. Miller, Combe Abbey.*

THE GENUS AGAVE.

(Continued from p. 62.)

SERIES I.—CORIACEO-CARNOSE.—Texture of the leaf rigid, not at all fleshy or yielding to the touch when mature. End-spine large, hard and pungent.

GROUP III. SUBMARGINATE.—Edge of the leaf furnished with a distinct horny border in the upper part running down from the end spine.

by Jacobi among [the true *Margaritæ*]. It most resembles in habit the small varieties of *Scolymus*, but may be easily recognised by its decurrent end-spine. It is a handsome plant, the chestnut-brown of the spines contrasting well with the very glaucous lamina. I cannot by the description alone clearly distinguish from this *A. cinereus*, Jacobi, Monogr., p. 51, unless it be by its having very large crowded deltoideus-prickles. If it be distinct this is evidently the place into which it falls.

** GRANDIFOLIA.

23. *A. Hookeri*, Jacobi, Monogr., p. 219.—Leaves 30–40 in a sessile rosette, which measures 8 or 9 feet in diameter, oblanceolate-spathulate, bright green on the face, rather glaucous on the back, 4–5 feet long, 7–9 inches broad two-thirds of the way up, narrowed to 2–5 inches above the dilated base, where it is 2–3 inches thick, the hard pungent end-spine a couple of inches long, and decurrent for a quarter or half a foot, in centre $\frac{1}{2}$ inch thick, the face fittish or slightly concave, the edge repand between the teeth, which are irregular, deltoideus-cuspidate, brown and horny, $\frac{1}{4}$ – $\frac{1}{2}$ inch long, and curve in different directions. Inflorescence unknown.

A native of Mexico. There are two fine specimens at present in the Kew collection, from one of which Jacobi's original description was taken, but it has never flowered. One of them, which came from Mr. Wilson Saunders, has prickles considerably smaller, and more distant than in the other. I cannot distinguish from this *A. Fendleri*, Jacobi, Monogr., p. 221, of which I have seen an authenticated specimen in the collection of Mr. Saunders, nor *A. inaequalis*, K. Koch; Jacobi, Monogr., p. 53, which I know from description only. If they are the same species the latter name, being the oldest, ought to be maintained.

24. *A. (Eugenia) Salmiana*, Otto; Jacobi, Monogr., pp. 52 and 221; Rev. Hort. 1873, p. 573, table 40, and 41; Garden Chron., 1873, p. 15, tab. 31.—Acaulescent. Leaves 12–30 in a dense rosette, which is often 5–6 feet broad, oblanceolate-spathulate, 2–4 feet long, 4–6 inches broad above the middle, narrowed to 3–4 inches above the dilated base, where it is 2–3 inches thick, a dull slightly glaucous green, the face more or less concave, the end spine $\frac{1}{2}$ –2 inches long, hard and pungent, decurrent for 2–3 feet, the teeth deltoideus-cuspidate, $\frac{1}{2}$ inch long, chestnut-brown, hooked up or down. Scape reaching a height of 20 feet exclusive of the inflorescence. Panicle thyrsoid, 6–8 feet long, with erect-patent branches and flowers in dense clusters. Perianth greenish-yellow, 4 inches long; ovary oblong-trigonus, above 2 inches long; tube narrowly funnel-shaped; segments oblong. Filaments 3 inches long; anthers linear-oblong, nearly $\frac{1}{2}$ inch long.

A native of Mexico, now one of the commonest kinds in European collections. I am not aware that it has ever flowered in England, but the inflorescence has been twice figured—once in the *Revue Horticole*, as just cited, from a specimen that flowered with 3, and again in Peck, near St. Germain-en-Laye (Seine et Oise), in 1871, and in the *Gardeners' Chronicle*, from the collection of M. Thuret, at Antibes. In general habit it closely resembles *A. americana*, from which it may be told at a glance by its denser colour, and decurrent end-spine. It varies greatly in size, and also in the breadth of the leaf in proportion to the length. So far as I am able to judge, a large number of species founded or adopted by Jacobi should range here. Of those of which I have seen specimens in English collections, which I have no reason to doubt are properly named, I would refer to the typical form of *Salmiana*, *A. atroviensis*, Karwinsk., Jacobi, Monogr., p. 55 (a name of earlier date than *Salmiana*, having been first published by Salm-Dyck in 1834); *A. tohuacensis*, Karwinsk.; Jacobi, Monogr., p. 60; and *A. Jacobiana*, Salm-Dyck; Jacobi, Monogr., p. 57. Of those of which I have seen descriptions only, I cannot separate from typical *atroviensis* by any definite character *A. Canariensis*, Jacobi, Nachtrage, ii., p. 22; *A. asperifolia*, Jacobi, Monogr., p. 61; *A. Sibirica*, Jacobi, Nachtrage, ii., p. 54; *A. deBorjiana*, Jacobi, Nachtrage, ii., p. 72; *A. Ottonis*, Jacobi, Mon., p. 263; and *A. gracilis*, Jacobi, Nachtrage, ii., p. 66.

Var. *A. latissima*, Jacobi, Monogr., p. 41.—Leaves broader in proportion to length than in typical *atroviensis*, 2–3 feet long, by 8–9 inches broad above the middle.

From this I cannot separate *A. Lehmanni*, Jacobi, Nachtrage, p. 21; *A. microforis*, Jacobi, Nachtrage, p. 20; and *A. variolata*, Jacobi, Nachtrage, p. 22.

25. *A. (Eugenia) cochlearis*, Jacobi, Nachtrage, ii., p. 67.—Acaulescent, forming a sessile rosette to feet

broad. Leaves oblong-spathulate, 5–6 feet long, above a foot broad, 5 inches thick at the base, opaque green, with a deeply excavated face, the very stout pungent brown end-spine decurrent for some distance, the middle-sized deltoideus-prickles curved variously. Stem reaching a height of 26 feet. Inflorescence thyrsoid, the flowers in dense clusters. Flowers yellowish green, above 4 inches long; ovary cylindrical-trigonus, above 2 inches long; tube $\frac{1}{2}$ inch long above the ovary. Filaments 3 inches long; anthers linear-oblong, $\frac{1}{2}$ inch long.

A native probably of Mexico, described by General Jacobi, in full detail, from a plant that flowered at Stuttgart in 1867. It may, perhaps, prove to be a giant form of *A. atroviensis* var. *latissima*, as the account of the inflorescence quite bears out this idea. *J. G. Baker.*

NOXIOUS INSECTS.*

I BEGIN by making one or two assumptions, which I presume will be granted me, but which, if disputed, can be easily proved. I assume that, besides the occasional great injury done by insects by which whole districts are ravaged, a continual drain is constantly kept up by them which constitutes a very perceptible per-centage of deduction from the cultivator's profits. I say that much of this is preventable, but I do not make this one of my assumptions. All the length I go is to assume that where it can be prevented at less cost than the loss it occasions, it should be prevented.

So far, I imagine, we must be all at one, but we may not be all at one as to the possibility or means of prevention, or at least of prevention except at a price greater than the loss that would be sustained by leaving matters as they are. I do not mean mere money cost—that would be easy to deal with, for whenever you come to actual figures you can cipher them out, but I mean the interference with a man's liberty of action in conducting his own business. That is the critical point of this question. How far it would be wise, and under what precautions it would be desirable, for the general benefit to interfere with the inalienable privilege of an Englishman to do what he likes with his own!

Before accepting any proposition tending in that direction, we should require not only to be satisfied that the object was really for the general interest, but also that it can be attained in no other way. That the object is for the general interest is one of the assumptions that you have permitted me to make; and that it can be attained in no other way than by entrusting power to some executive authority will be plain if we consider for a moment the nature of the work contemplated. If we wish to rid a district or a country of an injurious insect, and if, as is very generally the case, we have the power of doing so by attacking it at a particular date, and in a particular manner, it is obvious that to be effective the attack must be simultaneous and combined, for to what purpose would it be, if I cleared my farm while my neighbour did not clear his; or if I cleared mine one year and he cleared his another? We should each preserve an ample reserve of our pests to replenish the cleared fields of the other. A central authority, therefore, a power to which both he, and I, and every other farmer in the district, must bow, is needed to secure united action, and what is such an authority but paternal government, compelling us to obedience for the good of the whole?

As to the advantage of the general principle of stamping out, and the necessity of an executive authority to direct it, there cannot, therefore, be much difference of opinion, but there remains the more difficult question, how much and what kind of interference should be tolerated, and by what safeguards it should be surrounded, and how far it is workable or not? The administrative machinery by which it should be carried out need not concern us. If Government resolve to interfere, it must fall to them to make their own plans and find their own tools—but as a contribution towards elucidating the various points which they would have to consider, I think I may usefully draw attention to a few of the different ways in which interference might be beneficially exercised.

The simplest, and most powerful, and the most efficient of these is what I may call county or district rotation of cropping.

The great majority of vegetable-feeding insects do not feed on all kinds of plants indiscriminately; most of them are restricted to one kind of plant, and if by cultivation of that plant its numbers are enormously increased, so will naturally be the number of the insects that feed upon it, while, if we should cease to grow that plant, the number of the insects would correspondingly diminish. Thus, for instance, if a district is almost entirely in pasture, there will be very few Wheat feeding insects in it, but if it is turned into a Wheat county they will be in myriads. If these numbers reach such a pitch as to deteriorate the crops the remedy is plain. Change the rotation, and grow some other crop instead of Wheat. Allow me to illustrate this by an actual example. Last summer I spent the month of July at Broadstairs. In my rambles about the place I was immediately struck with the Wheat crops. At a little distance they looked tall and strong, but on examining the ears I found them so ill-filled that I should have said they were only three-quarters filled. The blade or leaf was throughout almost entirely white and dry, and I have no doubt that if I had asked any farmer what was the cause of the poor ears he would have said drought, as shown by the bleached and dried-up leaves.

But although he would be quite right in describing the deficiency of weight in the ear to the failure of the leaf, he would in this instance have been wrong in ascribing the failure of the leaf to drought. It was due to the milking of the larvae of a small fly named *Agromyza graminis*, which lays its eggs under the skin of the leaf at its tip. From thence the young larvae mine downwards, feeding on the parenchyma of the leaf, leaving nothing behind them but the empty husk, consisting of the upper and under walls of the leaf. If the leaf is small they entirely consume the interior; if large they may not reach entirely to the bottom of the leaf, but will have consumed about three-fourths of it before they pass into the pupa state—as may be seen from some leaves which I have preserved, and which I hand round. Now, of course, I cannot tell what amount of damage this insect did. I have said that the ears seemed only three-quarters filled. They continued so until reaped. Let us suppose that this is too much by half, and take an eighth. This would give a loss of upwards of 12 per cent. on the grain crop, and to make the margin still wider, and the figures more manageable, let us reduce it to 10 per cent. The actual percentage of loss is not of much consequence if I can satisfy you that it was considerable, and my object is less to show the amount lost, than where it falls.

Now we all know that the total yearly produce of a farm has to be distributed between three accounts—one is in repayment of the cost of cultivation; another is in payment of rent; and the third is the tenant's profit. It is plain that no reduction can be got either from the expenses of cultivation or thereon on account of this insect damage. The tenant or cultivator has to lose the whole of it, and you will also see that although the loss on the whole crop may only be 10 per cent., that is by no means the percentage of the loss on his profit. If, for example, we suppose that the tenant's profit on the entire produce is one-third, and that the total gross produce of the Wheat crop was £500, 10 per cent. loss on that is £50, 10 per cent. loss on the tenant's profit would only be £16, whereas a deduction of the whole £50 would be equivalent to a reduction of 100 per cent. on his profit. So that in its present state (entirely a cultivator's question) The landlord (not a cultivator) has only a prospective interest. If arrangements could be made by which such insect damage could be annihilated, no doubt as losses terminated a readjustment of rent suited to the improved production would take place, but in the meantime it is the tenant who suffers, and who will be first benefited by stamping out such insects.

Now a change of crop, if carried out over a sufficiently wide district, supplies an easy and effectual cure for the attacks of this insect. Its habits lend themselves to such a remedy. It feeds only on Wheat and a few allied pasture grasses. At Broadstairs there were crops of Barley and crops of Wheat growing side by side, the only separation between them being a footpath, not 2 feet in width, running through the field; and while, as I have said, every Wheat blade was matted, I could not find one touched on the Barley, which, by the way, had correspondingly escaped damage. Furthermore, the insect is only an annual. If it could be banished for one year it would

* Abstract of a paper read at the Society of Arts meeting on June 2.

be banished entirely, or until reintroduced. Now if there were a controlling authority in that district, what would be easier than to say to the farmers, "Gentlemen, in the common interest you will substitute Barley for Wheat in your next year's rotation." The fly, deprived of its proper nidus, must then either lay its eggs in an unsuitable place, where they will perish, or have recourse to the pasture fields for *Triticum repens*, or other suitable grasses. By this of course the fly would not be exterminated, but its numbers would be so reduced as to render it comparatively harmless, at all events for a time, when, if it again reappeared in force, the same means of defence could be again resorted to. May it, might be so arranged that two or more countries might brigade themselves together, so as to establish a permanent see-saw by which they should play into each other's hands. But you will observe that no single man can carry out such a rotation. He may try it upon his own fields, but they will be replenished continually from the fields of his neighbours, unless they at the same time are compelled to follow the same rotation. Gentlemen, it is for you, who know the respective capabilities of soils, and the relative returns of Wheat and Barley, to say whether you would prefer to suffer a heavy yearly per-centage of loss, or to submit to the substitution of barley or some other crop instead of Wheat for a single year.

And if you thought it desirable to do so, can there be any difficulty in carrying it out? I could suggest half-a-dozen ways. Power might be given to the Lords of the Privy Council to carry it out at their own discretion and *ex proprio motu*, or to carry it out on the requisition of the county authorities, or on the requisition of a committee of the farmers of the district appointed for the purpose of dealing with insect pests and similar questions; or an insector might be appointed for every county, with the requisite power and authority; or a central board of experts might be appointed for the same purpose, but with wider jurisdiction; or each county might have a board for itself. Any man can plan out a scheme for it; but I think no man will maintain that there is any insuperable difficulty in devising means that will answer the purpose.

Before leaving this point let me remind the meeting that the plan of excluding for a year a particular crop from the cultivation of a district will apply to almost every crop that we grow, whenever the insect is an annual (that is, does not live over one year), and this includes by far the greater number of injurious insects.

The next means of extirpation to which I shall advert is burning the nidus, in which the insect, in whatever stage, passes the winter, and I may take as my example the species of a small fly belonging to the genus *Chlorops*, some of which attack Wheat, others Barley, others Rye, &c. The larva makes a channel in the stem of the corn, causing abortion of the pickles, and gives it a twisted, striped-looking appearance (as shown in the diagram), which on a superficial examination might be taken for the work of sparrows. The fly remains about the ear for many weeks after it is thrashed, and may be found in great numbers in winter in a semi-torpid state among the chaff. Now it is not an intolerable abuse of the privilege of doing what a man likes with his own, that my neighbour should be allowed, for the sake of small profit he can make out of his chaff heap, to preserve such a focus of infection to destroy my future crops. He should be compelled to burn it. In like manner we want some one to compel the burning of the heaps of Couch-grass and weeds gathered from foul land instead of keeping them to rot into manure. These are the focus and shelter-place of wire-worms and other pests, and contribute largely to their spread.

To the same class of remedies belongs the local treatment which I recommended for the Onion-fly. The plants attacked are readily distinguishable from those that have escaped; the former are sickly, flaccid, and yellow, the latter firm, erect, and green; and those attacked can easily be picked out and burned. Each plant attacked contains a nest of larvae in the stem or bulb, as shown in the diagram. If these are destroyed the whole future family is annihilated.

The Carrot plants attacked by the Carrot-fly are equally easily distinguished and destroyed, but it is not certain that the grubs in them keep always to the same root. But both with them and similarly destructive insects that infest the Cabbage and Turnip,

a year's avoidance of that crop throughout the district will relieve it from them.

Next comes the remedy, in the shape of some application that is fatal to the insects. This is the plan adopted in America for the destruction of the Colorado beetle, where Paris green is dusted in powder or sprinkled in solution over the larvae on the Potato plants. It is the plan used by our horticulturists to get rid of the red-spider in their hothouses, where sulphur is the medium. Manufactured into Gishurst compound, or made up into some soapy solution, sulphur is also largely used by them to destroy greenfly. Sulphur has also been successfully used on a small scale against the hop-fly, and might be advantageously used on a large scale. There are various other supposed specifics (such as hellbore for the Gooseberry caterpillar, &c.), which are more or less in favour with different individuals. As a remedy, however, such applications seem better adapted for individual protection than combined stamping-out, although it would be foolish to forego the advantage of using them where they seem to meet the requirements of any special case. Such a case most certainly is the destruction of what are called ticks and lice upon sheep. Every one knows how readily such vermin can be communicated by contact or even proximity, and it does seem a very hard case that a man, who has kept his flock clean by taking proper precautions, should be liable to have them infected by a neighbouring neglected flock, by stray sheep, or even by sheep passing along the road. I have no personal knowledge on the subject, but I am told that, *caeteris paribus*, the difference in value between a sheep that has been kept clean for the season and one that has been worried by vermin will be 20s. If that is so, I wonder that sheep farmers have not long since clamoured for some supervision.

The picking and gathering of the individual caterpillars, or perfect insects, is a remedy that has been tried largely on the Continent, but without any marked success. For ordinary crops it is much more clumsy than a change in the rotation, and for crops which cannot be so dropped out of rotation, as fruit or forest trees, it is almost impossible to collect the larvae efficiently. At the same time it is right to add that this *schœnleuge*, or caterpillar collecting, can scarcely be said to have ever (any more than any other plan) had a fair trial, it being generally been conducted without regular system or combined and simultaneous action over a wide extent of country.

There remains the last refuge of all invaded countries, namely, destroying the resources of the country before the invaders, that they may perish for want of food. This can rarely be necessary, but beyond doubt it will be the proper course to follow should the Colorado beetle gain a footing in this country. In that event the first that we shall hear of it will be that the larva has appeared in some Potato patch near Cork or Londonderry, Liverpool or Glasgow. The instant this is perceived the vines of the Potato field should be cut to the ground, and Paris green scattered over the field.

But that is not a course that can be adopted even in a case of such urgency and importance, unless there is some central motive power having the necessary authority to act; for the notice that the Colorado beetle will give will be very short, the larval stage in which alone it can be successfully encountered only lasts about a fortnight, and, if no previous preparations have been made, I leave any one who knows the slow grinding of our administrative mills to say what chance there is of the larva having grown big enough to be noticed; of somebody having noticed it and reported it; of the report being considered and a course of action resolved on; of officers or agents being appointed to act; of their providing the necessary apparatus; and of their reaching the spot and putting them in operation—all within the short space of fourteen days.

The possibility of such a call for action occurring is an additional reason for getting some sort of executive machine rigged up that could on sudden emergency deal with such an event.

I have nearly exhausted the list of my suggestions, but there is one which I must not forget. It is very small, but in my view very important. Let us by all means call on the cultivator to give notice as soon as an injurious insect appears in any numbers on his farm; but do not trust to him. Promise a reward to the first person who shall communicate the intelligence of such a pest appearing. There are more entomologists scattered about the country than you think of.

It may be that you would have some erroneous and some false reports, but proper precautions against deception could be taken. Specimens of the insects might be required to be forwarded; and even although some deception and cheaterly did take place, it could be endured.

There remains another point which, supposing you to go in the line along with me, must also be considered, and that is, what the action of this Conference should be in regard thereto. If I might offer an opinion, it humbly appears to me that its office is rather to give a general verdict upon the importance of the subject and the practicability of dealing with it than to enter into the discussion of details which should more properly be left to the Government, who will be responsible for them should they resolve to deal with the subject. *Andrew Murray.*

THE MANCHESTER ORCHIDS.

THE magnificent show at the Botanical Gardens, Old Trafford, that must now be reckoned as a thing of the past, has doubtless in many a case left impressions and pleasures that will long remain in the memory, and find matter for congratulation and reflection, not only in the present but also in days that are yet to come. To the rosarian what finer display could have been desired? In what respect could the plans and groups have been improved? To the lover of the more stately forms of foliage and flower there was much to rejoice over, and to cause wishes and resolves to become the owners of similar, or at least the early beginnings that might ultimately grow into such fine masses of colour and forms of beauty. To those who are more interested in the commoner but still beautiful gems that we class as herbaceous, there were several collections comprising richness and variety that left nothing to be desired. To those again who make the Orchids more especially their study and care, there were such a number of grand specimens, finely bloomed and varied in colour, that there can be no doubt that for some time to come this show will be looked to and spoken of as pre-eminently a feast of Orchids. Your ample report has done full justice to the many shown, and none can complain of being overlooked or slightly noticed. Whilst not wishing in any way to supplement that report, there were several plants exhibited that hitherto have not, as far as my memory serves me, been staged in the exhibition-house at Old Trafford, which seem to me deserving of just more than a passing notice. That at one show such new and good things should be displayed to the public, at the same time giving opportunities to plant-lovers to see that even now all have not been obtained that the eye may feast upon, speaks much for the enterprise of those who are continually adding to the riches of our stores, and also for the care and patience of others who have succeeded in hybridising and successfully bringing to perfection such showy and new forms. In the collection of sixteen exhibited by Dr. Ainsworth what could be finer than the two seedlings named in honour of the learned and worthy Doctor? Its free blooming periods, *Dendrobium Ainsworthii* inherits from both its parents. The dark rosy purple of the labellum of both, and the pure white in one case and the rosy-tinted sepals and petals of the other, combine to make these welcome additions to an already rich family. Mr. Mitchell has brought them up this time in splendid condition, which leads one to hope that as they increase in size, they will also be even more showy and attractive. Passing to the group of Mr. Wigley, we therein met with one, new to the great majority who beheld it, which at most has only been in cultivation for about three years, I refer to *Thunia Marshallii*. This will make a fine companion to *T. Bensonii*, which it much resembles in growth and manner of flowering, bringing its heads of large white flowers, with yellow and crimson lip on the top of the new growth. There can be no question that now it has been seen in such fine condition it will be eagerly sought after, and find a place in many a collection. Mr. Hatterley must be congratulated on the excellent manner in which he exhibits these *Thunia* among his other fine plants. In Mr. B. S. Williams' group we observed a fine plant of *Oncidium concolor*, and, though not quite new, it has not been seen in such flourishing condition here. Looking at this plant one is reminded of the time just over five years ago, when the known plants of this in the country were considerably less than a dozen. Two of

these were in the collection of S. Mendel, Esq., and at the time of the sale one was disposed of for seventeen guineas, the other fetching nine guineas. Since then, however, great numbers have been sent home, and now good flowering plants may be purchased for much smaller amounts. The pendulous spike of self-coloured yellow flowers is very distinct and pleasing. In Messrs. Kollisson's group we met with a grand spike of *Oncidium Marshallianum*. This has been known to Orchid growers, by name at least, longer than any of the preceding, and yet is very seldom seen in flower. In this instance it carried a spike about 4 feet long, with several laterals, on which were a number of large bright yellow flowers marked with spots of a rich brown colour. It is certainly a fine and highly desirable species, and, coming from the same native habitat as *concolor*, will doubtless succeed under similar treatment. A plant of *Odontoglossum cirrhosum* was also exhibited among the new plants, and there can be no doubt that among the recently imported plants there will be many that will exhibit forms that will come up in every respect to the very glowing description with which it was first introduced to the notice of plant lovers. *W. Swan, Fallersfield, May 29.*

BLAIR ATHOLE.

(Concluded from p. 684.)

FROM the lawn we entered Glen Banovy, and a superb pheasant covert planted with rare shrubs. Higher up in the forest, Glen Banovy becomes a mere ragged watercourse across the moor. A young *Pinus nobilis* in this sheltered cover has grown 5 feet 6 inches in length within the last three years. It stands in a favourable situation, next a *Bird Cherry* and a "Snowberry," the noble and the humble side by side, as must often happen when the owner of Athole and his guests and keepers enter this covert together. But the nobility among shrubs do not thrive in a thick cover. They apparently require air and more space in which to develop themselves. The *Rhododendron indicum* holds its own here in the shade, but even there, as common *Berberis*; the *St. John's Wort* and *Savin* are tolerably at home; the *Weigela* roses adds to the variety.

From this ducal pheasant covert we crossed the Banovy, near a Spruce of unusual height, rising from the water's edge 140 feet, according to careful measurement. It is the largest Spruce I have seen, with a bole diminished in apparent size by its height and reduced in apparent height by the low position which the tree occupies. The measurement is 9 feet 11 inches at 5 feet from the ground, and the bole holds nearly the same girth to a height of 40 feet, and then tapers slowly to the lofty top. The parling brook loses itself here amongst the foliage of "Diana's Grove," and in this secluded spot, on a shelf above the stream, are the four remaining Larches of 1738. These trees are about 90 feet high, and the largest contains about 400 cubic feet of timber. Judging from their appearance, the proper distance apart for specimens of this kind would have been 13 yards, which is the actual distance between the trees in one direction, while in the other they stand at 8 yards, with some injury of the foliage and mutual repulsion that has sent two of the trunks away from the other two and caused a leaning up-hill and down-hill, and, as it happens, north and south.

Above, upon the banks, there are some handsome Conifers and evergreens. The Castle, in its full view, and on the left are the ruins of the old church of Blair, with a surrounding graveyard full of mouldering Stewarts, and thickly set with ancient grave-stones. The late Duke George was buried here in 1864. From the house the enclosed ruin on its knoll, surrounded by masses of *Vew* and *Box* and other appropriate foliage, forms an interesting point of repose in a delightful landscape. Great Ash trees partly surround it, and behind is a bank of Conifers, screening it from the factor's residence, the only remaining house of the old village of Blair, removed by Duke James in 1750.

Among the Conifers are *Abies Menziesii* of 50 feet, *Picea Pichta*, *Abies nigra* of 55 feet, the *Hemlock Spruce*, *Abies Albertiana*, *A. Douglasii*, and a common *Silver Fir*, of late habit of growth in spring. There is a nursery for young trees here which we crossed, and then followed the noisy Banovy, running below in a deep channel through a noble wood of Scotch Firs of eighty or ninety years' growth, which have in many cases each produced a cubic foot of

timber in each year of their age. A Beech wood thriving on a gravel soil followed, and then a wood of Scotch Fir and Bech mixed on a rubble glistening with mica. We are here ascending the slope of the Grampians, which terminates in the glen below us. A fall from the edge of our path would land us in the stream 250 feet below, but for the saving aid of trees upon the steep. The Mountain Ash became "Thor's helper" in just such a place as this. He was burying through the woods on some improper enterprise or other, when he slipped over a steep glen side, and was saved from falling by a Mountain Ash. The head of a great Scotch Fir might here receive him, or he might grasp one of their blushing trunks. We enter another Scotch Fir wood, old, with Fern and Heather below, and an occasional green carpet formed of *Whortleberry*. Then comes a stone dyke, and beyond it is the open moor, with the Banovy a mere burn scouring its wild surface; and two trees stand on its bank, outside the dyke, are the last trees in this direction for 20 miles. And this is the general character of Blair Athole—woods and plantations on the lower slopes, and then the bare moorland.

Turning southwards through Heather and plantations, a roe-deer started from our path, and a capercaillie went off upon the wing; he would have been better roasted, and served in the summer-house hard by. There are seats at "The Whim," which stands on a conspicuous site in front of a young plantation, with specimen Firs around, a pleasant prospect of the park, the valley of the Garry and its boundary mountains. Nature endowed this locality with the Garry and the Tilt and much uneven ground, and Art has added a castle and park, and woods which encircle several of the hills.

From the Whim we turned into Craig Urard Plantation of old Scotch Firs, which have reached the maximum height attained by this tree under ordinary circumstances, from 70 to 80 feet. There are eight trees per acre, straight and clear in the bole, and measuring in many cases 70 cubic feet—50 cubic feet is a good plantation tree. The soil is a micaceous rubble on rock. This was once a sheltered spot for deer during storms upon the hills outside, but they are now excluded by wire fencing, put up for the sake of some young plantations. There are about 500 acres of this fine old plantation, and as our road ran across the slope, we had around us a fine array—ranks of red trees below, regiments of red trees above, all wearing dark green caps. We next strolled up the valley to Brnar Water, through Balfan Wood, containing 800 acres of Scotch Fir, six and ten years old, and about to be thinned for the first time. Brnar Water has been elsewhere noticed. *H. Evershed.*

Forestry.

THIS is the season of the year at which all young and middle-aged plantations should be carefully and minutely gone through, and every tree examined. Not that each individual tree is either to be actually handled or operated upon, but the eye should be allowed to fall, and so far rest upon each tree, as to detect anything unnatural or wrong. When this is done, it is always found that the labour bestowed is not only well remunerated financially, but the pleasure and satisfaction emanating from it are such as only those who know delight in the beauties and perfections of properly managed woods and plantations.

The work to be done in different kinds of plantations, and upon different individual trees, varies so greatly, that only general directions can be given with safety. At the present time I am extensively engaged with such work, and proceed with it in the following manner. The subject in hand is a mixed Pine, Fir, and hard-wood plantation, ten years old, situated in a valley sloping towards the sea, but distant from it a few miles. The crop of trees consist chiefly of Norway Spruce, Larch and Silver Fir, Black Italian Poplar, Ash, Elm, and Oak. It was planted with the view of affording shelter to the arable land surrounding it on all sides, of beautifying and adorning the landscape, and of affording wood and timber for the requirements of the estate. When the plantation was formed, some of the adjoining tenants demurred to the sacrifice of some pieces of the arable land, although fully compensated for the loss, asserting that they would never derive any benefit by way of shelter during their nineteen years' lease. Little more than half the lease is yet run, and there is already splendid shelter afforded. This is the sixth time the plantation has been gone

over, and every tree attended to according to its requirements; and no one seeing the plantation now would say the attention and labour have been vain or ill-bestowed. The rapidity of growth has doubtless been greatly facilitated by allowing every individual tree the necessary amount of freedom which its habit and constitution demanded, and the uniform and rapid growth again has urged the constant attention bestowed. The reader is doubtless desirous to know what has actually been done in this plantation, and why it has required so much attention. The first matter attended to after planting was to see that no plant was overgrown with rank grass or other herbage; and at the same time to see that all were alive and in a growing state, so that no blanks or open spaces would occur. This was repeated each of three successive springs, till all the trees were above such intrusion. After the fifth year's growth the more rapid growing trees began to overgrow, and injure those less favoured, such as the Spruce overgrowing the Oaks and Elms, and the Poplar overtopping the Spruce, &c.

From various causes trees of various species are less or more liable to have their leading top shoots injured, and when this occurs it induces the top to divide into a plurality of leaders. Unless such trees are timely attended to by pruning off all except one, and that the most eligible, the tree would be rendered comparatively valueless, sometimes not worth room at all in any plantation. This, then, constituted part of the work referred to. Hard-wood trees are especially liable to produce, not only double and divided tops, but to produce a plurality of stems springing from the neck of the tree close to the surface of the ground—the remnant often of the tree either being too large when planted, or of the soil being too poor, cold, or wet to properly nourish the main stem; hence sickness or death of the stem, or part of it, and the young shoots springing out of the vital part below. This is one, and probably the most important branch of pruning, and had also an important place amongst the operations of work referred to. Regulating the distances between the trees is also a branch of forestry of vast and vital importance, and is generally spoken of as the art and practice of thinning—a subject of itself sufficient to fill volumes.

As practised upon the subject in hand, however, it only extended to the operation of relieving any seriously injured tree, and specially such, as from too close proximity were losing their proportional growth by inducing top growth at the sacrifice of the lateral or side growth. The plantation, as already stated, is situated in a valley, and one part of it is a ravine, which extends throughout its entire length. This and all similar ravines are liable to be filled with snow-drift at times, and, as is well known, it is only at a particular stage of growth that the trees suffer from accumulation of snow. When below 2 feet high they yield to the pressure, and will remain weeks flat upon the ground covered with tons of snow, and rise erect and uninjured when it melts, and they are relieved. Again, when the trees are sufficiently tall and strong to resist successfully the pressure, no evil, of course, occurs from snow-drift. It is only, therefore, at the middle stage of growth, and while the stems are clothed with branches near to the ground, that most damage is sustained, and in regard to the subject in hand, it has to be stated with regret that no small amount of injury has been inflicted by last and bygone winter's snow-drifts. With skill and timely attention, however, the evils have been remedied chiefly by means of raising those crushed down; lopping off shattered tops and side branches; splinting and bandaging tops partially broken; placing stones over the roots of those partially torn out of the ground, and other attentions suggested on the ground, and numerous to be here mentioned. *C. Y. Mills, Culten House, June 2.*

"THE GOLYONS OAK."—This wonderful tree, which overspread 452 square yards of ground, grew on the estate from which it takes its name, about 4 miles from Newport, in the county of Monmouth. The diameter of the main trunk was 9½ feet, from which grew exclusive of dead limbs, twelve branches, the largest of which contained 472 feet of timber, and the whole product of this enormous Oak was 2426 feet. Its bark, which round the trunk measured 3 inches in thickness, was estimated at 6 tons. From the rings in the bark it was calculated that the tree had been growing upwards of 400 years, and from many of its lateral branches being dead and broken off, it is presumed it must have stood after it had attained its maturity little short of a century. It was purchased by the late Mr. Thomas Harrison, many years pur-

veyor of Plymouth Dockyard and Dean Forest, in the year 1810, for 100 guineas, and when converted its total product was valued at nearly £600. The above was copied from an engraving published by the celebrated publishers, Boydell, Chesapside; T. Clay, Ludgate Hill; and Colnaghi, Cockspur Street. *Journal of Forestry.*

Notices of Books.

L'Olivier, &c.: *The Olive Tree, its History, Botany, Cultivation, Products, Commerce, &c.* Par A. Coutance. Paris, Rothschild. 8vo, pp. 443. Xylog. 120.

As may be judged from the title which we have quoted in brief, this is an ambitious volume, dealing

by the other trees to become their king, and the author proceeds to moralise on the subject of elective monarchies! The Mount of Olives, with its most hallowed associations, next comes under review. From it we pass to the Olive as known to the Greeks—the emblem of Minerva, the symbol of peace, the reward, in the form of a wreath, of valour and discretion. But classical literature alone has not sufficed for M. Coutance. He gives us a brief list of the principal modern works on the subject before he plunges into the more technical details connected with its natural history. The author has attempted, with what success we will not venture to say, to group all the most important varieties under sixteen groups, under each of which is ranged a number of synonyms. Woodcuts of some of these varieties are given, showing considerable variation in the fruit and in the

indestructible. Cut them down they spring up afresh, a fact known to Virgil—

“Quin et emulcibus secitis, mirabile dicta,
Truditur è sicco radix oleagina ligno.”

In south Europe the Olive is generally grown on terraces, on the slopes of the hills, carefully banked up and often artificially made with soil brought from the valleys. A single tree may be the property of a single proprietor, or the crop it yields may be even more subdivided as to its ownership. As to cultivation local proverbs say that by digging the ground you ask the Olive to yield fruit, by manuring it you press it to do so, and by pruning you compel it to do so; the latter process however naturally requires to be done with judgment, and if we mistake not many of the finest Olives as to produce are all but untouched with the pruning knife in Italy. As to manures, nothing



FIG. 116.—OLIVES ON THE CORNICHE ROAD NEAR MENTONE.

with a very large and manifold subject. It is got up in excellent style, the paper is good, the typography clear, the woodcuts numerous, and many of them beautiful. Commencing with the history of the Olive the author passes on to botanical details, to the districts wherein it is cultivated, the method of cultivation, the diseases to which it is subject, the manner of gathering the Olives, the mode of expressing the oil, and the uses made of it. Under these headings the author has massed together a large amount of useful information, and much that is interesting to the general reader. Few trees indeed can boast of more varied or hallowed associations. Our author begins with a dramatic rendering of the liberation of the dove from the Ark by Noah, and its return with the Olive spray in its beak as a token of the abating flood. Then we are reminded how the Olive was solicited

stones. As to the various districts in which the Olive is cultivated, as in Syria, in Greece, and in the Mediterranean region generally, the author gives full details. How great is the difference in climate even within the limit within which the Olive can be cultivated at a profit may be seen by the traveller as he passes by rail southward from Lyon to Nice, and the Riviera, or from the summit of the Apennines towards Florence. How different the miserable scrubby trees one sees north of Marseille, or high up above Pistoia, and the noble patriarchal trees met with on the Riviera, especially near Mentone. An illustration (fig. 116) which we take from an earlier volume, of an Olive tree on the Corniche Road near Mentone, shows an Olive tree in its noblest guise. The age such trees attain to is hardly to be estimated. We must confine ourselves to saying that they are almost

seems to come amis to the Olive. Very generally the rocky nature of the countries in which it grows prevents any great depth of soil, and hence what there is requires to be enriched in any possible manner. About Mentone a mode of root pruning and manuring is adopted which is not mentioned by our author. A trench some 18 inches or 2 feet wide, and as much in depth, is cut in a semi-circle at a few feet from the base of the tree. This is left open for a little, and subsequently filled in with what Kentish hop farmers know as shoddy—old woollen rags of the most varied description, but all having the common characteristic of frownsness to an almost incredible degree. From a dirty monk's dirtier robe or a soldier's blood-stained coat, then, come the rich Olives and the limpid oil.

We have not space to follow the author in his account of the fabrication of the oil, nor in his very

interesting account of the virtues, real and imaginary, that have been attributed to it. It must suffice to say that the chapters devoted to the symbolism connected with the oil, and the use made of it in religious ceremonies, is one of the most interesting in the book. The author, penetrated with a love of his subject, has collected together a large amount of miscellaneous information not otherwise readily accessible, and has placed it before his readers in an attractive and interesting form.

Aperçu Systématique des Usages Végétaux, &c.
Par A. Fischer de Waldheim. 4to. Paris, 1877. Labure, pp. 51.

This treatise is dedicated to the International Congress of Botany at Amsterdam, and is merely a preliminary sketch, with a view to a more perfect illustration of the subject. The author has taken great pains to collect every possible information, but from the scarcity of English publications in some of the Continental Herbaria he has not been able to give characters of all the species that have been published in this country. This however will ultimately be remedied, since he has applied for information on described or unrecorded species, which has accordingly been forwarded. Meanwhile we beg leave to recommend this to students who are desirous of knowing what species have been described. The work includes characters of 127 species, referred to seven genera, and though possibly some more varieties are raised to the rank of species, it is well to be able to refer at once even to these. In one case we have noticed a "double emploi." It is however quite certain that several distinct species occur on the same matrix, as is more especially the case with those found on the different species of *Polygonum*, some of which are local and extremely interesting, while others abound in very distant parts of the world. They all agree in a more or less intense lilac tint. The germination of the common Bunt (*Tilletia caries*) is so interesting that we hope that our author has extended his observations in this direction. It is curious that wheat in the United States suffers from a quite distinct species, but having a same disagreeable foetid smell. Information on specimens will be thankfully received if addressed to the author at Université, Varsovie. M. J. E.

PUBLICATIONS RECEIVED.—Dr Volksgärtner (Buda-Pest).—Le Balletin Horticole.—The Orchard Grower's Manual; by B. S. Williams (fifth edition).—Tropical Agriculture; by P. L. Simmonds (Spon).—Familiar Wild Flowers, part 3.—Balletin d'Arboriculture.—The Gardener.—Balletino della R. Società Toscana di Orticultura.—Botanical Tables for the use of Junior Students, by Arabella Buckley.—Tropical Agriculture, by P. L. Simmonds (Spon).—Revue Horticole.—Berlin Monatschrift.—American Agriculturist.

Florists' Flowers.

NEW FUCHSIAS.—On p. 206 of the present volume of the *Gardener's Chronicle* it was stated that Mr. J. Lye, Cliffe Hall Gardens, Market Lavington, Wilts, who holds the proud position of the Champion Fuchsia Grower of the West of England, was also a raiser of Fuchsias. In past years he raised three or four varieties that are now greatly esteemed exhibition sorts in the immediate district where they were originated.

Mr. Lye has this season bloomed a batch of seedlings of the second and third year of flowering that were of a promising character in previous trials, and which have this season proved so fine, that he has resolved to distribute a batch of ten varieties, which promise to be invaluable for exhibition and decorative purposes. I have just had an opportunity of inspecting them, and while the habit of growth is generally of a very satisfactory character, the varieties are all characterised by great freedom of bloom, the flowers large, bold, massive, of fine form and most attractive colours. Mr. Lye's determination is not to put his name to anything but what is of decided value for exhibition purposes; and an inspection of his products at the time of flowering leads me to the conclusion that he is in no danger of erring in this direction.

The batch of ten new varieties consists of six light and four dark forms. The former consist of Mrs. Huntley, white tube, delicate flesh-coloured segments, large brilliant carmine corolla, very stout and

large, and the whole flower of excellent form; Miss Lye, blush tube and sepals, with faint lines and somewhat suffused with delicate rose pink, carmine-red corolla flushed with a delicate violet, fine form; Letty Lye, delicate flesh-coloured tube and sepals, deep carmine corolla tinted with purple, very fine form, a most attractive variety; Beauty of Wilts, creamy white tube and very delicate flesh sepals, violet-rose corolla with distinct margin of carmine-red, like a Picotee edge, a charming variety; Blushing Bride, an improved Lastré, delicate flesh-coloured tube and sepals, dark carmine corolla slightly shaded with violet, stout, fine, and handsomely reflexed; and Delicata, white tube and sepals, pale pinkish violet corolla, evenly margined with brilliant carmine, very pretty and attractive.

The dark varieties consist of—James Lye, red tube and sepals, and dark violet purple corolla; an improved Perfection, flowers large, bold, and of the finest form; Charming, scarlet tube and sepals and purple corolla, a grand exhibition variety; Elegance, scarlet tube and sepals, with light blue corolla, fine and showy; and James Huntley, bright red tube and sepals, the latter very broad; rich plum-coloured corolla, changing to pale purple with age; very fine bold flower, stout and well reflexed.

Exhibitors of the Fuchsia especially will find these varieties well deserving their attention. R. D.

Garden Operations.

PLANT HOUSES.

GREENHOUSE HARD-WOODED PLANTS.—Many of the fine-leaved greenhouse plants suitable for table or room decoration whilst in a small state, and for general decorative purposes before they get too large, such as *Lomatias*, *Greivillas*, *Aralias*, and *Rhopalads*, can only be had in suitable sizes by continually working a young stock from year to year. Most of these are plants that will not root freely unless cuttings in a particular condition are obtained; to simply take the top of a young or half-ripened shoot, severing it at the base of a leaf, as usual with the majority of things, would be to court certain failure, as most of the plants can only be had in the root with a certain degree of certainty by making cuttings of young shoots, easily procured from headed down plants taken off with a heel, with a bit of the firm wood at the base attached, such as will be now available from plants that were cut back early in the spring, and that have since broken and made some 6 inches of growth. If the plants were put in a little heat to accelerate their breaking, the cuttings will be in better condition. In taking off cuttings of the above description it is necessary to be more than usually careful not to bruise the bark; use a sharp knife, in all cases cutting downwards from the upper side of the shoot, which means a cleaner cut is more likely to be effected than if the knife was inserted at the lower side; none of the leaves should be removed, simply smoothing the edges of the bark at the base. The cuttings should be put singly in 3 or 4-inch pots, according to their size, half filled with sandy peat, the remainder all sand; submit them to a brisk bottom-heat of 75° or 80°, if such is available; if not they will do stood on any moisture-holding material that will keep the atmosphere round them humid. Cover with bell or nardines, and shade from the sun if they take longer to root than many plants, some as much as three or four months, and should not be fully exposed to the atmosphere of the house until they have got sufficient roots to support them; with a night temperature, such as is easily maintained now for some time, of 70° or 75°, they will require no more attention, attention never letting them get dry. *Droseras* that were headed down in like manner will in most cases have broken several shoots, and as they look the best confined to a single stem, all except the best placed shoot for forming the future plant should be taken off, and struck in the same way as the above.

The present is a good time to take off root-cuttings of *Yucca filamentosa* variegata, which is one of the finest decorative variegated plants in existence, not near so much grown as it deserves to be, and although a very easy and simple to grow in a stove or cold-rooms, and yet is thoroughly at home in a greenhouse or cool conservatory. In the latter place, from its neat, yet graceful habit, and handsome white and green foliage, it is one of the most telling plants that can be introduced, especially when used in sufficient numbers. One of the reasons why it is being more generally grown is the high price that it has realised since variegated plants became fashionable, and a deficiency of knowledge on the part of many growers of the way to increase it to the extent it is capable of. Any one having a good strong plant fully established in a quantity of roots in a 12 or 14-inch pot, may now turn it out. Remove the crotch, shake

the soil away carefully without injuring the roots, which must be disentangled without breaking one-half of these, the strongest, should be selected and cut clean away from the underground portion of the stem. They should be cut into pieces about an inch long, and inserted in pans well drained and filled with sifted peat and sand in equal parts, putting the cuttings in an iron trowel, lifting yellow one-eighth of an inch above the surface. Press the soil firm, and give a light water immediately. Put them in a stove where a night temperature of 65° or 70° can be kept up. They may be covered with propagating glasses, or an ordinary sheet of glass laid over each pan, to prevent the soil resting too early the coming spring. In about eight weeks these root-cuttings will make growth, when the glasses must be removed, giving them a fair amount of light, and not allowing the soil to become either too wet or over dry. When they have made four or five leaves each, they may be put singly into thumb-pots, and kept on growing in heat through the winter. The partially drooped plant should be placed in a pot considerably smaller than it has before occupied in good peat with a little sand added. Be careful not to over-water, applying it sparingly and only when the plants again show signs of want; if warm stove treatment, with shade from the sun, and keep the atmosphere moderately humid; so treated it will lose very few leaves; but, as might be expected, if, after this partial drooping, it is not managed carefully, as above advised, a good deal of the iron foliage will be lost. In the case of the *Yucca* propagated this *Yucca* in the manner described at this time of the year is that the plant is enabled to recover itself before autumn, and the young stock in like manner has time to get established before winter, and are in a position to start off freely in growth with the coming spring. If carefully treated, they will make nice small plants by the following autumn.

The fine shrubby variegated *Yucca*, *Y. aloifolia* variegata, *Y. quadricolor*, and *Y. quadricolor* *Stokesii*, are liable in time, as they attain a considerable size, to become somewhat straggling and to assume a naked unshapely appearance, as, like all other plants grown for the beauty of their foliage, unless their leaves are perfect from the base upwards, they lose much of their effect. As these are slow-growing subjects, requiring years to form good heads, which may be done in the present state, it is better to re-root as large a portion of the head as is furnished with perfect leaves. This can be done at the present season. The head should be cut clean off 5 or 6 inches below the lowest healthy leaves; it should then be inserted in a well-drained pot filled with sifted loam and sand in equal proportions, sufficiently large to support the head. Put in a house with a temperature something like a late vinery, stood on the floor, and keep the atmosphere immediately around them confined, which can be best done by taking two, three, or more ordinary root-cuttings of the same top, and submit them on above another according to the height required, putting one of the tops over it. If a large plant, the leaves will require being partially tied in an upright position, so as to admit of their going inside this improvised covering. Keep closely shaded from the sun, and soil moist, but not too wet; in this way they will generally form abundance of roots in the course of six or eight weeks, when they may be gradually inured to the air of the house. I have found these large heads so treated, succeed much better than when subjected to more in any particular way, and the attention required for them often lose some of their bottom leaves. The remaining portion of naked stem may be either left to break, and the young shoots as produced taken off with a heel and struck, or it can be headed down to within 2 or 3 inches of the base. The bare stem thus cut away may be put in a similar soil, and kept in a similar manner to half their depth, like ordinary cuttings, in pots, or pans drained and filled with sand, placed in the stove, and kept moist, but not covered. Under these conditions very few will fail to produce root and to make healthy plants. T. Baines.

ORCHIDS.—Turning our attention from the Orchid-houses proper, as they may be called, and though not in any particular way requiring the attention required for them, they contain, it will be advisable and worth while to look again to one or two subjects that are best managed in the greenhouse or cool frame. For the late summer and autumn blooming there are few more striking plants of any class than *Dios grandiflora*, its peculiar form, its flower and colour, and its long and slender stem catching the eye at a moment, and causing one to linger and admire its singular and attractive forms. These now should be growing apace, the more forward of the growths just showing the commencement of the spike and the flowers are in the bud stage, and the leaves attain sufficient strength and size. In some cases these succeed moderately well in the Odontoglossum house, and, providing they are not subject to an atmosphere overcharged with moisture, they may remain here; plenty of air, however, must be given, and the plants should be kept in the Odontoglossum.

house is, that after flowering they are very apt to start growing sooner than is desirable, and thus the breaks become very wide, following narrow, and unable to stand its own weight, and in course of a season or two the plants get less, and ultimately die away. For managing these thoroughly there is no better place than a small greenhouse, where a few plants are grown that require less air than is given to the ordinary greenhouse, and a blind can be run down during the hottest part of the day. Now that the growths are well advanced they must be well supplied with water at the roots, and about once a week treated to some liquid manure; and under this treatment they will continue to grow in the strong and healthy appearance. Another that will be in flower at the present time is *Cypripedium spectabile*; this has been imported in such quantity, and the greater part in such good condition, during the last two or three years that many have been able to obtain it who before a small price. A mistake, however, is often made with plants that come to us from localities similar to those from whence these are received. Because they are found freely growing in some of the boggy parts of North America, it is thought they must stand almost as much cold as we get during any part of the year, and on being planted outside, in however sheltered a spot, they have in most cases died. These should be grown in pans covered about a third of the depth, in a mixture of leaf-soil, rough peat, and sphagnum. In the autumn they must be kept in a cold frame, as in the majority of other Orchids, to keep the crown very high above the rim; at the same time, the crowns must not be covered with soil. If, however, a little moss may have grown around the stems during the winter, no outside result from that, as on standing thus outside, after flowering, the moss will dry down and cause no injury by an excess of moisture. After the flowers have all died off, the plants should be stood out-of-doors on an ash border under a north wall. Here the stems will ripen and fall away, and the plants may be taken up a week or two later end of September, place them in a cool frame for the winter. A frame without fire-heat is best, and, during severe weather, besides throwing a mat over the lights, it will be of great service to cover the plants entirely with some dry leaves. By February or March the plants have been taken away, the shoots will push up and stand away. They may be taken into the greenhouse one or two of early blooming, then in two or three weeks the remainder should also be taken in, where they will come on as ordinary plants, the foliage being the same, and at last its pure white flowers with a rose-coloured labellum, will appear on the top of the growth, and add a novelty and richness to the conservatory that is to be found in few other plants. Although apparently this is in dormant from August to February, it must not be neglected during these months it will require care and treatment that it may be forming and developing the beauties that are for the time hidden. *W. Swan, Fallowfield.*

FRUIT HOUSES.

PEACHES and NECTARINES.—The propitious change in the weather which has taken place will, it continues, greatly facilitate the operations connected with these subjects, and advantage should be taken of such influence to air the houses in which the fruit is ripening very liberally, as it does contribute so much towards perfection, both in point of quality and colour. When the fruit begins to show its colour, the syringings should be discontinued, excepting those parts of the trees which are near the pipes, and where it can be applied without detriment to the fruit. In gathering this, its fitness will mainly depend on the purpose for which it is required, and it will fall away in the highest degree of excellence if it be allowed to ripen completely on the tree, but for packing for market purposes it should be gathered somewhat before that time; go over the trees every morning and remove carefully every ripe fruit, and if any means are employed to prevent the fruit which may drop from being injured, it should be seen to before the fruit is quite ripe. Netting is the best material to place beneath trellises below the roof of the house, and in the case of trees which are vertically placed a good layer of soft hay or similar material placed at the base will answer the purpose likewise. To prolong the supply of fruit, discontinue fire-heat as soon as it rises, excepting under most unfavourable conditions. Moisten the surface of the border to render the air cool, and open the house fully during sunny weather, and keep the party so constant. In the autumn stand the same shoot on constant. In spring, where fruit is left, and the laterals at the first leaf, excepting those on terminal shoots where the trellis is unoccupied. In this case a few should be left un-

touchd. Continue the weekly sowings of guano over the surface of the mulching materials in the house. Keep the borders in a moist condition, and copiously syringe the trees twice every day. *G. T. Miles, Wycombe Abbey Gardens.*

CUCUMBERS.—If the supply of fruit from pits and frames is sufficient for the demand, houses which are light and well adapted to winter sowing should now be cleared, thoroughly cleansed, and devoted to the growth of Melons, the crop from which will be cleared in time for the earliest batch of winter Cucumbers. Nights being still cold, the temperature in houses which are fitted up for forcing materials, will fall lower than is good for the raising of the one young fruit; it will therefore be necessary to turn on just sufficient fire-heat to prevent the glass from standing lower than 68° at midnight. After a very hot day, a degree or two, more or less, will not affect the plants; but, as a rule, a minimum of 70°, with a bottom-heat of 85°, should be maintained. Pay unremitting attention to the weekly dressing over and removal of old Vines and leaves. Top dress with good loam as the roots appear on the surface, and water freely with tepid liquid-manure. Damp the beds and floors two or three times a day, and syringe over and under the foliage especially early in the afternoon to allow of the heat running up to 90° after the house is closed. Frames and pits now in bearing will also derive great benefit from weekly watering, and the plants should be on the surface of the soil without wetting the foliage. Sprinkle overhead with tepid water, and close about 3.30 p.m. Tilt cap glasses on the south side as Ridge Cucumbers advance in growth. Cover the beds with short horse dung to prevent the escape of moisture, and elevate the glasses on four half-bricks for a few days prior to their final removal.

ORCHARD-HOUSE.—The wholesale destruction of fruit plants by the severe frosts and cutting north-easterly winds will cause many horticulturists to turn their attention to this useful structure, particularly if their gardens are not well sheltered from wind and sufficiently high to escape the disastrous effects of 14° of frost early in May. At this place I can see the size of Hazel-trees well fitted under glass copings with the roof of Prigi Dome. In front, and I may now count more fruit on a dozen pot trees than will be gathered from two rows of one of the best trees through the month of August. The plants are not ornamental, the leaf-to answers very well, as retarding rather than forcing is generally practised. Fruit trees established in pots may at all times be obtained in endless variety, but it is better to have duplicates of early, medium, and late sorts, in order of value, than to run into an endless list of names. We need not advise the owner of a well-stocked orchard-house to pay extra attention to his trees; we may, however, remark that pot trees must not be overtaxed to make up for deficiencies out-of-doors. A side crop of finely-swelled fruit will give more satisfaction than a greater quantity, which ripen off instead of taking their last swelling, and the trees will retain their vigour for many years. The thinning of fruit requires great firmness, as well as judgment, and it is always well to err on the safe side. A healthy established tree in a medium-sized pot, if growing in near proximity to a good manure-heap and liquid manure tank, will, in all probability, ripen off better fruit than the tree which cannot be well mulched and watered with tepid liquid. Next to judicious thinning cleanliness is of great importance, and roots are cleaned, and the soil will now begin to be troublesome. This must, of course, be kept in check by the constant use of Read's patent syringe, a most formidable instrument in skillful hands. If black-fly does not succumb, the points of the shoots may be dipped into tobacco water, or only partially, and the same may be done the following morning, and repeat if necessary. Ordinary green-fly may be kept down by fumigation. From this time forward, if early fruit is not wanted, the ventilators may be kept constantly open, but fruit always attains the largest size when the ventilators are closed for an hour or two after the afternoon syringing. *W. Coleman.*

KITCHEN GARDEN.

The kitchen garden amongst the multifarious sowings, thinnings, and plantings, which press for daily attention, has to take into consideration what will be required in the kitchen many months hence, and is therefore frequently obliged to take stock, in order that if any important crop has failed, or only partially, it may take such timely means as are available to him for supplying deficiencies. Hence small supplemental sowings of any of the sorts certain to be required, are always useful in case of failure, or if not required the value of a pinch of seed is not commensurate with the possible loss of a crop. The grower should be on his guard against such deficiencies, and should be at once provided for, if possible by timely supplemental sowings, or, if too late, by purchase or exchange of plants.

It is about this time when work presses so heavily in all departments, but particularly in the flower garden, that weeds are apt to come creeping along, and if means are not adopted by setting on a good strength of water, the weeds will be so high, that soon get so much ahead as to require double the labour to get rid of them. Hence the great advantage resulting from the following out of our repeated injunctions as regards surface stirring amongst advancing crops, which should never be omitted on all favourable occasions, is hereby confirmed. This will allow of a portion of the strength being relegated to other departments during bedding out time, provided also that the necessary plantations of Autumn Cauliflowers and Broccoli have been attended to, if any further continuation is permitted to interfere with its immediate performance. A good breadth of spring sown Cabbage, such as Carter's Heartwell or Veitch's Improved Matchless, should be got at once; the latter has proved itself to be by far the best Cabbage that has stood through the last winter; not anywhere in this neighbourhood have I seen any thing like them. Our own old favourite sort called Early Seal, and which has been grown continuously in these gardens over forty years has failed to approach this year. In addition to the immediate necessity for securing the planting of a good breadth of Brussels Sprouts, it is well to sow, for which, as it is one of the most important of our winter vegetables, the ground should be deeply trenched and highly manured, attention must also be paid to getting out a sufficient breadth of Early Drumhead Cabbage, a most useful vegetable for early supply, and, as these will be supplemented by later plantings of other varieties sown later, the supply will be carried on well through the winter into the spring. Look to the successional sowings of Walcheren Broccoli and Cauliflower for the latest plantings, and stick to your sowing, for the former sowings, and where space is at liberty lose no time in getting in the plants from the earliest sowings; this, as I have observed, is imperative, for if left too long either in the seed beds or when picked out they receive too severe a check, and frequently do not grow away sufficiently free to attain their most capable development, but commence early to throw up inflorescence which is often of very inferior quality.

The main crops of Celery should now be planted, and if the trenches are not already prepared no trench is planted should be all trenched over to a depth which must be regulated by the bottom of the trenches in which the plants are inserted; when all the ground is moved, and the bottom of the trenches is able to penetrate through the whole mass, and the depth of the trenches in which the plants are placed will become a very secondary consideration, but may safely be regulated by the nature of the soil and the condition of the subsoil, both with regard to its texture and drainage. For early crops of sufficient depth may be indulged with deeper trenches than would be advisable in the case of stiff, retentive soils with a cold bottom, where shallow trenches very little below the level of the ground will be most likely to ensure good keeping, and the plants will be supplied with particularly to that part of the crop which is intended to furnish a supply from Christmas to well on into the new year, which is the most trying time, as it is then so liable to decay, and that decay will be very much accelerated by planting deep down in ill-drained trenches. For early crops which will come up perfection and be used off before the trying time it is not needful to be so particular as to the depth of the plants in the ground. In preparing the trenches for the plants mark them out 2 feet wide for double rows, throw out right and left one good spad's depth, leaving a narrow strip of soil between the rows, then fill up with rich but well decomposed manure, which turn over and incorporate with the soil and plant at once, taking care that it is as near the supply of water as possible; the space between the trenches for the early crop which used crops need not be more than 3 feet, but for the long keeping 4 feet is not too much, because at the final earthing up the bottom of the bank should be considerably below the roots and thus act as drainage. Although the season is unusually backward one, most of the root crops will be ready for the thinning out. Onions, especially must have early attention, leaving them at from 4 to 6 inches apart, and transplanting to fill up vacancies, afterwards hoe up the soil between the drills, and if dry weather should prevail, the crop will be very much benefited by a liberal application of water in the early stages of the season. If any sods has been dissolved. I believe this to be a good antidote against the rotting of the roots, and therefore worthy of a trial. Thin out the main crops of Red Beet, leaving them at about 8 inches. The second sowings of Turnips will be ready for the thinning out, and the usual manner of good sowing should be made for the main early autumn crops. Early Snowball is a good sort for this sowing. Look to the Cucumbers and Vegetable Marrows on ridges, as they may want earthing up and pegging out. *John Cox, Relliford.*

THE
Gardeners' Chronicle.

SATURDAY, JUNE 9, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, June 11 Sale of Plants at Lee's Nursery, Hamersmith, by Stevens (two days).
WEDNESDAY, June 13 Royal Botanic Society's Summer Show, York Road, Finsley (three days).
FRIDAY, June 15 Scottish Fanny Society's Show.

AT the Society of Arts on Tuesday last, Mr. ANDREW MURRAY raised the difficult and well-nigh insoluble problem of State interference in agricultural matters. When we say insoluble, we mean insoluble *secundum artem*. No amount of logical argumentation or neatly-drawn conclusions will avail in the determination when or how Government ought to interfere. The line between State aid and individual enterprise must be drawn somewhere, but it is impossible beforehand to say where the demarcation should best be made. The severe logic of facts, however, in many cases ultimately forces the enactment of compulsory legislation or of State aid.

The immediate object of Mr. MURRAY'S paper, a full abstract of which will be found in another column, was to press upon the Government the consideration of the nature and amount of the INJURY INFLICTED ON GROWING CROPS BY INSECTS, and the best method of preventing or remedying these disasters. In the case of the cattle plague Government has interfered with the liberty of the cattle dealers and graziers to an extent that a few years ago would have been thought unbearable by free-born Britons. But the restrictions are quietly subverted, and the necessity for them has become apparent to the generality even of the most unthoughtful of farmers. Continental farmers, said Dr. VOELCKER, do not feel the restriction to which they are subjected onerous, because they are so well-instructed in the principles, as well as the practice, of their business that they understand the necessity when it arises, and are consequently obedient to the law. And so we take it, that when once the farmers or the gardeners become sufficiently aware of the importance of the question, they too would submit to Government interference when they were convinced of its necessity and act on the principle of choosing the least of two evils.

But perhaps the most astonishing thing that came out in the course of the discussion was the testimony given as to the amount of ignorance among the general body of agriculturists throughout the country, of the nature and especially of the amount of damage done by insects. Farmers in general appear to be not nearly so well informed on this matter as gardeners, and do not seem to have anything like an adequate conception of the amount of the loss they sustain every year by some plague or other. True, when a particular crop is ruined, or a particular field is specially infested, they recognise the enemy and realise his powers for destruction, but in an ordinary way they seem wrapped in nescience or apathy.

This may be illustrated in various ways, but it was strikingly shown by the circumstance that not one of the agricultural societies or chambers of agriculture to whom the Privy Council submitted Mr. MURRAY'S proposals took the slightest notice of them, even though they were deemed by a Government department of sufficient importance to be disseminated broadcast among the agricultural bodies of the kingdom. This betrays a want of appreciation of the amount of injury inflicted by insects which is almost incredible on the part of those who have to get their living by the cultivation

of plants, because, if it were not so, whether Mr. MURRAY'S proposals are judicious, or whether they are not, they are clearly of a nature to elicit discussion, if their purpose be fully appreciated. In point of fact, when the Society of Arts did institute a conference of representative agriculturists, horticulturists, and men of science to hear Mr. MURRAY'S paper read, a discussion ensued of a most valuable character, and one which, when it comes to be circulated, as it probably will be in the *Journal* of the Society, will do much towards enlightening the public on the matter. The general principle that some action should be taken was universally assented to, but direct Government interference was evidently not held in favour, Mr. CLARE SEWELL READ emphatically stating that in such a matter the Government would be sure to make a muddle, and concluding his speech by recommending that the Government be asked not to do anything in the matter. On matters of detail there was, as might have been anticipated, considerable diversity of opinion, Mr. MACLACHLAN pointing out that the evil effect of insects might often be overcome or compensated for by increased vigour of growth of the plant. Several of the speakers, we are glad to say, denounced the indiscriminate slaughter of small birds, and more than one speaker endorsed Mr. MECH'S assertion that birds are the farmer's best friends. This of itself is a healthy sign. Twenty years ago, or even less, we do not think such a statement would have been received with so much assent as it was by the representative men gathered together at the Society of Arts on Tuesday. Having heard this discussion, and having balanced what we know of the state of the question with the opinions expressed by some of the leading agriculturists at the Conference we can but come to the conclusion that Mr. MURRAY'S proposals as to State interference are premature, and that before anything like compulsory legislation can be proposed with any chance of success, those most concerned must become much better informed of the nature and extent of the losses they now often blindly incur.

Of the extent of injury inflicted by insects we are in a very fair position to judge. Ever since the establishment of the *Gardeners' Chronicle*, entomology in its relation to cultivated plants has constituted a prominent feature in our columns. We can point with justifiable pride to the long series of articles on this subject from the pens of such men as CURTIS, as WESTWOOD, as MURRAY, MACLACHLAN, and others. Week after week, too, often daily we receive inquiries relating to insects, and specimens of the injury they inflict. Week after week these are referred to the most competent entomologists of the day; and the number of these inquiries, in addition to what falls under our own personal observation, enables us to form some idea of the amount of injury really inflicted. The Scientific Committee of the Royal Horticultural Society also does good service in this way by giving information to inquirers, by naming the specimens sent to it for identification, and suggesting the most appropriate remedies.

We have heard the Royal Horticultural Society so much abused of late, especially by those who do not know that, amidst all its troubles, it has still done good work, that it was cheering to find the merits of its Scientific Committee thus publicly and independently vindicated. But the number of persons whom this and other horticultural or agricultural journals reach, or who could avail themselves of the Scientific Committee of the Royal Horticultural Society, are few compared with the number of those who suffer from the depredations of insects. It would appear, then, that in place of compulsory legislation, which at present, we believe, would be im-

practicable, it would be better to appoint a State entomologist (as has been done with such conspicuous success in America), and whose duty it should be to examine and report upon all cases of insect injuries submitted to him, and who should make known to the widest possible extent, and in the clearest and most intelligible manner consistent with accuracy, the nature of the insect, its habits of life, the character and extent of the injuries inflicted by it, and the best method of prevention and of cure. Every agricultural and horticultural society in the kingdom, every chamber of agriculture, should have a scientific officer competent to advise in these matters, and these local or district officers should be in communication with the Government entomologist or some other central authority. In this manner knowledge would be diffused and extended, much of the loss now incurred would be entirely prevented, and some materially lessened. In time public opinion and enlightened self-interest would know when to ask for or to submit to Government interference.

We may remark, in passing, on the great waste of power for good of our horticultural societies in general. Throughout the country their whole aim seems to be to get up one or more flower-shows in the year; often these shows are confined to one class of flowers even. Now, we have nothing to say against this, except that it should be supplemented by other means of doing good, now entirely neglected. We have often alluded to the unprofitableness of horticultural societies and of flower-shows, as also to the many ways in which they might, at little cost, do good service to horticulture and to the general welfare. Each of these societies should be in communication with the Royal Horticultural Society, and avail itself of the opportunities of gaining that information which the Royal Horticultural Society or other central body is capable of giving, and would give more freely than they do if outside pressure were put upon them.

— It is a matter for sincere congratulation to men of science in general that their official leader, the President of the Royal Society, and to horticulturists and botanists in particular, that their acknowledged chief, the Director of the Royal Gardens, Kew, should have been created "Knight Commander of the most exalted Order of the Star of India." There is peculiar significance in the affiliation of Sir JOSEPH HOOKER, K.C.S.I., to the Order of the Star of India, as it was in India that he consolidated the reputation he had early won in the antarctic regions; it was in India that he made his largest scientific collections; and it is in connection with India that he has so largely worked in scientific matters since his return a quarter of a century ago. It is from India that he sent home those gorgeous Sikkim Rhododendrons, while the services he has rendered to India and to the colonies in general in his capacity of Director of the Royal Gardens, Kew, though little known to the outside world, are alone sufficient to justify an honour which has been too readily bestowed, but which will cause him to rank, not only among the most eminent of botanists, but among the greatest benefactors to his fellow-men.

— We have received from our correspondent, "A. W.," a very CURIOUS CASE OF DISEASE IN PEACHES AND NECTARINES. Dark red spots appear, either at the apex or on the sides, which after a time slightly collapse without showing, what we at first supposed, any trace of Gloeosporium leucolor (BERK., in *Gardeners' Chronicle*, 1859, pp. 604), though it is possible that it may still be in abeyance, like the red spots on Shoe-leaves, which seldom come to perfection. It is observable that these coloured parts exhibit the odour and taste of imperfectly-ripened fruit. In this condition the microscope shows nothing but abundant crystals and minute particles with Brownian motion. In the next stage, still while the cuticle is unbroken, though collapsed, the contents of the cells are greatly altered, sometimes showing contracted granular masses, sometimes strings of minute particles, the whole body of cells, but especially those in the centre, becoming pulpy, as if some ferment were at work. Still, there is no trace of mycelium; but at the moment the parenchyma is

exposed to the air, abundant threads traverse the mass, and the cell-walls are much decomposed, added to which a glazy matter oozes from the edges of the spots, which is full of *Vibrios*, resembling what are commonly called the eels in decomposed vinegar. Finally, the fruit, or part of it, becomes a pulpy mass of decay, in one case covered externally with *Cladosporium herbarum*. The pulpy condition, however, occurs before the cuticle is broken, and calls to mind the observations which have been made on contagious diseases in animals, as dependent on specific germs. Such may also be the case with vegetables, though we are not in a condition to give any positive opinion on the subject. The best advice we can offer is, carefully to gather every affected fruit, and at once commit it to the flames. *M. Y. B.* [Since we sent the specimens above alluded to, to the Rev. M. J. BERKELEY for examination, we have received others from other sources, which induce us to caution forced Peach growers against a plague which threatens to be serious. Eds.]

— That the "wind bloweth where it listeth" is an old maxim that was most forcibly displayed on the

Museum, together with a pamphlet containing the opinions of many medical men in India on its efficacy. This preparation is, as most of our readers know, made from the red *Cinchona* bark (*Cinchona succirubra*), grown in the Government plantations at Darjiling, and contains, as we are told, "all the febrifugal alkaloids of that species in the relative proportions in which they exist naturally in the bark." In the treatment of fever the efficacy of this febrifuge has been proved at the Medical College Hospital, Calcutta, the General Hospital, the Howrah Hospital, and by numerous experienced members of the medical profession. All the reports show that it possesses very nearly to the same extent as quinine all the anti-periodic properties of that more expensive drug, so that it may safely be substituted for it in the treatment of ordinary fever and ague. This new medicine is issued by the Government in India at a low price, as a cheap and efficient febrifuge for the poorer classes; and we read that it "is not intended to replace quinine in very serious and complicated cases, or among those who can afford to pay for the more expensive drug." It is to be had by application to the Superintendent of the Botanical Garden,

where incalculable. We believe that a satisfactory portrait exists—the work of an eminent artist—and it is hoped that this also might be secured by the aid of private subscriptions.

— A visit to Mr. WARE'S nursery, at Tottenham, though it is chiefly confined to outdoor plants, is always a matter for pleasurable remembrance. The *Narcissi*, including that very useful double form of *N. poeticus*, are nearly over, but the visitor even now can hardly fail to be struck with the enormous quantities of these favourite bulbs grown here, even if he has just returned from Holland. Among the herbaceous plants best worth notice at this time are *Corydalis nobilis*, a grand golden-flowered Fumitory, an old plant no doubt, but a grand one and one seldom seen. *Dodecatheon Jeffreyanum* makes a show at this season, as also a splendid patch of *Trillium grandiflorum*. *Ferulas* are always strikingly handsome, but now, when they are coming into blossom, they are particularly so. *Aster alpinus* is a plant so much in request that it is difficult to get enough of it. *Iris susiana*, its flowers more than 3 inches across, is simply magnificent. The beautiful and sweet-

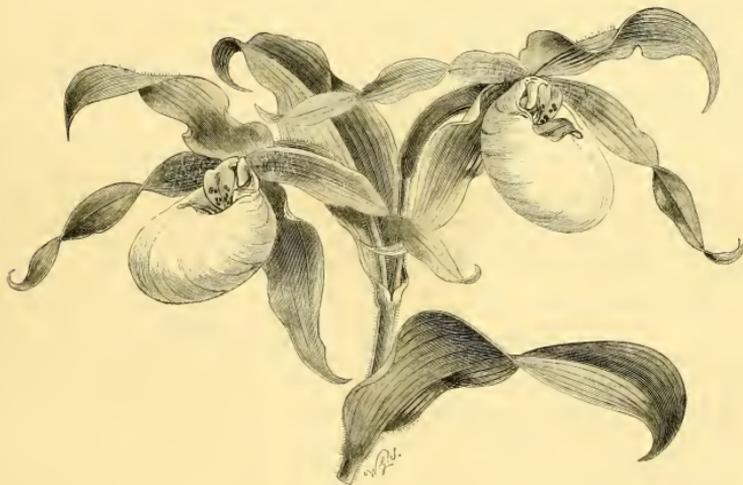


FIG. 117.—CYRTOPODIUM OCCIDENTALE (SEE P. 727).

opening days of this the present leafy month of June. We might well have been excused in imagining as we awoke on the morning of the 1st that we had indulged in a *RIP VAN WINKLE* state of somnolence, and had slept until the period of the autumnal equinox. Such fierce winds have left their mark on trees and in gardens, and have been productive of much mischief; our only consolation being found in the assurance that no human foresting could have stayed the storm or allayed its force. The young and tender foliage has been terribly cut in exposed places, and the trees will bear traces of the damage for some time. Fortunately we are a sanguine people, and with a few days of warmth and sunshine past disasters are soon forgotten.

— We hear that His Royal Highness the Prince of WALES has given up *Chiswick House*, the lease having expired. The grand garden parties will, in future, be given in the gardens at *Buckingham Palace*. We are also informed that Mr. JOHN WILLS, of South Kensington, will have the honour of supplying the floral decorations at *Marlborough House*.

— A sample of THE NEW CINCHONA FEBRIFUGA, or mixed *Cinchona* alkaloids now being used in India, has recently been received at the New

Howrah, near Calcutta. With regard to the administration of the medicine, it is said to be given in the same doses as quinine. The "natives frequently prefer to swallow it in the state of powder, or to rub it up for themselves with a little ghor or honey before taking it. It may also be conveniently made into pills with a little lime-juice." With regard to price, it is sold to the general public at 20 rupees per lb. tin wholesale of 20 lb. at a time; and to public officers for charitable institutions at 16 to 18 rupees. The more general use of this febrifuge should affect shortly the price of quinine itself.

— At the Royal Horticultural Society may be seen a portrait of the late G. U. SKINNER (Lycate Skinner, &c.). This portrait, we believe, is for sale, and should most assuredly be added to the portrait gallery entrusted to the trustees of the LINDLEY library, for the benefit of the Royal Horticultural Society. A small subscription from those who knew and respected the late Mr. SKINNER should at once be made, so as to secure this portrait; the likeness is excellent. We shall be pleased to forward such contributions as may be sent to us for this purpose. Another portrait deserves to find a place in this or in some other suitable locality, viz., that of the late J. C. LOUDON, whose services to horticulture

scented *Aponogeton distachyon* flowers here in an open tank unprotected, and is as hardy as the beautiful *Buck Bean*, *Menyanthes trifoliata*, by its side. *Aquilegia corulea* is now in full bloom, with sepals of a delicate lavender blue surrounding pure white petals. *Armeria grandiflora*, a magnified representation of the common Sea Pink, is striking at most seasons, especially in spring. A fine lot of the very striking *Eryngium* depicted by Mr. FITCH in our columns in January, 1876, is here to be seen, as also a large selection of hardy *Cyrtopodia*. Lilies, such as *Humboldtii* Scovitzii, *californicum*, *pyrenaicum*, and *giganteum*, are remarkable for the sturdy growth they are making. *Mesembryanthemum uncinatum* proves hardy here on the rockwork, and is one of the most singular plants for the curious. A number of more conventional tastes there are bedding *Pansies* in great variety and of great merit, while the loveliness of some of the *Pinks* and *Carnations* will attract flower-lovers of all denominations.

— The superb bank of HERBACEOUS CALCEOLARIAS staged by Mr. JAMES, of Isleworth, at the recent show at the Orleans Club, illustrated far more forcibly than any descriptive notes can, the marvellous excellence, beauty, and high quality of the famous *Reddes* strain. As with the *Cineraria*, so

with the Calceolaria, Mr. JAMES holds the foremost place as a raiser and grower, for his strains of these fine greenhouse flowers are unrivalled. Mere size of plant or of flower is no indication of quality, but in the plants shown at Twickenham there was seen at a glance a singularly even, compact, yet robust habit, large trusses, huge, full, finely-formed flowers, and these of the richest and most varied hues, ranging from a pale cream down to deep crimson-maroon.

— We learn that it is proposed to erect at Ootacamund, in the Nelgherry Hills, a STATUE of the late Mr. MACIVOR, to whom the successful cultivation of Cinchona on those Indian slopes is so prominently due.

— Among the plants shown at the meeting of the Royal Horticultural Society, on Wednesday last, was a nice plant of AOTUS GEACILLIMA, a New Holland shrub, with slender recurved whip-lash-like branches, covered with small papilionaceous flowers of a yellow colour flecked with darker orange. The plant is exceedingly attractive, but, according to Mr. BAINE, has the disadvantage of speedily casting its flowers.

— MESSRS. VEITCH'S group of thirteen species of MASSEVALIA at the last Floral Committee was noteworthy. The species represented were M. cocinea, orange; M. Veitchiana, orange-scarlet; M. Ifariyana, lilac; M. Barleana, orange; M. ignea, bright clear yellow; M. myricina, a weed looking species, with purplish brown spots on the hairy sepals, and long-tailed flowers. Of small flowered curiosities, gems in their way, were ionocharis, infracta, ochthodes, Peristria, and simula.

— The last issued part of the *Journal of the Linnean Society*, contains a notice of the root stock of MARATTIA FRAXINEA by Mr. J. BUCHANAN. The chief interest lies in the circumstance that the Maories of New Zealand use the rootstock as an article of food, and propagate it by crushing it. Every separate piece will form a new plant. The rhizome or stock, it appears, is composed of an irregular mass of thick fleshy scales, which separate by an articulation from the stalks of the fronds of which they form the lower portion. These scales, placed under favourable circumstances, form buds.

— The growth of the Marattia rhizome is remarkably slow, being under favourable circumstances only 1 inch diameter in one year; and as the height is less than the diameter, it may be safely calculated that a Maori will consume in one day the growth of five years, which fact may account for this Fern becoming rare in certain localities. The rhizome, by a process of renewal and movement, lives for an indefinite time, shifting its position in the ground by its growth outwards from a centre, the exhausted scales accumulating in a hard mass on the original site. In this way, as in certain fungi, rings or detached clumps may be formed at equal distances from the centre if no obstruction exists."

— Recent advices from New South Wales inform us that a successful experiment has been made recently in the cultivation of the JUTE plant at Grafon. The seeds were obtained from Mr. CHARLES MOORE, of the Botanic Garden, Sydney, who, judging by this result, anticipates that JUTE FIBRE will become one of the most valuable products ever introduced into the colony. We learn also that the cultivation of TOBACCO is to be attempted in South Australia.

— Mr. EDWARD PEACOCK, writing in the *North British Advertiser*, says:—"It was informed yesterday that in felling a wood in the parish of Southport near Kington-Lindsay, several horse-shoes were found buried under the roots of ASH TREES. It seemed, said my informant, that a horse-shoe had been put into the hole and the young tree planted on it. Have any of your readers ever heard of such a practice, and can any motive, magical or otherwise, be suggested for the custom, if custom it be?"

— As such has been said of the late AMERICAN EXHIBITION in its horticultural aspect as its merits deserved. It is a singular circumstance, however, that the banquets and the pleasure trips on the occasion, the excursions to Hazleam, to the Gardens

of Prince HENRY, at Soestdijk, and other outings of a like character, were as well managed as the more serious business was the reverse. We fancy we see our Dutch friends laughing—*dulce et desipere in loco*. Three hundred jurors tied to the desk or counting-house at home, or always "going through the houses," may well welcome a little change from the daily routine, and thoroughly enjoy, as they did, the hearty hospitality of their hosts. And, besides, as we have said, the hospitality was not only hearty, it was scientific, well ordered, and well managed. Gastronomy was not forgotten, but catered for in the most delicate and appetising manner, but the jury-man was made to feel that there was something else worth living for than *Ch. & Co.* or even good dinners. Intellectual recreation and mental food were provided in abundance, and highly relished. A capital account of the several excursions is given in the *Gardener's Magazine* of June 2, but how or when Alphabetagema, for that is the reporter's name, managed to sketch that "pretty greengrocer," we do not know.

— THE NEW ANTHURUM DECHARI, shown at the last Floral Committee by Mr. WILLS, is not likely to receive much popular favour so long as people are dazzled by A. Scherzerianum, though it will be valuable to collectors. It has a whitish spathe and a white spadix, the tip of which, covered with unexpanded flowers, is green. The leaves are stalked, broad, oblong, and prominently veined.

— The current number of the *Journal of Botany* contains a coloured plate and description by Mr. W. G. SMITH of a new fungus, XEROTUS SANGUINEUS, a "remarkable species of a very rare genus collected by Mr. SHUTTLEWORTH, Mr. BULL'S collector, on stamps and on the ground in the State of Santander, United States of Columbia, South America."

— We understand that the GARSTON VINEYARD, near Liverpool, formerly the property of Mr. MERE-DITH, of Grape-growing notoriety, and lately of the Cowan Patents Company, has been purchased by Mr. JOHN COWAN, the late managing director of the Company.

— A matter has been brought to our notice, which, whether more or less founded on fact, or entirely suppositions, is worth a few moments' consideration. In SONNENSCHNEIN'S *Handbuch der gerichtlichen Chemie*, p. 13, is the following:—

"In the year 1864 occurred in London a case of poisoning, of which a gipsy was suspected, and a physician stated that the gipsies possess a peculiar poison called Drai or Dri. It is a fine brown powder originating from the spores of a Mushroom. These spores are capable of germinating and developing in animal organisms, so that they form greenish-yellow filaments 12-18 inches in length. This powder is given in lukewarm water. The spores attach themselves to the mucous membrane, and develop very quickly. The symptoms are, first, those of hectic fever, cough, and sometimes hæmoptysis. Death follows in from two to three weeks. A case was observed by a physician in Italy. The filaments, whose growth was brought to a standstill through the death of the individual, and the consequent want of warmth, soon decompose, so that in a few days later there is no trace of them."

Now, making allowance for a slight degree of exaggeration, there is here still enough to command attention, and the more so, because there is a fungus which in great measure answers the condition. Micro Phycomyces, BERK., which was considered an Alga by AGARDHI, is sometimes developed in enormous quantities on oilcasks, walls impregnated with oil, and casks of grease, which it ultimately reduces to a *caustic mortuum*. We have cultivated it with success on the latter, and doubtless any quantity of spores might be collected by any one who cared to do so. The mycelium is just what is described in the passage quoted above, is green, but grows darker with age, and the threads which have the fertile cysts are of considerable length. But this is not all; we have specimens on cement from Alabama; and we remember seeing, in Dr. MONTAGNE'S herbarium, specimens which had grown on fat broth, we believe rejected from the stomach. It is, however, very possible that the spores, like those of some other moulds, are capable of germinating on the mucous membrane in certain conditions, and if so they might not only

produce great constitutional derangement, which would possibly be increased by something mixed with the spores, or by something which would favour their germination. At any rate, we have here a possible solution of the problem. It is quite certain that gipsies do possess some valuable or dangerous matters which are not generally known, and this may be one of them. M. F. E.

— The freedom with which several varieties of SUCCELLANT PLANTS can be PROPAGATED by LEAF CUTTINGS was recently exemplified at the Crystal Palace, Mr. THOMPSON exhibiting with a large number of plants of the *Sempervivum tabuliforme*—of sizes varying from 10 inches down to about 4 inches in diameter—the one parent plant of the whole lot, a small insignificant thing, which, because its lower leaves had constantly been taken from it, had assumed a rotund form, about the size of the half of a cricket ball, and might have passed for a distinct species. As this plant is one of the most decorative in succulent bedding, a knowledge of the ease with which plants can thus be propagated may be useful. Not less easy to propagate are the Pachyphytons, two of the most valuable of which for bedding as pot plants are bracteosum and roseum. The extremely fleshy nature of the leaves renders the smallest amount of moisture necessary to produce rootlets from them. We have found leaves that have been thrown down on the damp floor of a greenhouse to root freely in a few weeks, but it is both neater and more systematic to plant the leaves with their base resting upon a surface of sand and kept in a nearly perpendicular position by means of a support of moss; an occasional sprinkling will suffice to maintain the requisite amount of moisture. We have recently seen a curious instance of leaf rooting exemplified on a plant of Pachyphyton roseum that had been kept in a cool house all the winter; a side leaf was partially broken off some time since, but the stem of the outer cuticle remained attached to the stem to prevent its falling off. Roots have now been thrown out at the base of the leaf, and a young plant formed; thus showing that a very small amount of moisture is needed to ensure growth.

— BRON VO MUELLER'S fourth part of *Descriptive Notes on Papuan Plants* confirms the supposition that the Frog Bit, HYDROCHARIS MORBUS-RANE, is indigenous to some countries in the Northern Hemisphere. In HOOKER'S *Student's Flora of the British Islands* the distribution of this interesting plant is given as Europe, except Turkey and Siberia; but its area has, since the publication of this work, been ascertained to be much wider. In BENTHAM'S *Flora Australiensis*, vi., p. 256, Wide Bay, in Queensland, is given as a habitat, and one or two other stations are indicated. MUELLER, in this part of his Notes, dissipates any doubt that might previously have existed respecting its being at home in Australia, and also in New Guinea. The specimens from the latter country were collected by DALBERTIS in the Fly River, and, although devoid of flowers and fruit, the anatomical structure of the leaves of the specimens is sufficient to determine the plant to which they belong. Growing along with the Hydrocharis in New Guinea was another widely dispersed aquatic plant, named Ceratophyllum demersum. In Australia the former has been found at Moreton Bay by Mr. W. HILL, and at Rockhampton by Mr. A. THOZET. It is associated with Drosera Aldrovandi and Brasenia peltata, a plant occurring in tropical Asia and Africa, and subtropical North America.

— We have more than once mentioned the forge plant, REANA LUXURIANS, which caused so much stir in France, and which, like too many new plants of this class, has failed to fulfil the promises made for it by its enthusiastic friends. From trials made in the most favourable parts of France in respect of climate, the hope that it would prove a valuable source of food for cattle has been frustrated. It is a native of Guatemala, and although flourishing there at a considerable elevation it enjoys a climate so different from that of continental Europe, that it could hardly be expected to succeed here. But this is not the point we wish to call particular attention to now, which is this, the correct name of the plant. It will be remembered by those interested in the matter that we Prof. DECAINE, that it was no other than Tripsacum

monostachyum. In a paper on the genus *Euchlena*, read by Dr. ASCHIERON before the Gesellschaft Naturforschender Freunde, of Berlin, and reported in the *Botanische Zeitung* for March, the author declares this to be an error, and that DURIEU DE MAISONNEUVE was right in his first determination. However, the generic name, *Keana*, falls before *Euchlena*, and ASCHIERON gives the name of the plant in question as *Euchlena luxurians*, DURIEU et ASCIL. He also credits FOURNIER with having corrected this blunder in the *Illustration Horticoles*, p. 143, 1876.

— Manchester can boast a young and rising artist in Mr. WILLIAM RATHENES, a member of the Manchester Academy, who possesses considerable ability in painting flowers. There has been recently on view at Manchester two pictures by this artist, in which flowers were painted with a wonderful fidelity to Nature. One was a bunch of dark Wallflowers—just such an one as would be seen in Covent Garden Market, and so bold and life-like was the artist's work, that the bunch appeared to stand out from the canvas; and this, too, without a trace of formality in the rendering. Perhaps even more successful was the painting of a group of some four bunches of Violets, such as are sold in the streets of London—a necessarily formal subject, but depicted with amazing life and skill. A third picture of a dish of fruit was equally successful. Mr. SAMUEL BARLOW, of Stake Hill House, possesses a little picture by this artist representing a bunch of cut blooms of Pansies in a small vase, with a flower of Great Eastern in the foreground. So truthfully is the bloom depicted, that it is at once recognised by all who are acquainted with the variety.

— As the result of some experiments made by M. AUDOYNAUD, Professor in the School of Agriculture of Montpellier, on the influence of manures containing POTASH on the growth of the VINE, and recorded in the *Annals Agronomiques*, it is stated (1) that sulphate of potash and chloride of potassium have a marked influence on the development of the Vine, and nitrate of potash still more so, while carbonate of potash is less efficient. 2. That weak plants of Vines appear to appropriate as much manure as strong ones. 3. An excess of nitrogenous manure is more harmful than useful. 4. Potash should enter into the composition of manures for the Vine, that which exists already in the soil being usually not in a fit condition to be readily absorbed. The absorption of the potash seems to be associated with that of the other fertilising principles. 5. The potash from the root passes to the stem, to the leaves, then to the shoots, and ultimately to the fruit. 6. Only a part of the potash taken up by the root is used up, since after the ripening of the fruit a considerable reserve store is found in the wood. It will be seen that M. AUDOYNAUD'S researches are quite in conformity with the plan advocated by Mr. WILDSMITH of employing wood ashes as a manure for Vine borders.

— On the occasion of the Celebration of June 4, at Eton, Dr. GOODFORD, the Provost, mentioned a circumstance in connection with the splendid Elms in the playing fields that are the admiration of all who see them. His statement was interesting from the fact that it would appear that Eton is under considerable obligations to OLIVER CROMWELL, of all people in the world. The Protector of the Commonwealth, who is reputed to be an intimate friend of the Provost of that day, exerted his influence to save the venerable pile of buildings from desecration, and while on a visit to Eton, he suggested the planting of the trees which is so now so conspicuous an ornament of Eton for the last century, but whose numbers have been sadly diminished during the past few years. No great historical character is credited with the commission of so many acts of Vandalism as the Lord Protector; and it is interesting to find that something can be produced as a set-off on the other side in the character of one of the greatest of Englishmen.

— The seventeenth anniversary festival of the ROYAL AGRICULTURAL BENEVOLENT INSTITUTION was held on Wednesday evening, at Willis' Rooms, under the Presidency of the EARL OF DUNMORE, who in proposing the toast of the evening, stated that one of the best feelings of our fallen nature was that of sympathy, and it was that very feeling which had started this very necessary institution, and which had

kept it going until now. It was the sympathy of farmers for farmers. Since 1860 no less than £55,000 had been expended in relieving distressed farmers, and 610 persons had been recipients during the same period. At present 362 persons were receiving relief, comprising 70 males, 37 married couples, 204 widows and unmarried daughters, 14 octogenarians, besides 50 orphan children fed, clothed, and educated. The total annual expenditure was upwards of £9,000, of which £800 was derived from property, the remainder being supplied by voluntary subscriptions. Mr. J. J. MECHI, whose name was coupled with the toast, dwelt on the great need of such an institution, and stated that about twenty years ago two cases of distress among farmers came under his notice, and to his great astonishment he discovered that there was no society in existence for the purpose of relieving them. The present were very bad times for farmers, and he should like the funds of the Association to be very largely increased. The Secretary, Mr. J. BOUSFIELD SHAW, read a list of the principal subscriptions, the total amount subscribed for this year being nearly £11,000.

The following passage is from "Pencilings of the Week" in *Leisure and Idler*.—"Why do the Covent Garden people wrap their flowers in blue paper of that uncompromising shade that 'goes with' nothing on earth? It is all very well for grocers to put tea and coffee in, but flowers ought to have a little more consideration shown them when they come to market. I have seen Pansies, pale blue, and Philadelphia most particularly resent such unsympathetic proximity."

— We understand, though we have received no official intimation of the fact, that the Council of the Royal Horticultural Society have decided to hold a PROVINCIAL EXHIBITION at Preston, in Lancashire, in June next year.

— A medium-sized specimen of COCHLOSTEMMA JACOBLANUM is now in splendid flower at the Victoria and Panicle Nurseries, Upper Holloway, N.; it has ten branching spikes, from 12 to 18 inches in length, and each spike has from twenty to sixty towers and buds on it. It would be difficult to find a more beautiful temperate-house plant, and would well repay a visit to the above-named nursery.

— A committee has been formed, having for its object the presentation of a testimonial to Mr. F. W. WILSON, whose connection with the Crystal Palace, after twenty-five years' service, has just terminated. Mr. CHARLES EDWARD ELLIOTT, of the Ceramic Court, Crystal Palace, has consented to act as honorary treasurer and secretary.

— LORD ABERDARE announced on Wednesday last, at South Kensington, that he had received an intimation of the intention of their Royal Highnesses, the Prince and Princess of WALES to visit the great summer exhibition to be held on the 19th inst.

CYPRIPEDIUM OCCIDENTALE.

THE pretty little Cypripedium, of which an illustration (fig. 117, p. 725) is here given, is a native of many parts of the Rocky Mountains, and has been recently introduced under the name of Cypripedium occidentale. I do not know the authority for this name, but I find numerous specimens of what I think is the same plant in the Herbarium as *C. parviflorum*, and *C. montanum* of Douglas.

Cypripedium parviflorum of the Eastern States, as I know it, is a smaller, usually one-flowered plant with yellow labellum; whilst the Western form seems to have two or three flowers, with white labellum, and is also very sweet-scented. According to ASA GRAY, *C. parviflorum* passes into pubescens, and our plant seems also to be *C. ciliolatum* Muhl., from the Eastern States, which I flowered this year.

I would add that though all these Orchids are hardy they thrive much better in a sheltered frame, as the leaves and flowers get much cut and torn by the bitter winds and frosts, which have been so prevalent this spring.

I shall be glad to know if Cypripedium ventricosum and guttatum from Siberia are now in cultivation, as I am anxious to get them. H. J. Elwes.

[We may add that the Cypripedium occidentale was introduced and distributed last autumn by the New Plant and Bulb Company, and our drawing printed at p. 725, was prepared from a plant sent to us by them, Eds.]

Home Correspondence.

The Royal Horticultural Society and the Education of Gardeners.—My last letter was to have been my final one, and on the general question I need write no more, as your leading article of Saturday week puts me of the matter at least, with more knowledge than I have at command. I cannot, however, leave quite unnoticed Sir Charles Strickland's courteous suggestion that any promising efforts made here in the direction of horticulture might be best effected by arrangement at the hands of the Royal Horticultural Society. The proposal is not new to me. Two years ago I drew up such a scheme, and would have tried to carry it out had it been possible for me to find any leisure to organise it. My rare times of leisure are, however, times mostly of weariness also. I had intended to seek my help from the Yorkshire College of Science, and in any case I should be unwilling to commit the Royal Horticultural Society to the failure or success of any local movement. I believe I can nevertheless name privately to you, or to Sir Charles Strickland, at least one large horticultural centre where scientific lectures would be warmly welcomed by professional gardeners, and would perhaps be self-supporting, even from the first. It is rather, however, from above, that I think any important and useful development must come. When gardeners see their employers earnest in desiring to carry horticulture from the empirical into the scientific stage, they will themselves soon follow the example. Horticulture is even behind Agriculture in its scientific aspects, and is in the position in which engineering would have been, had the latter been without physics, geology, medicine without anatomy and physiology, and law without history. I think I may say without offence, that amateur horticulturists do not as a body profess to have much knowledge of the sciences of plant life—of vegetable physiology, morphology, or chemistry. But a warner amongst them, as one of their favourite pursuits would soon be lighted up if such a man as Dr. Reichenbach, for instance, delivered a course of lectures on scientific horticulture at the Society's rooms, and if such work were begun at Chiswick as was done by Dr. Cooper, Dr. Sorauer and his assistants at Proskau, and others, and I may add in England by private persons such as Mr. Darwin and Sir John Lubbock. The work at Kew is of course more exclusively botanical in its methods or purposes. I believe, too, as I have said development must come. When the subject is for discussions, such as those of the Geographical Society, the Geological Society, and other such bodies, would give a great impulse to scientific gardening, both in themselves, and in the reports of the meetings in the journals. Would not a summer gathering of horticulturists, again, at such places, as Chatsworth or Trobach, if permitted, be at least as attractive as the meetings of the British, the British Medical, the Social Science, or the Archaeological Association and far more interesting and useful than the gigantic "provincial" flower shows, which are talked of? Here, sir, I must take leave of the subject, and trust that this discussion at any rate may not remain wholly fruitless. T. Clifford-Allbutt, Leeds. [We entirely sympathise with our correspondent so far as general principles are concerned. It is disheartening, however, to have to recall that the lectures given at various times at South Kensington, by men eminent in their several departments, have been failures. Eds.]

Wild Lily.—It is fortunate for me that you are better able to take in a very mild joke, than is apparently the case with your correspondent of last week. That the wild convulvuli are "the lilies of the field," was a piece of information which I received from a Sussex nurseryman more than half a century ago, and which was not only implicitly believed at the time, but for some years after. K.

Double White Narcissus.—The cause of the failure your correspondent experiences in not obtaining flowers of the Superb Double White Narcissus is due, no doubt, to lack of moisture. We get many thousands for sale in the Covent Garden markets, and as you will say, and our practice is to give copious waterings as soon as the flower bud is apparent, without which they cannot bring the flowers to perfection. We have cut some hundreds of blossoms, and hope to "cut an acre again" for some time. W. Hedges and Sons, Jersey Gardens, Cheltenham.

— Your correspondent, Mr. W. E. Heathfield, appears to have found some difficulty in getting the double white Narcissus to flower satisfactorily. We have a large quantity here, and we have found from experience that to place them in a propagating lifting occasionally and the bulbs to be singled out and planted, when perfectly at rest, in some good light rich soil. They should have an open situation, where they get plenty of sunshine, to well mature the growth. I should say the cause of

your correspondent's Narcissus not blooming as they should was either poor hungry soil, or too much shade, as under such conditions we have found they will remain years without flowering. *Robert Mair, The Gardens, Boyne House, Tunbridge Wells.*

Helix pomatia (see p. 692).—I have found this fine Mollusk at Charing in Kent, at Caterham in Surrey, and at Hemel Hempstead, in Hertfordshire, in each case on chalky soil. This week I found several of it near Godstone, at least a mile from the chalk, and close by were specimens of a plant which I have, likewise, always regarded as a chalk species, *Poterium Sanguisorba*. There was nothing abnormal in the appearance of the burr or the snail; the former is good in a salad, and I know no reason why the latter, cold boiled, should not be just as good therapeutically as a plow's egg. *W. T. Z.*

—I think *Helix pomatia* is pretty plentiful in Gloucestershire. When a boy I remember seeing it often, on the Witcomb Park Estate, near Gloucester. I also remember, when living in Hampshire, a lady of the neighbourhood wanting to see specimens of her cabinet, she asked a Gloucestershire friend to send her a few. The request was soon complied with; the gentleman sent her a hamper full. A few specimens were selected, and the remainder turned out in the garden, to the great annoyance of the gardener. They came from Coleborne near Cirencester. *W. Robin.*

Dendrobium thysiflorum.—I was glad to see that Mr. Day has called your attention to the account that is here of *Dendrobium thysiflorum*, and which is interesting to know on what principle the Royal Horticultural Society grant first-class certificates to new plants. Mr. Wilson, late gardener to W. Marshall, Esq., Enfield, and myself (when gardener to the late G. Cooper, Esq., Camberwell) each received a first-class certificate for them, the latter two months before Mr. Day flowered it, and four years before the Royal Horticultural Society gave Messrs. Veitch a certificate for it as a new plant. I may also say that Mr. Cooper's plant was bought from Messrs. Low. *John Robson, Boxfield Nursery, Dooton, Cheshire.*

Fuchsia serratifolia and **fulgens**.—Plants that will bloom naturally in winter without forcing and which will stand in a moderate temperature, such as that of an ordinary greenhouse, are not over plentiful; and few as there are, one of the best, the good old *Fuchsia serratifolia*, appears to have been almost entirely lost sight of, for, excepting here and one or two other places, where I have given orders for gardenias, hibiscus plants or cuttings, I do not remember to have met with it during the last twenty-five years. Possessing, as it does, the double merit of being free-flowering and of exceedingly attractive appearance, it is very remarkable that it should have dropped out of cultivation in the West Indies, and in our gardens. *Fuchsia fulgens*, my favourite and one that has rarely failed me when most wanted, I have thought a few lines in the *Gardener's Chronicle* might be the means of bringing it to the front again, as I feel sure many would be glad to make the acquaintance of such a really deserving serviceable plant. Most of the *Fuchsias*, *F. serratifolia* is an evergreen, and flowers on the ends of the shoots much after the manner of those of our popular plants, *F. corymbiflora* and *F. fulgens*, that are also fast disappearing, and will soon share the fate of many others that were once considered almost indispensable; but there had not the great choice we have now, since all the world has been laid under tribute to furnish our gardens, and skillful hybridisers at home have not, meantime, been idle in turning any new thing to account. Would that they would take the *Fuchsia* command—not that my old friend could be greatly improved, but that other valuable some of its valuable properties might be raised to help us at a season when really choice flowers are scarce. Noticing how late *F. Madame Corneliussen* continued in bloom, I have endeavoured to effect a cross between the two, but as yet unsuccessfully, although I am not without hope of doing so, as I have had several seed-pods swell and ripen, but from some cause or other the seed did not germinate. Although not so generally useful, the old *Fuchsia fulgens* forms a capital companion plant to *F. serratifolia*, except that it rarely forcing and seldom flowering, but the latter to have it in good condition, but where this can be afforded its foliage alone renders it worth growing for winter decoration, especially where small plants are required for rooms, as in window recesses or the embellishment of dinner-tables, as they are in monthly plants, but they are not the great choice of *F. serratifolia* by the autumn, the cuttings should be put in at once where they can get a brisk heat, in which they will soon root and start away rapidly into growth. Like its congeners, it delights in a plentiful supply of moisture, and a moderate shade, but being altogether a more fleshy and succulent, requires more to harden the wood so as to get it

to bloom freely; this may be done towards the end of the season by gradually withdrawing the lights and exposing the plants, which will tend greatly to get them matured, and enable them to pass well through the winter. As its habit is naturally shrubby, and useless attempting to grow it in pyramid form, in the way others are usually trained, and it never looks better or shows to greater advantage than when allowed to have its own way, except an occasional stopping to induce any strong unruly shoots that appear to be taking the lead to break back. It will grow in the open air during the summer in any deep pit or frame where they can be kept in firm bottom of cinder ashes, and kept well syringed to prevent the attack of red-spider to which they are otherwise rather subject. After their final shift into 8 inch pots, which are quite large enough, and they have got the possession of the soil, liquid manure should be given to afford the necessary stimulus to them in pushing forth a good head of bloom. Plants so treated will flower during the greater part of the winter, and will not be the least attractive among the occupants of the greenhouse or conservatory in which they are planted. The great capricious habit of *Fuchsia* renders them well adapted for a good arrangement in vases to droop over the side, and *F. serratifolia* comes in admirably for this purpose, and on its comparatively soft stems, that take up water freely, lasts in good fresh condition longer than any other kind. *F. J. S.*

Our Burial Grounds.—The thought has many times occurred to me how easy a matter it would be to convert all our closed burial grounds, which are most unattractive during summer in their present arid state, into plots of refreshing verdure. If this were once accomplished it would no doubt be considered a very desirable thing. The green spots here and there in our overgrown city (London) would afford a grand relief to the eyes of its plodding inhabitants when drawn away from the never-ending rows of houses. But the question will be asked, How could this be accomplished, considering that nearly three-fourths of the surface proposed to be thus renovated is covered with monumental stones, and there is no doubt a strong feeling against any kind of interference with these? But as this conservative feeling has been in some measure already broken in upon, and many of the memorial stones which used to be in an upright position, and decorated with iron, or better still, built into or against the walls of the ground, are now to be beyond the bounds of possibility to go a little further in this direction. I should only propose a little further interference with these stones to bring about the desired effect. First of all, then, it is suggested that an accurate plan be taken of the burial ground, and that the exact position of the stones be marked upon it. This done, I would sink the stones from 6 to 9 inches under the surface, being particular to keep them all in their exact position, so that at any time, if necessary, they could be readily found for removal, and a quantity of soil laid over them. After having covered the stones with soil, the ground might be quite smooth by digging it all over, then treading and raking it, preparatory to laying down the turf. If the soil should be considered unfit for turf, a small quantity of fresh soil should be got to spread over the surface, say half an inch thick, which would quite overcome any irregularity of this description. The turf might then be got and laid on, watered and well beaten. Water should be laid on, and a hose provided, so that during dry, hot weather, the grass may be copiously watered when necessary. This operation would be a very simple one, and the expense of seeing and smelling in its immediate neighbourhood. A mowing-machine must be provided, and the grass properly mown about once a-week. There would be no difficulty in doing all this provided the preliminary one of lowering the stones, and marking them, were done. I think it would be well worth the trial, especially if they had the good fortune to have seen the many small spots in the very heart of the city of Paris during the palmy days of the Empire, and to have witnessed how refreshing they looked, and what a boon they conferred upon the denizens of that city. Would it not confer a much greater boon on our citizens, whose city is so much larger than that of Paris? I commend the subject most earnestly to all whom it may concern, and beg of them to "Try it." The grass would probably not remain green every spring, but this would be only a very small consideration in a city, where so much money is annually spent for sanitary purposes. If, however, in any instance the turfing process should prove too expensive, the same result or nearly might be realised in a year or two's time, by the use of a hot-bed, and the selection of good seed, and mowing the grass down occasionally. I strongly urge the adoption of this plan, or at least a trial of it, in a few cases where its practicability could be fairly tested. *E.* [We expect people would say it was so distressing to have to bury their friends, and that it would be better to ask the sexton to be burying their tombstones! However, we presume

our correspondent is alluding to the memorials of the forefathers of the hamlet. *EDS.*]

The Weather and the Fruit Crops.—As if to complete the wreck and ruin wrought by the frost, a strong gale of wind from the south-west set in here on the morning of the 1st, and gathered force till it culminated in a perfect hurricane during the afternoon, and continued to blow with one or two lulls in all directions. The damage it has done to these on the weather side is quite distressing to see, as the foliage is lacerated, battered, and bruised to such an extent as to preclude the possibility of their looking much better till they have met their midsummer showers. To-day [the wind has blown to the good deal, but it is still blowing strong, and is very cold for the time of year, which keeps things very much back, a fortunate circumstance perhaps, as the season turns out so exceptionally bad. Nothing grows, and although gardening has been carried on under unusually adverse circumstances since last autumn, for, with the incessantly wet and mild winter, slugs abound everywhere, and the land is so cold and close that only the hardier seeds can germinate, and such as *French Beans* rot in the ground. The wind shows unmistakably the signs of the coming of the late winter. For blossoms, for the ground is covered with fallen fruit, if it may be said to have reached that stage, and although walls have a fair share that appear likely to swell off, pyramids are an almost total failure, as are *Plums* and *Cherries*, except the latter on walls where, from present appearances, they may be saved as a crop. Never did a season open up with greater promise for all kinds of fruit, or yet more disastrously than this has done. Even *Apples*, that opened so late and appeared a certainty, are now so sadly knocked about that they too must be thin and inferior, and it is never safe to depend on them to come in so regularly, owing to the injury they have received from being chafed about in the manner they have been for the last two days past, independent of the effect the frost and cold has had on them, and which will no doubt show itself later on. As to *Peach* and *Apricot* trees I never saw them in worse for them to be kept, keeping dying away, and the former have scarcely a leaf that is not more or less blistered and deformed, and unless fine warm weather soon sets in of many of them will be too much crippled to recover.—Since writing the above the most favourable change has set in, and to-day [Monday] the real summer weather, which it is to be hoped may continue, as everything stands much in need of the aid of sunshine, of which we have had so little for many months past. Although as yet we have only had a few hours of increased temperature and a slight shower, vegetation has responded to once, and a marked difference may already be seen in the grass, and a decided advance in all garden crops. *F. Sheppard.*

Abies Menziesii.—Whether *A. Menziesii* at Boston, U.S.A., has reflexed scales, while those of the Derbyshire variety are not, is not a matter of much moment to those of our country who are arboriculturists. The question is this—Is *Abies Engelmannii*, the seeds of which were collected by M. Koelz, and distributed by M. Orties in Europe, the same plant as that which I have spoken of as *Abies Menziesii* Parryana, after having admired it in Professor Sargent's garden near Boston. I say it is not. Since I wrote before, I have seen authentic specimens of *A. Engelmannii* from the nurseries of M. Durand of Bourg-la-reine. It is not possible to confound them with *A. Menziesii* and its varieties. The slightly recurved and appressed leaves of *A. Engelmannii* are much less sharply pointed, so that the shoot can be drawn through the hand without pain. In *A. Menziesii*, on the other hand, the leaves are excessively sharp, so that they cannot be drawn through the hand with impunity. The habit of *A. Engelmannii* is much closer to that of our native *Abies* than that of the other species, and there are other differences which it is unnecessary to mention here. I maintain that the *Abies Menziesii* Parryana, of which last autumn Mr. Waterer possessed the only specimen in Europe, and who obtained the plants from Mr. Sargent himself, is a splendid variety of a unique colouration, and one which I hope to see widely distributed ere long. *Ed. André, 67, Rue Blanche, Paris.*

Paraffin Oil as a Dressing for Seeds.—In spite of all that your correspondents have said in favour of paraffin for the above purpose, I should say it is a remedy that requires using with great caution, particularly as paraffin varies so much in strength, as it is quite possible to get five or six kinds of oil in a small town; and if the seed should remain in the oil long enough for the oil to penetrate the outer coat, it would destroy the vitality of the seeds. A few years since paraffin oil was recommended as a cure for mealy-bug. On visiting a neighbour—we were going through a range of vineries—we came to a house where the vines were dead to where they entered the house to ask the owner of the matter, as the other vines looked well. Oh, he said, I had

a few stove plants in the house and got bog on the trees, and was recommended to use paraffin oil to cure it; so I gave them a winter dressing, and you see the result. I was so well satisfied with its curative properties that I should want a good deal of persuading to use it. *K. Makers, Boyne House.*

Effects of Paraffin on Peach Trees.—My Peach trees were well formed and healthy, and bore crops equal to any in the county. Scale having appeared on them, I was strongly recommended to brush them with paraffin oil, which I did on December 21. It not only destroyed the scale, but the trees also. There were no signs of harm done until the fruit was set, when gradually branch after branch showed signs of decay, and now they are more like fire-wood than growing trees. I also know others in this neighbourhood who have suffered through using paraffin, and would therefore, like "R. W.," recommend your readers to consider before using it on trees or Peas. I have also tried an experiment on a plant of Prickly Comfrey, which it destroyed in two days. *S. Laird, Dunminald Castle, by Montross, N.B., June 6.*

The Cultivation of Seakale for the London Market.—This differs so much from that described by your able correspondent in the former number that I will attempt to give your readers a short account of how it is grown in quantities of from 10 to 20 acres. Sets are only used, and these are obtained from the strongest of the roots cut of the Kale when lifted to force. They are cut into sets 4 inches long. It is advisable to make two sizes of sets, so as to have as many as required at planting time. Planting the smaller ones last they come in for later forcing. It is surprising how small a set will produce a fine Kale an inch in diameter. As the sets are made they are laid in soil, thick end upwards, and a little litter thrown over them till April. When they are dibbled in between-leather cabbages or lettuce, a set between each plant, barely covering the set, when dibbled so deep, they don't produce such fine crowns. It is never grown as a crop by itself, sometimes the third crop on the ground, as the autumn cabbages are cleared off, there is a row of spring-own lettuce planted between the rows of Kale, and those are cleared off before they interfere with the growth of the Kale. The sets planted between the cabbages are 12 inches apart, and those between the lettuces 9 inches apart, and from 16 to 15 inches between the rows. As the cabbages and lettuces are cleared off, they are gone over, and all the shoots but one taken off, and then well hoed, keeping clean is all that is now requisite till the middle of November, which is about the time forcing begins for Christmas. The Kales are then carefully lifted, and prepared for forcing by cutting off all the roots to within an inch or two of the crown. The trenches for forcing are previously prepared by marking of the beds 4 feet wide; and the soil from every alternate space is thrown on the top of the next space till the beds are 4 feet deep. These are filled with fresh fermented manure and well trodden in the trenches. The Kale is planted in the intervening spaces between the manure, in rows nearly as thickly as they will sit, and about 4 inches between the rows. As the beds are planted short stakes are inserted thickly over them, and then a little short litter is loosely shaken in between them, as the Kale lifts it up in its growth over the top of the stakes. Mats are then laid, and the beds and the fermenting material well covered with loose litter, of which there is always a good supply in hand. As the manure comes from the bottom of the litter is shaken out and stocked for covering purposes. It is only the shortest and best that is used for digging into the ground, and that is used freely and in great quantities, several crops being produced from one manuring by market gardeners. The Kale is ready to cut in a month or so from the time of planting. The sets are generally cleared at two cuttings, the outside first and the centre next. As the beds are cleared the stakes, mats, and litter are removed to others. I may notice that for small quantities similar trenches are thrown out, and filled with fermenting material, and the soil turned on to the top, to the depth of 12 inches, planting the Kale as the soil is returned, and covering up as noticed. This mode is as good as the former, but not generally practised, though I think preferable for small growers. Kale produced in this manner is of the best quality, and is generally produced in drier atmospheres. Forcing the roots out of doors from year to year is very uncertain, and attended with much labour and anxiety. I strongly recommend making annual plants, and forcing as above.—*E. W.*

The Calville Blanche Apple.—At the February meeting of the Fruit Committee, Mr. Stevens, gr. to the Duke of Sutherland at Trentham, exhibited a leafless, pot-grown tree of this grand variety, on which ten very fine fruits were still hanging. Since then a beautifully coloured plate of the Apple has appeared in the *Florist and Pomoologist*, and on the

same subject Mr. Stevens has contributed some notes to the *May* number, from which we learn that some trees of the Calville Blanche were introduced to the gardens at Trentham more than fifty years ago by the then Marquis of Stafford. The trees were planted against a south wall, and fruited regularly until their removal to make room for glass-houses. The Apple, under such circumstances, was said to attain a fair size, but to be wanting in flavour, by comparison with samples subsequently grown in pots. The climate at Trentham, says Mr. Stevens, is so uncertain and unfavourable for the growth of Apples out of doors, that the late Mr.



FIG. 118.—CALVILLE BLANCHE AS A POT TREE.

Fleming happily hit upon the idea of growing this Apple extensively in pots, and he purchased, some twenty years ago, of Mr. Rivers, a quantity of small trees, grafted upon the French Paradise Stock, which trees never fail to produce a sufficient quantity of handsome and delicious fruits for dessert during the winter months. Mr. Stevens adds, however, that it requires a long summer to bring out its best qualities as a Dessert Apple. If grown in an orchard-house the trees should be in flower by the latter end of March, and the fruit should never be gathered until they have attained that bright yellow colour peculiar to this Apple, and this will not occur, as a rule, before the middle or end of October. The fruit should be gathered as they attain their full colour, but not before. They will then

ripen perfectly, with a firm, crisp flesh, vanishing in the mouth like that of a Peach, and leaving a delightful impression on the palate. Our illustration (fig. 118) will represent the pot specimen shown by Mr. Stevens on the occasion above alluded to. When used in the leafless state for decorative purposes, a few adventitious leaves can be supplied by the cultivator! *E. W.*

Blair Athole Plants.—Your correspondent, Mr. Evershed, in his interesting account of Blair Athole, says that Anthericum canaliculatum is not rare in the vicinity of the Castle. Surely there must be some mistake here. *Anthericum canaliculatum* is a Cape plant. The only plants of this family grown in the United Kingdom are *Lloydia serotina*, an inhabitant of the more inaccessible parts of Snowdon; and *Simethis bicolor*, a denizen of sandy Pine woods near Bournemouth. Does Mr. Evershed allude to either of these plants? *H. Harpur-Crewe.*

Teedia lucida.—This pretty plant is just coming into bloom with me. In leaf and habit it much resembles a *Scrophularia*, to which genus it is closely allied; but it has umbels of delicate mauve flowers, somewhat like a miniature *Franseria*. It has been in the greenhouse during the winter, but has a hardy look. *H. Harpur-Crewe.*

Malva campanulata.—This rare and pretty Chilean Malva is now nicely in bloom here. It has stood out all the winter in the open border. It has pretty foliage, and numbers of pale rose lilac flowers, about the size of a shilling, with dark purple anthers and stigma. It was struck with its beauty some years since at the Wellington Nursery, and purchased; but both Mr. Henderson and I lost our stock during the ensuing winter, and I tried in vain to procure another plant. Last year Mr. Max Leichtlin very kindly sent me some, June 4, and I raised a few plants. *H. Harpur-Crewe, June 4.*

Myosotis dissitiflora.—As on more than one occasion special allusion has been made in the *Gardener's Chronicle* to the manner in which this beautiful early spring flower has been cut with the frost this season, and, fearing that this may tend to bring a most useful spring bedding plant into disrepute, I desire to state that I have never had this *Myosotis* in more luxuriant or lengthening bloom than is the case this year, although, because of the cold and dull weather of March it was at least a month later than usual coming into bloom, yet it has more than compensated for this in the fact that now, in the first week in June, it is in a mass of flower, and has been so from the first, only excepting the week of the May frosts, when it was cut as though scared all over with fire; but in a few days all traces of the frost were lost in the renewed and abundant bloom. This *Myosotis* is incomparably the best of all blue spring bedding plants yet that can be got true from seed. *Alex. Dean, Belfast.*

Reports of Societies.

Royal Horticultural: June 5.—The Rt. Hon. Lord Alford, President, in the chair. The medals which had been awarded at previous exhibitions were presented by his lordship, and after thanking the exhibitors for their generous support to the Society, stated that he had received an intimation that their Royal Highnesses the Prince and Princess of Wales would honour the great summer flower show, on the 19th instant, with their presence.

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

Plants Exhibited.—The Rev. H. H. Crewe exhibited cut blooms of the following plants—*Malva campanulata*, from Chili; *Muscari armeniacum*, the latest, and in some respects the most beautiful, of the genus; a white-flowered variety of *Geranium pratense*, an accidental hybrid *Poppo* between *P. arvense* and *P. bracteatum*, with the habit of the latter and intermediate in colour between the two supposed parents; *Lunaria rediviva*, *Orchis pseudopalens*, *Tulipa carolina*, and on the part of Mrs. Bateman a singularly lacinated Parrot Tulip.

Mr. Eves forwarded blooms of *Ismene viridiflora*, a curious green-flowered *Anarrhida* from Peru; *Cypripedium macranthum*, a hardy purplish brown Orchid from Siberia, very rarely seen in cultivation; *Fritillaria recurva*, from California, very distinct in its orange-coloured flowers from any other *Fritillaria*; *Geranium terestricum*, *Orchis* from northern Italy, to illustrate a case of natural hybridism as generally supposed, but the plant, *Isatis triloba* or *Serapias papilionaceo-lingua*, which was figured (from the same plant now sent) in the *Botanical Magazine* recently, 1625, is so rare that it deserves further examination. For this purpose the two supposed parents, viz., *Serapias lingua* and *Orchis papilionacea*, are also sent. A

small-flowered *Cyrtanthus*, from Natal; and a curious plant which Mr. Elwes received from Van Houtte as *Cyrtanthus* species, but which evidently does not belong to that genus. It is not bulbous, but has a root like *Agapanthus*. [*Tulbaghia alliance*, J. G. B.] *Niphion tingianum*, [true *Niphion*, I believe, not the same as the one figured in the *Botanical Magazine* as *N. tingianum*, which is only a form of *N. filifolium*. [X. latifolium certainly. J. G. B.] [Specimens were also sent from Calcutta to the Duke of Devonshire and Benham, the last new to cultivation. J. G. B.]

Narcissus Fita, &c..—Mr. Murray exhibited specimens of a *Narcissus* yellow-flowered which he had raised from larvae taken from *Narcissus* bulbs. They exhibited so much variation as to give rise to the suggestion that some of the so-called species of *Narcissus* are varieties of one and the same. Mr. Murray also showed eggs of a Mantis enveloped in a frothy secretion, and having the appearance of a cocoon.

Diseased Myrtle Leaves.—Dr. M. C. Cooke reported as follows on the leaves (sent by Mr. Lee) submitted to him at the last meeting:—

"The leaves submitted to me for report, were all deeply discoloured with a white mould which occupies half the superficies of the leaf. Out of four leaves, two had a whitish frosted appearance on the upper surface, caused by the presence of a white mould, while the other two were spotted with a whitish areolae. A microscopic examination demonstrated that the white mould was a species of *Oidium*, with small oval spores arranged in chains, the spores not exceeding .008—01 in diameter, and which were not attached to one another, which this mould can be referred to. At first I thought it might possibly be the same species as that which attacks young Pear leaves in spring, and which I published in *Fungus Fidele* (No. 245) as *Oidium* minutum; but the latter means probably, as the spores in that species are .013 x .012—014 mm., or fully three times as large, and there are no discoloured spots."

"The next question which arises is whether the disease is caused by the fungus? As far as I have yet seen I do not think that the fungus is the cause of the disease, but a consequence. In the two leaves on which there was no evidence of the fungus, I have satisfied myself of the presence of mycelium, or of any other indications of fungoid disease. The spots were in a condition of soft decay, and that decay appeared to be the result of where no fungus was present as where the mould was distinctly evident."

"In other species of *Oidium* there appears to be no habitual decay or decoloration of the leaves. Such species as precede the species of *Erysiphe*, which I published in the *Hesperian* do not in fact affect the leaves, and even the *Oidium* of the Vine is not preceded by decayed spots. It is always necessary to be cautious in making strong affirmations on the subject of a disease, or a simple series of specimens, but I certainly am of opinion that in this instance the cause of the disease must be sought elsewhere than in the *Oidium* found on some of the leaves. Doubtless it would be an advantage to examine another parcel of leaves sent to the committee for further examination, and it should also be stated whether one tree or many are injured, because if some should escape it would be interesting to know under what different conditions the plants are growing. Still more, it would be an advantage to learn if the same disease has appeared elsewhere, because, if not, some local cause would then have to be sought for in its occurrence."

"It is not by any means satisfactory to characterise these moulds, which probably are not autonomous, as distinct species, still it is an advantage to have at least a temporary name by which to speak or write of them, and for such purposes the *Medica* mould may be known as *Oidium Medica*."

Larch Disease.—Rev. H. H. Crewe forwarded on the part of the Duchess Dowager of Athole specimens of trees affected with this disease, together with the following communication from Mr. M'Gregor, forester to His Grace the Duke of Athole:—

"I send a box containing a few specimens of portions of the stems and branches of Larch from the Ladywell plantation, showing the blister with which many young plants of Athole have been afflicted for the last year, and which has been also afflicted for years back. There is also enclosed, wrapped in paper, some branches with fresh foliage containing the insect, which I believe is the cause of the blister; and another paper containing a few specimens of Larch also afflicted with insects, although on Scot's Fir I never noticed blisters."

"With reference to this matter, I may mention that the appearance of insects in life on Larch was noticed by the fourth Duke of Athole in 1795, as is shown in the paper on the Athole Larch plantations in the Highland Society's *Transactions*, No. xvi. p. 207, March, 1829. It is also referred to in the edition of *Gilpin's Forest Sketches*, edited by Mr. Thomas Dixon, London, vol. i. pp. 157-8, printed in 1824, where it reads:—'The Larch is much infested in this country with the insect peculiar to it, which we shall call the Chermis larva, or the Larch larva.' The male of the insect is the active winged fly, whilst the female is without wings, and one of the most inert of the things possessed of life. The female is generally found adhering to the silky angles of young trees' buds like a brown scale. It lives upon the resinous sap of the tree, which it seems to pump up by inserting its proboscis into the bark, and the resinous matter exudes in a flocculent and white state from certain tuberculated pores in the thorax, abdomen, and caudal,

covering the creature with what to the careless observer looks like a woolly or cottony substance. When the insect is ready to fly it emits a strong odour, which is due to the bark, one by one as they are excluded, by minute resinous filaments spun from a mamillary protuberance in the breast. It lays eighty or a hundred eggs or more, and the larvae shed their skins several times, and are applied to the ends of them, so that, when one is touched by a delicate instrument, the whole are thereby put in motion. It appears that instinct teaches the insect to leave the end of the egg at liberty where the pupa lies, and the wonderful provision of the Great Creator of the universe is such that the heat necessary for the enclosed pupa, and that for the growth of the young shoot being equal, the insect which is in the case of the cocoon, is ready for food to the insects that they are ready to burst their coverments, and revel on its juices. The pupæ have six legs, and are very active. Our examinations of these creatures were minute and frequent, and long-continued, and our observations many, but we have not room to give them in detail here. We may remark, however, that in the plantations subjected to our inspection, the trees which were the most hurt, and in which we could discover but two or three Larch trees which appeared to be actually killed by the insect, though many were manifestly much retarded in their growth by their operations, but which were in such a manner so situated, that we could not detect the insect at all, except, we think, on one occasion, and then a few individuals merely were observable on one tree." During the last two years the insect has been very common, and it is to be hoped it may disappear altogether, as it has been the cause of great loss in young Larch plantations.

"His Grace the Duchess Dowager of Athole has also desired me to communicate any further particulars regarding the insect, and other diseases affecting the Larch that might be interesting. But I fear I can add very little to what I have already written, and I should be glad to be informed in any circumstances in which I would desire to bring under notice, and which is exhibited on the specimens sent—it is a fungus of the genus *Fozia*, which is almost invariably found on the blistered portions of the bark of the trees, but does not extend upwards from the seedling of one year to trees of upwards of twenty years, and it is found on every variety of soil and situation. There is also another disease to which Larch is subject, and which is not common, but which I do not do with the aphid—it is a decay of the tissues of the wood, and is most noticeable in old trees." John M'Gregor.

Mr. Andrew Murray described the changes in this well-known but little understood disease. The disease consists in an ulceration of the tissues under the bark, and the excretion of resin, or, in some cases, a derangement of the nutrition of the plant, so that how that derangement is brought about is at present uncertain. The insects and the fungi which are found accompanying the disease appear to be the consequences and not causes of the malady. The nature of the soil will not account for it, as the disease is steadily progressing, and occurs on soils of very different character. Mr. Murray had seen young plants of only one year's growth, and on which there was no trace of insects thus diseased."

Action of Scion on Stock.—Dr. Masters contributed the following communication from Mr. Sme of Elvanor:—

"In the spring of last year I had a few of Mr. Richard Smith's golden Laburnum grafted cut-downs on the common Laburnum. Five or six of the scions died, the stocks starting freely from 2 inch to 2 inches below the bases of the dead scions. These stocks were all vigorous and in the full of leaf, and the branches next to the dead scions having made from 1 foot to 3 feet of growth. The uppermost branches of three out of the five stocks have now golden yellow bark and leaves like Mr. Smith's golden Laburnum. I do not hesitate to say that, while the scions lived, their sap, which was too thin to effect a union with the stocks—the scions having been put on rather late—influenced the stocks for a considerable period. It is possible they were affected, but it is one thing in connection with them that I am not certain of, and that is, as to whether these branches that are now golden were so last year; but really I do not believe they were, because, if they had been, I have a conviction that I would have noted it."

Dr. Masters alluded to other instances of the same kind in Laburnum and other plants.

Asplenium Farleyense.—Mr. Sme also sent a portion of a frond of *A. Farleyense*, showing an attempt to produce spore-cases. This condition is all over the plant, and is quite unusual to this species of *Adiantum*.

Hybrid Aquilegia.—Dr. Masters showed, on the part of Mr. Douglas, flowers of a hybrid raised between *Aquilegia vulgaris* and *A. vulgaris*. The flowers were large, the sepals of a pale-blue; the petals pale-primrose, and almost flat. The flower was of great beauty. Another hybrid was shown from *A. californica* and *A. chrysantha*, with large flowers intermediate in colour between the parent forms.

Various Malformations.—Dr. Masters showed, on the part of Mr. Pilgrim, of Cheltenham, a spaxid of

Richardia aethiopica with three spathe. Also flowers of the curious condition of the wall flower in which the petals are reduced to linear threads, and in which the stamens are converted into carpels, so that there is a ring of imperfect carpels surrounding the normal central pistil. This is the form called var. *gyrantherus* by De Candolle. The specimens were given through by Mr. Ware, of Tottenham, who also sent green-flowered *Panicum* species. The remarkable *Gloxinia* was also exhibited, the peculiarity consisting in the development from the outside of the normal corolla tube of a supplementary series of petaline lobes, constituting an imperfect corolla outside the first. This malformation has been the subject of a memoir by Professor Edward Morren.

FLORAL COMMITTEE.—W. B. Kellock, Esq., in the chair.—As was to be expected but few subjects, comparatively speaking, came under the notice of the committee to-day. The finest contribution to the meeting was a large group of Orchids from Mr. G. Hepburn, Esq., Sincup Place, Kent (Mr. Loveland, gr.), and which included two very fine specimens of *Vanda suavis Veitchii*, with five good spikes between them of a very large and well-flowered *Dendrobium nobilissimum*, a very good specimen of a new variety of *Sobralia macrantha*; *Anguloa Clossweii*, with one flower of its large cup-like yellow flowers; *Dendrobium Dahloosianum*, *Odontoglossum citrosium*, with several very fine spikes; *Cattleya Mossie*, with eight flowers; *Cypripedium caudatum*, *C. barbatum grandiflorum*, together with a very good specimen of a new variegatum, *Cattleya Mendellii*, *Oncidium sexosum*, *Phalaenopsis Ludemanniana*, *P. grandiflora*, *Oncidium crispum*, *Maseveldia Veitchii*, &c. A silver medal was awarded. From Mr. John Willis came a small but showy group of *Odontoglossum* and *Cattleya* together with a very good specimen of a new variety of *Anthurium Scherzerianum*, which promises for size to run Ward's variety very close, if it does not prove to be identical. A silver medal was also voted to this group. Another very showy group of Orchids was contributed by Mr. Ollerhead, gr. to Sir H. W. Peck, Bart., of the Wimbledon House. This included a good-sized and exceedingly well-flowered example of *Dendrobium amonum*, *Brassia Lawrenceana*, with four good spikes; the showy *Dendrobium formosum giganteum*, several fine *Odontoglossum*, notably *O. Alexandri*, *Scaccolabium retusum*, with two exceedingly good spikes; *Oncidium*, *Oncidium affine roseum*, the charming *Odontoglossum nevium majus*, *Cattleya maxima pallida*, *C. purpurata*, *Odontoglossum Roezlii* album, and *O. citrosium*, &c. Mr. Ollerhead also sent a fine and particularly well-flowered bush of *Aotus gracillima*, a grand old plant very seldom seen in this country, and was also awarded to this collection, as well as to Messrs. James Veitch & Sons for an interesting group of *Maseveldia* and a few other Orchids. The former consisted of flowering plants of *M. Harrizana*, *Veitchiana*, *coccinea*, *nycteria*, *similia*, *lanocharia*, *infracta*, *ochrolepis*, *lanceolata*, *barlowiana*, *Parlatii*, &c. The latter. The other Orchids shown were a very good specimen of *Odontoglossum nevium*, a beautifully coloured *Cattleya Mossie*, *Cypripedium Parishii*, *Oncidium concolor*, *Cypripedium caudatum*, &c. Messrs. Barr & Sugden received a bronze medal for a very showy group of cut blooms, brilliantly coloured varieties of *Sparaxis*. From Mr. Holmes, Whittington Nursery, Lichfield, were specimens of *Juniperus virginiana* variegata, the young shoots on which are tipped with silvery white. Messrs. Osborn & Sons sent a sample of the new *Fyrehurum aurum*, *O. incicium*, and from Mr. Osborn & Sons came cut blooms of several varieties of *Stocks*, and *Tropaeolum*, &c. The Rev. A. Rawson, Bromley Common, showed cut blooms of *Calochortis* and *Cyclobothra*, and Mr. B. S. Williams contributed examples of a new show *Polygonum* which he has named *P. elegantissimum*. It has dark blood-red in colour, and a delicate dark maroon. It has a neat and vigorous habit, and must prove a useful market or general decorative plant. First-class Certificates were awarded to Mr. Ollerhead, gr. to Sir H. W. Peck, Bart., M.P., for *Odontoglossum Alexandri*, *Scaccolabium retusum*, *Oncidium affine roseum*, the sepals and petals being entirely white with rosy lilac. To Mr. Kinghorn, Sheen Nursery, Richmond, for *Gloxinia Paragon*, a very free, erect-flowering variety, the large, bold blossoms of which are pink-shaded with rose in colour, by a delicate but not too deep tinge of purple. To Messrs. James Veitch & Sons, for *Cattleya Skinneri* alb., the sepals and petals of which are silky white, and the lip too, with an addition of a faint blotch of primrose, and a rosy purple base. To Messrs. John Laing & Co., Stanstead Park, for *Begonia Gloire de Nancy*, which does the work of the *Wimpolei* variety; a distinct and decided novelty. To Mr. James Douglas, gr. to F. Whitburn, Esq., Loxford Hall, Ilford, for two very beautiful hybrid *Aquilegia*—*A. hybridæ cœrulea*, the result of a cross between *A. corallina* and *A. chrysantha*, and exactly intermediate between the two; and *A. hybridæ albicaerulea*, which is in colour, and the petals yellow; and *A. hybrida californica*, a cross between *A. californica* and *A.*

chrysantha. The flowers in this case are larger than those of its first-named parent, the petals being yellow in colour, and the sepals and spurs dark crimson. In habit both of the hybrids are intermediate in character between the parents, and what is most curious is, that the same plants produce the same seeds, a great proportion of the progeny proved to be identical with those shown. To Mr. Turner for show Pelargoniums Eloquence (Foster), dark crimson with dark maroon blotches; Venus (Bantani), white, with a faint maroon blotch; a promising variety, called Virginia Queen (Smith), white spotted with puce, also a showy decorative variety; and Mr. King (Turner), one of the fancy section, lilac, shaded with dark rose, and of fine form; and to Mr. C. Barley, Brentwood, for Pelargonium T. A. (Rabard), a variety which will large, smooth and very refined scented blossoms.

FRUIT COMMITTEE.—John Lee, Esq., in the chair. Nothing of particular importance came under the notice of this body to-day. Mr. H. J. Barnes, gr. sent specimens of a Cucumber named Montrose, which was not considered to be any improvement on many existing kinds. A cluster of Cucumbers, one of which was slightly fasciated, an occurrence which is very rarely met with, was shown by Mr. J. Swanwick, Esq., Chesterfield. An exceedingly fine dish of Hathaway's Excelsior Tomatos was shown by Mr. Iggulden, gr. to R. B. W. Baker, Esq., Orsett Hill, Essex, and a Cultural Commendation was awarded. Messrs. James Carter & Co. showed examples of their Silver Broccoli, a variety by no means white-flowered variety, to which the committee made no award. A new variety of Broccoli was also shown by Mr. Gough, The Gardens, Westwood Park, Bristol, and which, though past its best, was thought to be a promising sort. Samples of Broccoli named Lord Broccoli, shown by Mr. Howard, gr. to J. H. Johnson, Esq., St. Oysth Priory, Essex. This was considered to be quite distinct, but no improvement on existing sorts. A fine dish of Strawberries, unnamed, but said to have been grown under the name of Stirling Castle, was shown by Mr. Cadger, gr. to N. Mayer de Rothschild, Esq., Tring Park, and a Cultural Commendation was awarded. Mr. Gilbert, gr. to the Marquis of Exeter, Burchley Park, Stamford, sent a netted variety of the Victoria of Bath Melon, which proved to possess a very fine flavour, but was not considered distinct from the Victoria of Bath. Two pots of Garibaldi Strawberries, a sample of a batch of 1000, were shown by Mr. Denning, gr. to Lord Londesborough. The general opinion seemed to be that they were not distinct from *Vicomtesse Hericard* de Thury. A letter of thanks was voted.

Royal Horticultural Exhibition.—The spring show of this Society took place on May 29 and 30, at the Crystal Palace, and was the show of the year, and was a good one. Though smaller than on previous occasions, the quality more than made up for the quantity. The plants shown by Messrs. Lacombe, Finck, & Co., of Exeter, must be awarded the highest commendation. No one could help being struck immediately on entering the hall with the magnificent plants occupying the centre of the room, and with a stand of *Azaleas* to the left. A splendid Palm (*Latania borbonica*) overshadowed the other plants in the centre stand. There was an *Ixora amabilis* with twenty-four beautiful bloom-heads, very full and perfect. A fine variety of *Aphelexis saccharum* roses, *Dendrobium densiflorum*, with fourteen spikes of bloom; a fine *Stephanotis*, and a splendid *Yucca*. Messrs. Lacombe, Finck, & Co. also had several exhibits not for competition, among them a box of very lovely cut Roses (*Niphedos*) of perfect shape and delicate colour, sent by Mr. E. Taylor, of Beaconfield, Plymouth, had some exceedingly good exhibits. The *Chorozeema* he sent to compete among the specimen plants in bloom was one of the finest ever shown in Plymouth. Mr. Taylor's Ferns, too, were very fine, but in them he was closely rivalled by Dr. Methan, of Stoke. So close was the competition between these gentlemen in the class for six varieties that the judges, after careful consideration, eventually decided to award them an equal 1st prize. The Ferns altogether were exceedingly fine. In the class of twelve varieties, as well as in the class of six, the competition was difficult in awarding the prizes. The competition here was between Mrs. Fisher, of Stoke, and Dr. Methan. The former showed some beautifully cultivated plants, among which *Lomaria gibba* and *Pteris tricolor* were specially good; but the 1st prize went to Dr. Methan, principally, perhaps, because his plants were of far greater value. The most noticeable among them were fine specimens of *Adiantum peruvianum*, and the very pretty *Davallia Teyrmani*. In addition, however, to the 2d prize, the judges highly commended Mrs. Fisher's plants for their superior cultivation. The Pelargoniums were also very good, those of Mrs. Fisher were of splendid growth and flower. In tricolors the competition was very keen,

Mr. Fitzcock, who was awarded the 1st prize, being very well seconded by Mr. Johns, of Morrice Town; and Mr. C. Pridcaux's were so good that, in addition to receiving 31 prizes, he was highly commended. In the class for nine Pelargoniums, Mr. Harvey, of Clons, Plym, exhibited a splendid lot, far exceeding all competitors, but in the class for "three," Mr. I. Watts, of Plymouth (who was a large and successful exhibitor in other classes), had a lot with the best blossoms of any in the show. In *Calceolarias* Mr. Harvey's plants were very fine, especially that of Mr. Pridcaux; and in *Petasites* Mr. Steer's contributions were especially admired, particularly *Madame Hengest* and the *Countess of Morley*. Mr. G. H. E. Rundle was the only exhibitor of *Roses*. His lots had fine blossoms, but the plants were small. The two exhibits of *Teas* were very fine, especially that of Mr. Pridcaux. The cut flowers were few in quantity, but very good.

The fruit and vegetables were a good show, rather smaller, though, than usual, probably owing in the case of the latter to the lateness of the season. Earl Devon's 1st prize Grapes were a picture, and though Mr. Harvey's were larger in the berry they were not so good in colour. Mr. Hawke, of Liskeard, showed a very good Pine; and Mr. Rundle's basket of seedling Strawberries were much admired. The most noticeable of the other vegetables were the Spanish Broccoli, a hundred of Asparagus, sent by Mr. C. Pridcaux, and though Mr. Watts' were exceedingly good, the judges evidently had no difficulty in awarding the 1st prize. Mr. Watts made many other capital contributions to this department. His collection of vegetables and also Carrots and *Noisette* cresses, three trusses to well deserved the extra prize awarded them; and his 1st prize Rhabarb was remarkably fine. *Western Morning News*.

Bath and West of England and Southern Counties Association: The novelty in the floral department, is the introduction of two tea-geneas of a novel type, and which are especially adapted to be shown by nurserymen, and one by amateurs. Mr. C. Turner, of Slough, met not only no foe worthy of his steel, but, we regret to add, no foe at all, and the judges, Mr. Curtis, of Torquay, and Mr. Arkwright, of Herefordshire, had no difficulty in awarding the 1st prize, especially that of Mr. Devoniensis, *Marchal Neil*, and *Madame Willermors*, have been nowhere excelled. The other Roses shown in this collection were *Celine Forester*, *Niphedos*, *Gloire de Dijon*, *Safano*, *Souvenir d'un Ami*, *Maria* and *Madame*, *Madame de Saint Joseph*, *Madame* and *Madame Falot*.

Only two competitors met in the class for amateurs, which number we hope will next year be multiplied by ten. Mr. Chard, gr. to Sir T. Batuurst, wrest the laurel wreath to Mr. Hunn, gr. to R. B. The former had in good form *Catherine Meris*, *Souvenir d'un Ami*, *Marchal Neil*, *Devoniensis*, *Celine Forester*, and *Adam*, and we were pleased to greet a very old friend in a beautiful blossom of *Arkwright*.

Mr. Arkwright sent two boxes not for competition. Though at a matter of much regret that some liberties did not notice more growers, still a point has been made in proving that at Oxford next year a grand collection of *Roses* may be got together, if it becomes generally known that renewed efforts will be made in this direction. Modest and timid exhibitors write at the last moment, one that he cannot manage the weather, another that his plants have blossomed out, another that they are still in bud, and so on. *Teas* are far more amenable to management than any other class of *Rose* in this respect, and we may fairly ask all growers to keep the first week of June, 1878, constantly in their memory from this time forward, for no stand in the show of this year at Bath has given more genuine pleasure than the four boxes we saw to-day. A new feature, we are told, at Oxford will be a mixture of twelve *Teas* and twelve Hybrid Perpetuals, arranged alternately in the same box of twenty-four. Here will be a grand opportunity for nurserymen to make the most of natural effects in contrasting the delicate shades of pink, straw, and white of the *Teas* with the brilliant reds and crimsons of their more robust cousins, especially if, as Mr. Curtis has suggested, encouragement, or rather prizes, be given to the *Rose* exhibitors in the stages of its development. Growers should had this latitude given, for it will consign many an eteet blossom to its proper place to make room for a brighter successor in the dawn of its youth and beauty. We cannot conclude without mentioning that the most acceptable feature in the horticultural tent, and expressing a hope that the committee of the National and other *Rose* shows will view with favour this proposed innovation in making it essential to mix *Teas* with Perpetuals in equal proportions. A.

Central Horticultural Society of France, Paris.—On the 28th, 29th, 30th, and 31st of May last the Horticultural Society of France held its

annual flower show in the Palais de l'Industrie, in the Champs Elysees. This show took place as usual during the time the Salon (that is our Royal Academy) is opened. There were about sixty exhibitors, all of them being, with a few exceptions, nurserymen. The name of the show (Objet d'Art) was "M. A. Chantin, who staged a fine collection of Palms, Pandanus, Ferns, Agaves, Aloes, Bromeliads, Anthurium, Acazacia, a fine *Corypha Gebrena*, and sundry other hothouse and new plants. The 2d prize (Objet d'Art) was won by M. de Lamoignon-Soyve for a collection of Palms, Ferns, Crotons, Marants, Dracaenas, and other hothouse plants, but the show that attracted the attention of all the visitors was that of M. A. Bleu, who showed the finest collection of *Maladuns* we ever saw put together; he was awarded a 1st prize. M. de Lamoignon-Soyve, among the sixty varieties, which were all fine plants, and in splendid condition, we noticed the following:—*Madame Alfred Bleu*, *Impératrice*, *Eugénie*, *Devicak*, *Luxurante*, *Princess of Teck*, *Burel*, *Madame Andrieux*, *Adolphe Andrieux*, *Vicomtesse de Rouze-Ornan*, *Madame Verdier*, *Pyrreus*, *Perle du Brésil*, *Araïnoe*, Mrs. Ling, *Agrippine Dimitri*, &c. The *Roses* were generally very poor, nothing equal to what we are accustomed to see in London. MM. Lévêque & Fils, who sent 800 plants, received a medal of honour. The 2d prize was given to M. de Lamoignon-Soyve, Alice Leroy, Virgile, Adam, Louis Van Houfte, Prince Napoleon, Climbing Devoniensis, *Eméralda*, *Thérèse Levat*, *Marguerite Dombrian*, Mrs. Bosanquet, *Marceline Niel*, *Annie Alexiev*, *Abbé Brancard*, *Madame Louis Lévêque*, *Marie Arnaud*, *Edouard Lévêque*, *Prince Adolphe de Lamoignon*, *Comtesse de Bresson*, *L'Éclatante*, *Camille Bernardin*. M. Margottin Fils received also a medal of honour for his collection. We remarked the following: *Captain Christy*, *Pauline Labouret*, *Madame Falot*, *Madame Fardio*, *M. de Lamoignon*, *Facole*, *Anna Dieckhoff*, *Aug. Oger*, *Vicomte Lefebvre*, *Cherpin*, *Monte-Cristo*, *Charles*, *Victor*, and *Paul Neron*. We may here state that a grand gold medal has lately been awarded by the Society to M. Levet for his having raised the now well-known *Rose Paul Neron*. A silver medal was given to M. Dumoulin for his collection of 150 varieties of *Roses*.

M. L. Herivaux had a splendid collection of *Cocos Weddelliana*, for which he received a silver-gilt medal. M. Malet (silver medal), showed six fine plants of a new *Zonal Pelargonium*, *Gaston*, a good plant, and *Madame de Lamoignon*, a fine one. He had two new *Zonal Pelargoniums*, *Duchesse de Magenta* and *Trocis d'Henin*. M. Darand, gold medal, for Palms, Bromeliads, Ferns, Evergreens, &c. A collection of 130 *Pansies* brought by M. Falaise, secured a silver medal. M. Valleraud a gold and a silver-gilt medal for above hundred varieties of *Gloxinias* in fine condition. M. Moser, of Versailles, took a medal of honour for his *Rhododendrons* and *Azaleas*. M. Chantier Frères, of Montefontaine, were awarded two medals, a gold and a silver one, for hothouse plants, Crotons, Dracaenas, &c., their best plants were the *Victoria* and *Adiantum*. M. de Lamoignon and amongst them new *Dracaenas*, *D. Vertoliti*, *D. Bergmannii*, *D. spiralis*, *D. erecta*, *D. purpurea*. [M. Daval, of Versailles, gold and silver medals for his collection of hothouse and new plants.

The fruit and vegetables were not numerous, and they were placed in such a part of the building that owing to their darkness they could scarcely be seen. However three gold medals were awarded, one to M. Millet, Fils, for his vegetables, amongst which the new *China Cucumber* "8000-qua," and his fruit. One to M. Croquet Farnes, for Fine-apples, Peaches, &c., and one to M. L'Héritier, for his Apples. We should remember no doubt that some two years ago, he exhibited some very fine ones, we might say enormous, at the summer show at Kensington. It was to be regretted that there was not a single English exhibitor.

The exhibitors of horticultural implements numbered above a hundred, but only two English firms, Williams's lawn mowers, and Ransomes, Sims & Head's lawn mowers. The well-known French firm of M. P. Loyre, of Passy, exhibited as usual their round cases for grass trees. This firm was the first to make the manufacture of lawnmowers. Nothing new amongst the other implements, which were as follows:—pumps, syringes, lawn mowers, rollers, garden seats, tables, awnings, tents, wire works, all sorts of hot-water apparatuses, greenhouses, &c. The flower show was open to the visitors of the Salon, and *vice versa*, and during the four days, one day being a free day and the others pay days (1 franc), 70,000 people passed through the gates.

Royal Botanic June 2.—A special meeting of the Council of this Society was held on Saturday—his Serene Highness the Duke of Teck, President, in the chair—to consider a letter from his Royal Highness the Prince of Wales, respecting the Paris International Exhibition next year, and expressing a hope that the Society would help in promoting a due representation of British horticulture at the exhibition,

The meeting, entering fully into the importance of the subject, have promised that the influence of the Society will be used to the utmost in promoting the best representation of horticulture in its many features at the exhibition. His Serene Highness the President, attended by several of the Vice-Presidents of the Society, after the meeting, inspected the exhibitions of American plants and Clematis now on view in the gardens.

Apiary.

HONEY IN DRONES' CELLS.—In my notice of the massacre of drones at page 594, I omitted to state that the furious bees cast out the eggs and unhatched males from their cells, which in good seasons are soon filled with progeny. Those who doubt this have only to examine drone's cells, which have the slight angular elevation of the others for holding honey. Thus instead of drone's cells being an evil, they are of more service for holding honey than those of the workers, which are chiefly occupied either with pollen or brood during summer, while drone's cells are seldom filled with brood after the defenceless insects are destroyed. This brings to mind, that a correspondent in a back *Chronicle* spoke of the utility of cutting out drone's cells to prevent their increase, because they contained no honey. Those, however, conversant with the structures of bees' combs, know that the drone's cells are usually in the centre of them, or at least surrounded with others, so that the act of extracting them must injure the combs, while the process may be useless because the bees may soon fill up the gaps with the same kind of cells. Again, such operations are not practicable, except with Grecian or bar hives, some of which are really worthy of notice. Anyone to extract drone's cells from a common hive must have the courage of Bonner, who, it is said, could face enraged bees in his kilt, with only a tobacco pipe in his mouth. Likewise he took an extra glass in the evening of the day when drones appeared, because their presence not only foretold swarming, but also that their empty cells may soon be filled with honey, as noted by *J. Wighton*.

Law Notes.

A DISPUTED LIABILITY.—At the City of London Court, on Monday last, before Mr. Commissioner Kerr, the case of *Williams v. Kaye* was heard, in which the plaintiff, described as a florist of Thames, near Oxford, sued the defendant, a merchant, of St. Mary Axe, in the City, to recover the sum of £15 14s. for plants and exotics supplied to the defendant's son. Mr. Boydell appeared as solicitor for the plaintiff and Mr. Absalom for the defence. From Mr. Boydell's opening it appeared that his client during 1875 and 1876 supplied the defendant's son, who was then an undergraduate at Merton College, Oxford, with the goods sued for in the particulars before the Court, which consisted of rare exotics and choice plants, and was told at the time the plaintiff would be paid by the defendant's father whenever he liked to send in his account, as the defendant always paid his son's accounts, when at the University, and from inquiries the plaintiff made, he felt no hesitation in giving the defendant's son the credit he required.

The plaintiff being called corroborated this statement, adding, that after he had made repeated applications to the defendant for payment without receiving any reply, he was obliged to bring the present action.

In reply to his Honor, the plaintiff said, that all the goods had been delivered, and that the charges were fair, and reasonable, and by no means exorbitant. In cross-examination the plaintiff said he knew that some Oxford tradesmen were in the habit of charging undergraduates exorbitantly, but it was not his practice to do so, nor did he think a guinea and thirty shillings too much for bouquets, nor five shillings a large charge, and could prove they were not so by calling a skilled florist to prove they were not.

Mr. Antell, a florist from Edmonton, was then called, who said, considering the character of the goods supplied, he did not think the charges at all extravagant.

This being the plaintiff's case, Mr. Absalom urged on the part of the defence, that he was prepared to suppose that any parent could be rendered liable for such unnecessary extravagance as the defendant's son had been guilty of, as in reality in

the present instance the sum of nearly £16 had been charged in the months of May and June in 1875 and 1876, and it was impossible to suppose that such things were necessary for any student. Further than this, if his Honor considered the defendant had incurred any liability at all, he, Mr. Absalom, could call witnesses to prove that the charges were most exorbitant, and could not be sustained in any court of justice. At this stage of the case the learned Judge recalled the plaintiff, who said he had never seen the defendant, nor had he received any reply to the letters he had written to him. At this stage of the case his Honor told Mr. Absalom it would not be necessary to call his witnesses, as there could be no doubt that the defendant was in no way liable. There was no doubt that the case of flowers was a very pure and innocent taste, which he would like to see cultivated by every one having the means to do so, and, however much he might like to see young men in the position of the defendant's son cultivating such tastes, it must not be recklessly indulged in. Judgment must therefore be for the defendant, and his Honor hoped his decision would operate against university tradesmen giving indiscriminate credit.

Judgment was accordingly entered for the defendant, with the costs of attorney and witnesses.



Natural History.

THE STARLING.—For several years past a pair of starlings have built their nest in a corner of my cottage roof, and when the young are hatched I have abundant opportunity to observe the marvellous industry displayed by the old birds in the procuring the necessary supply of food. As this consists exclusively of insects or garden pests, there can be no doubt that the service they thus render me is incalculable. It is strange that there should still be found people so entirely obtuse as to be unable to see or appreciate the immense services that the birds render to man. Of course, it is trying to see a little fruit injured or abstracted, but this mischievous too evident, whilst the enormous benefit birds produce for us is only visible to those who are generous enough to be impartial observers. *A. D.*

SCALE INSECTS.—ASPIDIOTUS PANDANI.—Among these pests of the hothouse we have lately had our attention drawn to a species that very persistently affects plants of *Pandanus filiformis*. It is the same *Aspidiotus* which, as living exclusively on the *Pandanus utilis*, showing that its predilection or allotment is generic and not specific, to which we may add that it appears even to wander a little from its special plant, some being found on neighbouring plants of totally different families.

It is a round, flat, blackish brown scale, with a whitish umbilic in the centre. The female under the scale is rounded, of a whitish yellow colour, and the characteristic clusters of secretors (called *filieres* by Signoret) on the terminal segment are four in number, and each consists of a very small number of openings—four or five in each of the upper lateral ones and three in the lower. The isolated *filieres* are peculiar; they are long hairs, pointed at the extremity, having a small bitubercular head at the base, so elongate and so abundant that at first sight they look like spermatozoa. The terminal segment is a very difficult part to decipher under the microscope, requiring previous boiling in potassic-water, &c., and few microscopists are so qualified to deal with it as long practice has rendered Dr. Signoret. *Andrew Murray.*

Obituary.

WE regret to announce the death of Mr. ROBERT WHITE, the much respected proprietor of the Poule and Parkstone Nurseries, Dorset. Mr. White, who was in his sixty-seventh year, died at his residence, Constitution Hill, Parkstone, on May 28.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, JUNE 6, 1877.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.			HYGROMETRICAL DEGREES FROM GAUSSNER'S TABLE 643 Edition.	WIND.	RAINFALL.		
	Mean Reading at 3 p.m.	Departure from 30 in.	At 10 A.M.	Range.	Mean for Month.					
May 31	30.43	-.07	57.0	74.1	27.6	54.0	2	S.S.W.	0.00	
June 1	29.40	-.09	54.0	49.6	10.8	59.0	3	S.W.	0.18	
2	29.74	-.06	59.1	41.0	12.6	61.0	4	S.W.	0.00	
3	29.59	-.07	58.5	47.3	11.4	60.0	5	S.W.	0.00	
4	29.35	-.09	58.1	51.9	29.0	65.0	6	S.W.	0.02	
5	29.83	-.07	60.0	58.0	18.8	57.0	6	S.W.	0.00	
6	29.83	-.07	60.0	58.0	18.8	57.0	6	S.S.W.	0.00	
Mean	29.63	-.07	59.1	48.8	20.3	57.4	5.7	7.0	S.S.W.	sum .00

May 31.—Fine day, but very cloudy: cold wind.
 June 1.—Dull, cloudy, with frequent rain. Fine at times, Gale in early morning.
 2.—Overcast and dull till evening. Cloudless at night. Cold and windy.
 3.—A brilliantly fine hot day. Cloudless till evening, cloudy at night. Temperature at 9 A.M. 70°, being higher than any day in 1877, since August 16, 1876. Max. for the day 80°, being 2° higher than the max. of the preceding day and higher than the max. of any day since August 19, 1876. Mean temperature of the day 58°, being 1° higher than that of the preceding day.
 4.—A fine bright hot day. With a smart shower of rain at 11.30 A.M. Lightning at night.
 5.—A fine day, partially cloudy. Cool wind.
 6.—Fine, but very dull and cloudy at times. Frequent rain between 5 and 9 P.M. Cloudless at midnight. Cold wind.

LONDON: Barometer.—During the week ending Saturday, June 2, in the neighbourhood of London the reading of the barometer at the level of the sea decreased from 30.07 inches at the beginning of the week to 29.27 inches by the afternoon of May 28, increased to 29.68 inches by the evening of the 30th, decreased to 29.58 inches by the morning of May 31, increased to 29.50 inches by the evening of the 1st day, decreased to 29.44 inches by noon on June 1, and increased to 29.93 inches by the end of the week. The mean reading for the week at sea level was 29.62 inches, being 0.56 inch below that of the preceding week, and 0.35 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 66½° on May 31 to 59½° on June 2; the mean value for the week was 63°. The lowest temperatures of the air observed by day ranged between 43° on May 30 and 49½° on May 28 and June 2; the mean for the week was 46½°. The mean daily range of temperature in the week was 16½°, the least range in the day was 10½° on June 2, and the greatest, 22½°, on May 30 and 31.

The mean daily temperatures of the air were as follows:—May 27th, 53.5°; 28th, 54.2°; 29th, 51.5°; 30th, 52.9°; 31st, 54.2°; June 1, 52.9°; 2d, 52.6°; and the departures in defect of their respective averages were:—1.9°, 1.4°, 4.3°, 3.1°, 2.1°, 3.6°, and 4.1°. The temperature of the air for the week was 53.1°, being 2.9° below the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 126½° on May 27, 121° on the 29th, and 125½° on the 30th; on June 2 the reading did not rise above 73°. The lowest readings of a thermometer on grass, with the bulb exposed to the sky, were 37½° on May 27, and 35½° on the 30th; the mean of the seven low readings was 42½°.

Wind.—The direction of the wind was S.W., and its strength brisk throughout. The weather during the week was generally fine and cold, but at times dull. Gales of wind prevailed on May 28 and June 1 and 2.

Rain fell on two days during the week, to the amount of 0.31 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 72½° at Leicester 70½° at Cambridge, and 70° at Manchester; at Portsmouth 62° was the highest temperature in the week. The mean value from all stations was 65½°. The lowest temperatures of the air observed by day were 39° at Wolverhampton, and 40° at Truro, Sheffield,

and Eccles; at Plymouth 48° was the lowest temperature. The mean value from all stations was 42½°. The range of temperature in the week was the greatest at Leicester, 31°, and the least at Portsmouth and Plymouth, both 15°. The mean range of temperature from all stations was 24½°.

The mean of the seven high day temperatures was the highest at Cambridge, 60½°, and the lowest at Liverpool, both 59½°; and the general mean from all stations was 62½°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 43°, and the highest at Brighton, Portsmouth, Plymouth, and Norwich—all 48½°; the mean value from all stations was 47°. The mean daily range of temperature was the greatest at Manchester, 20°, and the least at Portsmouth, 10½°; the mean daily range from all stations was 15½°.

The mean temperature of the air for the week from all stations was 53°, being 1° lower than the value for the corresponding week in 1876. The highest was 55½°, at Cambridge, and the lowest 51°, at Wolverhampton and Eccles.

Rain fell on every day in the week at Wolverhampton, Sheffield, and Manchester. The amounts varied from 2 inches at Sheffield to three-tenths of an inch at both Liverpool and Bristol. The average fall over the country was 1 inch nearly. The weather during the week was generally fine, but cold and stormy; thunderstorms occurred at Bristol on May 31, and at Portsmouth on June 1.

SCOTLAND: *Temperatures*.—The highest temperatures of the air varied from 63° at Dundee to 59½° at Glasgow; the mean value from all stations for the week was 58°. The mean of the air ranged from 38° at Paisley, 19° at Dundee, and 20° from 38° at Paisley, 19° at Dundee, and 20° from the mean from all stations was 40½°. The mean range of temperature in the week from all stations was 21½°.

The mean temperature of the air for the week from all stations was 51½°, being 3½° lower than the value for the corresponding week in 1876. The highest was at Dundee, 52½°, and the lowest at Aberdeen, Greenock, Paisley, and Perth, all 51°.

Rain.—The fall of rain in the week was somewhat large everywhere. At Greenock 3½ inches fell, at Leith three-quarters of an inch fell, and with this exception at no place was there a 1 inch fall; the average fall over the country was 1½ inch.

DUBLIN.—The highest temperature of the air was 65°, the lowest 38°, the range 27°, the mean 53°, and the fall of rain 0.41 inch.

JAMES GLAISHER.

Variorum.

THE MUSKIEE OF THE NORTH PACIFIC.—Long education is necessary for any one to become an adept in the use of the axe. It is really a fine-art-sight to see a thorough axeman at work. How easily—without an effort one would think—he swings the axe over his head, in every time brings it down within a hair's-breadth of the right place. Not a blow is wasted. At every stroke a huge wedge-shaped chip flies; and with a sound that makes the silent forest echo, the great tree shivers, cracks, and then crashes to the ground, bringing along with it often a thicket of its smaller relatives, which have grown up under its shade. The work of an axeman is well calculated to bring into play all the muscles of the body. Accordingly, the *physique* of the Canadian and State of Maine men—who are all accustomed to this muscular employment—then are usually so tall, and without having that yellow sickly colour so common in the American townsman. The lumberman who passes his life in active, healthy work, inhaling the reviving breath of the Pine forest, has not an ounce of superfluous fat, while every muscle is developed to its normal size.

The axe used in chopping is small, and of American make, with a long handle. The English manufacturers, though furnished with samples of this axe, do not seem to have succeeded in making it so as to suit the requirements of the Canadian.

It is known what to do with his hands when he has an insect in them. It seems indispensable to him, and it is astonishing how quickly and well he can fell trees, make roads, or build houses with it. Failing the axe, the lumberman, like most Western men, is fond of sitting, and when sitting in the summer evening in front of big open and comfortably-situated cabin, is usually seen leisurely and heartlessly shaving down a "shingle," or still better, the soft cheese-like white Pine, if he be fortunate enough to lay his hands on a piece of it.

The loggers of the North-west are a fine, manly, intelligent set of men. They have generally been fairly educated, and have seen a good deal of the world. Having few opportunities of spending money in the woods, and being well paid, those of them who resist the temptation to spend their earnings in the towns are able to save money, and can get on to the logging contractors' lives. From "The Countries of the World," by Dr. Robert Brown, for May,

THE CLIMATE OF CEYLON.—The following climatal details relating to Ceylon are taken from Dr. King's report on Cichona cultivation in India, as a result of an expedition in some cases seven years' observations. The elevation is 4600 feet.—

	Shade temp.		Exposed.	Exposed.	Rain.
	Max.	Min.			
January	85	6	126	7	Inches.
February	84	43	105	33	3.9
March	84	46	105	39	5.2
April	84	47	105	40	7.0
May	83	50	123	46	6.0
June	78	35	123	43	18.4
July	84	34	123	43	106.5
August	79	34	134	48	9.0
September	50	39	139	46	15.2
October	79	54	134	43	13.0
November	79	48	133	46	7.7
December	79	44	133	41	4.4
Mean of year	89	44	136	33	107.7

This table is one of great significance for the home cultivator, especially the details relating to the extreme temperatures in the sun.

KEY GARDENS.—If any man's heart be sore and his eyes heavy let him forthwith take horse or rail to Kew and live an afternoon in the garden there. If that cure him not nothing will. The Azaleas are in all their glory, and the Camellias are bursting from their buds. A walk through hothouse No. 4 is a kind of mid intoxication unattended with headache; the air is full of a hundred delicate scents, and I can testify to an instantaneous cure of heavy eyes effected by one plant of *Erica Cavendishiana* in this house. A lady, who is on her first visit to England, was walking in Kew Gardens the other day. She was, without a word, much pleased, but was greatly shocked at the notice which she read at every turn—that "birds' nesting is strictly forbidden." "How you are severe and cruel in this country," she at last sorrowfully exclaimed, "that even the little birds may not make their nests in your public gardens. *Vandy Fair.*"

THE CLIMATE OF THE SIKKIM HIMALAYA AND NILGIRRI HILLS.—We glean the following details as to the climate of the Sikkim Himalaya (Kangboe) from Dr. King's *Manual of Cichona Cultivation*—fractrons omitted:—

1866.	Altitude, 5371 feet.		Altitude, 2555 feet.	
	Mean Temperature.	Minimum.	Mean.	Minimum.
January	41	24	39	20
February	41	24	41	24
March	37	27	44	28
April	37	28	44	28
May	27	48	43	24
June	64	57	78	67
July	64	57	78	67
August	62	58	79	68
September	61	56	77	66
October	50	39	65	46
November	39	29	65	36
December	31	24	37	26
Mean of year	55.4	44.8	70.1	55.5

The annual average of two years' rainfall near Rungbee, at a height of 3300 feet, is 112 inches, the greatest of all being in July, 40 inches; while in November, December, January, and February, next to none fell.—The daily mean temperature and rainfall of the Nilgiri Hills (Ootacamund) during the year ending March 31, 1869, is thus tabulated—fractrons omitted:—

1869.	Deg.	In.	1868.	Deg.	In.
April	75	75	December	58	34
May	62	7	January	58	44
June	57	8	February	61	39
July	57	7	March	57	39
August	57	3	April	58	44
September	57	3	May	61	39
October	57	3	June	61	39

The mean temperature of the year is noted as 59° 28'. The maximum temperature in the shade was 77° 87' in April; the mean maximum of the year, 70° 59'; the minimum temperature is, unfortunately, not given. The total rainfall was 52 inches.

ROXBURGH CASTLE.—On suddenly emerging from the leafy gloom, one of the most brilliant landscapes in Europe opens to the eye—the splendid mansion and embellished grounds of Springwood Park; the demesne of Fleurs, with its noble ducal castle and stately terraces; the two beautiful rivers of Teviotdale, which are spanned by a magnificent bridge; Kelso with its vast park and the green tufted knoll, where one stood the great Border Castle of Roxburgh, a bulwark against England, and the key of the Merse. On one hand, the eye can look along a valley 10 miles in length, covered with the finest timber, and on the other, an open and diversified prospect for double that distance, away to the summits of Carter-Fell and other mountains. Looking over all this, from the height of

Dunse Law, where the army of the Covenant unfurled the standard in 1639, the eye commands a prospect so extensive, rich, and varied, so abounding in all the sweetest elements of rural landscape, including three great castles, renowned in ancient wars, and a peep at the German Ocean, as to defy a succinct description. The town of Roxburgh—which was a place of great note in the twelfth century, and in the days of David I. had an encircling wall and ditch, which scholars that flourished under the abbots of Kelso, who was the seat of a mint, where John of Wiliam I. and James II. were struck, having in the fourteenth century former a weekly market, and in the time of Queen Elizabeth enjoying the reputation of being the fourth town in Scotland—has so completely passed away, that not a stone remains. It stood over against Kelso, on a rising ground, at the western end of a fertile plain, insulated by the confluence of the Tweed and the Teviot. The remains of its castle still appear on a steep and wooded knoll on the margin of the Teviot, about 40 feet above the plain, and indicate it to have been a place of vast extent and strength. From "The *Picturesque Europe*" for May.

A FOREST SCENE IN CENTRAL AMERICA.—We were now again in the midst of a dense Pine forest, with tall trees—every one fit for a spear for the Titans when they warred against the gods—on either side of us. The rough path which the settlers have been out of the dense forest, and the two axes were again barred by one of these forest giants, which the wind has thrown athwart. How painfully silent are these Fir forests of the North Pacific! At one portion of my life it was my happy lot every morning to walk through pastures of a great tropical forest in Central America. Fragrant odours of a sweet wood were wafted in the sultry air, and everywhere the forest rang with the scream of tropical birds of gorgeous plumage, and the chatter of the long-ringed monkeys, which swung themselves from branch to branch, and tree to tree, in their astonishment at this degenerate descendant of the ape who was permitted to walk aloft, while they distorted themselves among the leaves of the indiarubber trees, and at the lascivious frisks from among the waves of flowers which rolled from forest tree to forest tree, until, as you looked on a rising ground, the wide expanse of country before you seemed in places like a sea of foliage and flowers. Above all, filling up as it were every vacant space, was the never-ceasing din and hum of insect life which arose from among the trees. This seemed like one huge temple, where ten millions of unseen chorists sang a never-ending hymn of praise to the "Unknown God!" Here, 40° to the north, all is different. There are odours, but they are those of Fir trees and turpentine, and you may listen for hours without hearing the sound or beholding the sight of living being. We sit under a tree, and draw for a few minutes our forehead comes a gentle tapping, and from a tree close at hand another similar sound; we look up and find that it proceeds from two species of woodpeckers boring a tree for insects. They are *Audubon's Picus Harisi* and *P. Gairdneri*, the two species found on the island. We almost repeat what said above of the scarcity of life in the forest, for down jumps from a tree a little brownish squirrel, which starts at us for a second, then, tail on end, skips along a fallen tree, tears open a Fir-cone, extracts the seed, and then skips off on the errand he is bound. There are several species of squirrels in the North Pacific slope of the Rocky Mountains, but this is the common one (*Sciurus Douglasii*). In the mild climate of this region it does not hibernate, but may be seen all the year long jumping about, fearlessly approaching the traveller, and resting up to the ears as it runs off scolding and barking. As we are moving off, a pretty fawn ambles into the pathway just before us, and after eyeing us for some time, again trots up the bush, and in a minute is lost among the thick foliage.—From "The *Countries of the World*," by Dr. Robert Brown, for May.

THE ELDER.—The Elder, Bour-tree, or Boun-tree (*Sambucus nigra*), is one of the hardiest of our indigenous plants, growing freely and even luxuriantly in high and exposed situations where few other shrubs exist, braving the stormiest winds and severest winters in such a manner as to excite our admiration. We have often seen it used with excellent effect for fences and shelter around high-lying farms and cottages, whose inhabitants appear to appreciate it as their best friend for mellowing the blast and sheltering their stock and crops from the cold and boisterous winds to which they are exposed in elevated parts of the country. When once it has established itself, which it quickly does in almost any soil and situation, it is not easy to eradicate it, which makes it among our troublesome when growing amidst young plantations; but it is a most valuable plant for planting thickly along the skirts of new plantations in high and exposed parts, where it speedily gives the necessary shelter to the young trees to leeward of it, protecting them from being tossed about and injured by the cutting blast, and enabling them to quickly start into strong and healthy growth, which is a most

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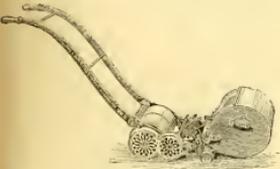
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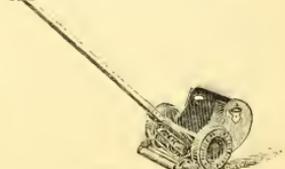
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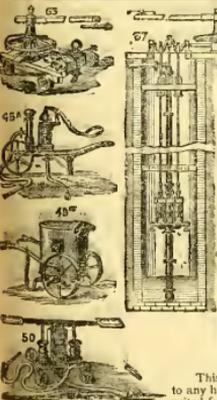
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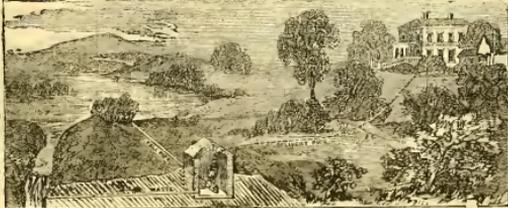
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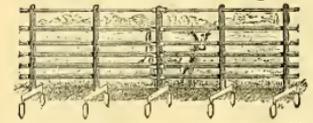
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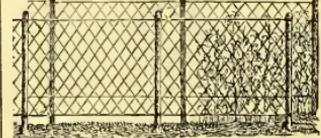
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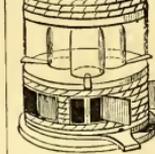
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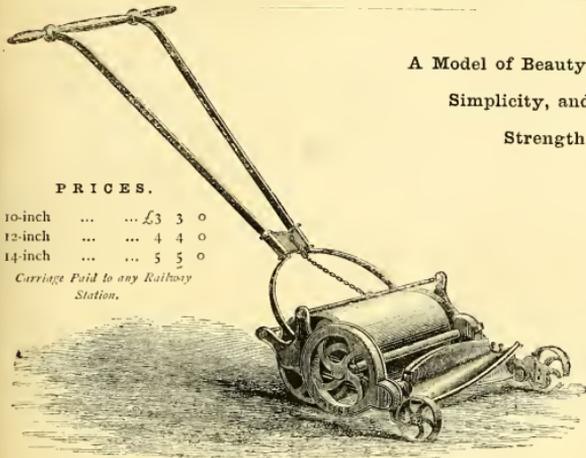
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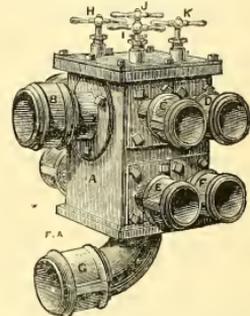
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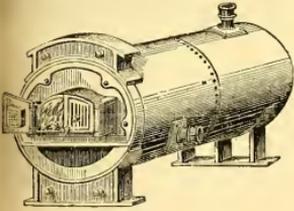
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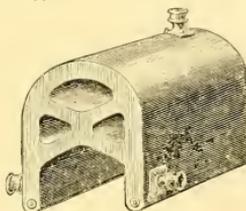
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WANTED, thoroughly experienced MAN, in the above capacity, to be put in charge of the Nursery and partly by commission.—Applications to be made, in confidence, to Messrs. JAMES MITCH AND SONS, 10, Abchurch Lane, London, E.C.

WANTED, an intelligent young Man, as an ASSISTANT in the New Plant Department at Mr. William Bull's Establishment. Wages, 4s per week.—Apply personally to the MANAGER, established for New and Rare Plants, King's Road, Chelsea, London, S.W.

WANTED, a Young Man, to Assist in the Houses, where Plants are Grown for Market; one who has been long attached to Messrs. THOMAS PESTRIDGE, Hotspur Road Nursery, Brentford.

WANTED, in an old-established Nursery, a SALESMAN and PROPAGATOR, for the Indoor Department, one used to the Trade required. State particulars as to previous engagements, age, and salary expected.—W. D., Post-office, Reigate, Surrey.

WANTED, a TRAVELLER and CLERK, to take English journey; must have been out before.—Write, with full particulars, to MINER, NASH, AND CO., 69, Strand, W.C.

MESSRS. VEITCH AND SONS are in want of TWO YOUNG MEN who have had some experience in the Packing Department. The situation is permanent. Applications to be made by letter.—Royal Exotic Nursery, Chelsea, S.W.

SEA-Respectable APPRENTICES Wanted for one of the finest new Iron Clipper Ships, 430 tons, designed for the East India Trade. Premiums, &c., for four years, which will be returned on arrival. Ships to follow—Apply at once to OWNER, H. Coy, 21, Leadenhall Street, E.C.

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Head Gardeners.
JOHN LAING AND CO. can at present recommend with every confidence several energetic and practical Men, of tested ability and first-rate character. Ladies and GARDENERS for First-class Establishments, or GARDENERS for First-class Establishments, in various Situations, can be suited, and have full particulars of the same, from the Park and Keston Park Nurseries, Forest Hill, London, S.E.

The Executors of the late JOHN HARRISON have at present on their register several HEAD GARDENERS, whom they can recommend with every confidence to any Lady or Gentleman requiring a first-class man. Their Spring Catalogue of New Roses, Dahlias, &c., is now ready, and may be had post-free on application.—The Nurseries, Keston Park Nurseries, Catcliffe Bridge, Yorkshire.

GARDENER (HEAD), age 26.—**GEORGE BOND** can recommend his Foreman to any Lady or Gentleman requiring the services of a trustworthy Man.—The Gardens, Waltham, Waltham North, Shropshire.

GARDENER (HEAD), Age 40; twenty-six years' experience in best Gardens and Nurseries in England; has taken over 500 Prizes for Fruit, Flowers, and Vegetables at Royal Exotic and other Shows.—J. CROSS, The Gardens, Redoubt, Cirencester.

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GARDENER (HEAD),—Age 36. First-class Pine and Grape Grower, also other choice Fruits, Flowers, and general routine of Gardening; breaking up of the establishment.—C. M., 6, Cranfield Villas, Lower North Street, London, E.C.

GARDENER (HEAD), married.—**H. KEMP,** for upwards of eight years Head Gardener at Caythorpe Hall, Grantham, in consequence of the place being left open as an engagement with any Noblemen or Gentlemen requiring a thorough practical man in all branches: Flower Land, Stock, Woods, &c. Excellent character.—Address as above.

To Noblemen and Gentlemen.
GARDENER (HEAD),—Age 40, married; is very practical in Early and Late Forcing of Fruits, Flowers, and all vegetables. Has been twenty years in Noblemen's and Gentlemen's situations. Wages, 4s per week. Good references.—R., Royal Horticultural Gardens, South Kensington, S.W.

GARDENER (HEAD),—**MR. A. PETTIGREW,** Gardener to the most Honourable the Marquis of Bath, Cardiff Castle, Cardiff, will have much pleasure in recommending any Lady or Gentleman. Thoroughly competent Gardener, of great experience in all branches of the profession; his character will bear the strictest investigation. This is a rare opportunity for those who may require the services of a really first-rate man.—Address as above.

GARDENER (HEAD, WORKING),—Age 30, married; understands Gardening in all its branches. Two years' good character.—G. W., Tisbury, near Godstone, Surrey.

GARDENER (HEAD, WORKING),—Age 34, married, no family; good knowledge of Gardening in all its branches. Good references.—G. C., 10, Herne Place, Hammersmith, W.

GARDENER (HEAD, WORKING), where two or three are kept.—Single.—Age 27; twenty years' practical experience. Good character.—W. B., High Street, Dereham, Norfolk.

GARDENER (HEAD, WORKING),—Age 34, married; thoroughly understands the profession in all its branches. Leaving through death of employer. Twenty years' good character and testimonials.—**WALTER BLAKE,** Grove Lodge, Park Road, Regent's Park, London, W.

GARDENER (HEAD, WORKING),—Age 40, married, no family; understands Vines, Stove and Greenhouse Plants, and Flower and Kitchen Gardening. Wife Anna Cottage Lane, Leamington, Warwickshire.

GARDENER (HEAD, WORKING), Age 30, single; good practical knowledge of Pine, Vines, Paches, Cucumbers, Melons, also Stove and Greenhouse Plants, and Flower and Kitchen Gardening. Conservatory and Table Decorating. Five years' good references.—J. GUN, 19, Tivoli Street, Cheltenham.

GARDENER (HEAD, WORKING),—Age 47; branches of Gardening; good Practical in all its branches; could undertake Alterations, or Laying-out New Grounds by the plan or otherwise. Eight years in his place. First-class testimonials.—F. E., 15, North Road, Bromley, Kent.

GARDENER (HEAD, WORKING),—Age 43, married, no family; thoroughly understands the business in all its various branches; over twenty-five years' experience. Good character as an contractor and ability.—W. W. M., Leicester, Hampstead Road Lock, Camden Town, London, N.W.

GARDENER (HEAD, WORKING), where two understands Forcing, Flower and Kitchen Gardening, and all its branches. Leaving through death and present gentleman giving up the place, discharged at a liberal salary. First-class character.—G. R., Wadley Garden, Faringdon, Berkshire.

GARDENER (HEAD, WORKING),—Age 34, married, no children; understands Early and Late Forcing, and all the business of a Nursery, and is well up in the required. Will be desired to take charge of a Nursery, or change in the establishment. Two years' good character. Also Glass in present place. Can be well recommended.—A. B., 25, Kate Street, Batham, Surrey.

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GARDENER—Has had considerable experience in four large Establishments. No Single-handed place accepted.—Application permitted to Mr. W. LYNX, Hedor, Maidenhead.

GARDENER—Has had very extensive first-class practice; good things produced all round, with method and order to secure moderation in outlay.—P. S., 16, Postland Terrace, Wood Hill, Northampton.

GARDENER (SINGLE-HANDED), or **GARDENER** assistance is occasionally given.—The only experienced in Stove and Greenhouse Plants, Fruits, &c.; where Proprietor.—H. S., 5, Grove Terrace, Beverley.

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GARDENER (SECOND), in a Gentleman's Establishment.—Understands the profession ten years' experience. Good character.—C. 175, Elsley Road, Shaftesbury Park, Hammersmith, S.W.

GARDENER (SECOND, or good SINGLE-HANDED),—Age 23, single; understands Vines, Melons, Cucumbers, Flowers, and Kitchen Gardening. Good character.—B. WINKTON, Ringwood, Hants.

GARDENER (SECOND), in the Houses, in a Noblemen's or Gentlemen's Garden, under a Foreman professional in all its branches. Good character. Twelve months' good character from the proprietor.—J. W., The Gardens, Taplow House, Taplow, Bucks.

GARDENER (UNDER),—Age 20; fair knowledge of Stove and Greenhouse Plants. Would prefer a N.W. Man, H. H., Regent House, Norfolk, Essex.

GARDENER (UNDER), in the Houses.—Age 19. Three years and nine months' good character.—Address, stating wages, **WALTER LISNEY,** Great Bookham, Leatherhead, Surrey.

GARDENER (UNDER),—Age 23. Five years' experience in Flower and Kitchen Gardening. Good character.—Address, stating wages, &c., **GEORGE THOMAS,** London Road, Uckfield, Sussex.

To Nurseriesmen.
FOREMAN PROPAGATOR—Well up in the Propagation of Clematis, Roses, Conifers, Ornamental Trees and Shrubs, Rhododendrons, &c.—G. H., Post-office, Brenchley, Kent.

PROPAGATOR, or FOREMAN and PROPAGATOR (strictly so)—Age 25; understands the Seed Trade, can act as Salesman and keep the Books if required.—A. B. C., 4, Zurich Place, Old London Road, Hastings.

IMPROVER, in a Gentleman's Garden, recommendation.—Age 20, two and a half years' experience.—B. Post-office, Kiblington.

IMPROVER, in the Houses, in a good Establishment.—Age 21. Six years' good character. London suburbs preferred.—J. S., The Lodge, Oak Park, Cowditch, Hammersmith, W.

IMPROVER, in the Glass Department, under a Foreman.—Age 21. Six years' experience.—X. V., Garsdon Hall, Peterborough.

TO NURSESMEN—A young Man, Age 21, requires a situation under Glass in a good Establishment. Seven years' experience.—Address, stating wages, &c., T. S., 10, St. James's Place, London, N.W.

HIND (WORKING),—Age 33, married, one child; has had good experience with Stock and Farming in all its branches. A Farmer's son.—T. VEAL, Ford Post-office, near Bedford, North Devon.

CLERK, or BOOK-KEEPER—Age 30; has had ten years' experience in both Nursery and Seed Trade. No objection to a low salary.—H. Trade, Messrs. Austin & McAustin, Seaside, 16, Buchanan Street, Glasgow.

TO FLORISTS and SEEDSMEN—A young Lady, who has had some experience in a Seed Shop and Bouquetist's, eight years' experience. In exceptional services.—Miss B., Post-office, Northampton.

DINNEFORD'S FLUID MAGNESIA.
The best remedy for ACIDITY of the STOMACH, DRACONIC, and the most powerful in the treatment of INDIGESTION; and the most valuable for delicate Constitutions, Ladies, Children, and Infants.

DINEFORD AND CO., 172, New Bond Street, London, and all Chemists.

KINAHAN'S LL WHISKY.
Universally recommended by the Medical Profession. A pure old spirit, mild, delicate, and most wholesome. Dr. Hassall says: "The sample was of a fine quality, of a taste, aromatic and ethereal to the smell. The Whisky must be pure, well-matured, and of very excellent quality."—W. H. H., 25, Great Titchard Street, London, W.

HOLLOWAY'S OINTMENT and PILLS.
—Debility, indigestion, when climate, age, or hardships have undermined the health, skin eruptions to arise and suggest the existing weakness. Holloway's Ointment and Pills are the most powerful in the most judiciously prepared. It is the most powerful purgative the finest balsamic virtues, which soothe and heal without any of the usual effects of other purgatives. It is a sensitive cure. Holloway's Ointment and Pills are infallible for all the diseases of the skin, eruptions, eczema, scaly skin, and every variety of skin disease. Over all the disorders Holloway's remedies exert a quick and favourable action, and there is no doubt, gradually but certainly arising at that consumption. They are invaluable in the cure of scrofula and scurvy.

GREEN'S PATENT "SILENS MESSOR" & "MONARCH,"

OR NOISELESS LAWN MOWING, ROLLING, and COLLECTING MACHINES for 1877,

THE WINNERS OF EVERY PRIZE IN ALL CASES OF COMPETITION.

Patronised by Her Most Gracious Majesty the Queen on numerous occasions, H.R.H. the Prince of Wales, the King of the Belgians, the late Emperor of the French, the Emperor of Russia, and most of the Nobility, Clergy, and Gentry in the United Kingdom.

Upwards of 80,000 of the above Machines have been Sold since they were first introduced in the year 1856, And Hundreds of unsolicited Testimonials have been received testifying to their superiority over all others.

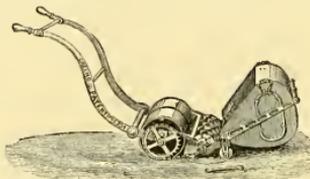
They have been submitted to numerous practical tests in Public Competition, and in all cases have carried off every Prize that has been given.

The following are their special advantages:—

- 1st. Simplicity of Construction—every part being free of access.
- 2d. They are worked by far greater ease than any other.
- 3d. They are the least liable to get out of order.
- 4th. They make little or no noise in working.
- 5th. They will cut either long or short Grass, wet or dry.

SINGLE AND DOUBLE-HANDED "SILENS MESSOR" LAWN MOWER.

To cut	£	s.	d.
6 inches	1	15	0
Can be worked by a Lady.			
8 inches	2	10	0
Ditto.			
10 inches	3	10	0
Ditto.			
12 inches	4	15	0
Can be worked by one Person.			
14 inches	5	15	0
Ditto.			
16 inches	6	15	0
Can be worked by one Person on an even Lawn.			



To cut	£	s.	d.
18 inches	8	0	0
Can be worked by a Man and Boy.			
20 inches	8	10	0
Ditto.			
22 "	9	0	0
Ditto.			
24 "	9	10	0
Ditto.			

Prices of Horse, Pony, and Donkey Machines, including Chain Self or Slide Delivery Box; * If made stronger, suitable for Donkey, 30s. extra. Cross-stay complete; suitable for attaching

DONKEY and PONY MACHINES.

To cut 26 inches	£15	0	0	Leather Boots for Donkey	£1	0	0
" 28 "	17	0	0	" " Pony	1	4	0
" 30 "	18	10	0	" " "			

HORSE MACHINES.

To cut 30 inches	£22	0	0	To cut 42 inches	£30	0	0
" 36 "	26	0	0	" 48 "	48	9	0
" 40 "	28	0	0	" 50 "	51	10	0

The 26 and 28 inches can easily be worked by a Donkey, the 30 inches by a Pony, and the larger sizes by a Horse; and as the Machines make little noise in working, the most spirited animal can be employed without fear of its running away, or in any way damaging the Machines.

Carriage paid to all the principal Railway Stations and Shipping Ports in England, Ireland, and Scotland.

GREEN'S PATENT "MONARCH" LAWN MOWER, with Chain and Internal Gear combined.

This Mower is well adapted for cutting long, coarse, rough, and wet Grass. It is strongly made, and does its work admirably. It will cut nearer to an object than any other Lawn Mower extant.

The sizes and prices of the "Monarch" Mower are in every respect the same as for the "Silens Messor," with Grass Box, &c., complete.

Green's Patent Lawn Mowers have proved to be the best, and have carried off every prize that has been given in all cases of competition.

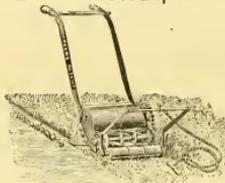
No Lawn Mower Manufacturer keeps so large a stock of Mowers as is to be found at our London Establishment, 54 and 55, Blackfriars Road, where purchasers can select from upwards of 500 Machines of Hand, Pony, and Horse Power, and have their Orders executed the same day they are received.

The above Machines are Warranted to give entire Satisfaction, otherwise they may be returned at once, free of cost to the Purchaser.

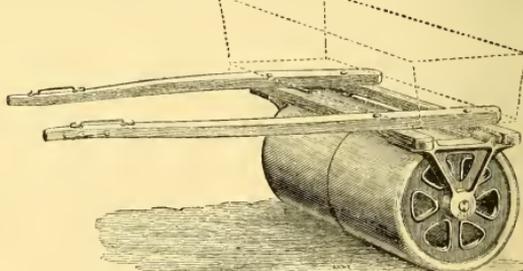
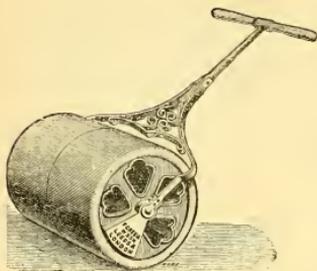
Green's Lawn Mowers are the only Machines in constant use at the Royal Horticultural Society's Gardens, South Kensington, London.

N.B.—Those who have Lawn Mowers which require repairing should send them to either our Leeds or London establishment, where they will have prompt attention, as an Efficient Staff of Workmen is kept at both places.

Delivered, Carriage Free, at all the principal Railway Stations and Shipping Ports in England, Ireland, and Scotland.



GREEN'S PATENT ROLLERS FOR LAWNS, DRIVES, BOWLING GREENS, CRICKET FIELDS, AND GRAVEL PATHS SUITABLE FOR HAND OR HORSE POWER.



PRICES OF HAND ROLLERS.

In One Piece.		In Two Pieces.		£		s.		d.		
Diam.	Length.	Diam.	Length.	£	s.	£	s.	£	s.	
10 inches	17 inches	10 inches	17 inches	3	5	0	0	4	7	0
20 "	23 "	20 "	26 "	5	13	0	0	11	36 "	0
24 "	26 "	30 "	32 "	9	10	0	0	30 "	42 "	0

PRICES OF ROLLERS, IN TWO PARTS, FITTED WITH SHAFTS.

£		s.		d.		£		s.		d.	
Diam.	Length.	Diam.	Length.	£	s.	£	s.	£	s.	£	s.
13 inches	30 inches	13 inches	30 inches	13	10	0	0	30	inches	45	inches
14 "	30 "	14 "	30 "	14	0	0	0	30 "	60 "	19	10
15 "	30 "	15 "	30 "	15	10	0	0	30 "	72 "	22	0

Special quotations made for Rollers 3 feet and 4 feet diameter, fitted with Shafts for One or Two Horses.

THEY CAN BE HAD FROM ALL RESPECTABLE IRONMONGERS AND SEEDSMEN IN THE UNITED KINGDOM; OR FROM THOMAS GREEN & SON, Smithfield Ironworks, Leeds; and 54 and 55, Blackfriars Road, London, S.E. ILLUSTRATED PRICE LIST FREE ON APPLICATION.

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C. Rosenberg del.

CYCLAMEN PERSICUM COMPACTUM MAGNIFICUM

SUPPLEMENT TO THE GARDENERS' CHRONICLE.

POPULAR GARDENING.

HERE are certain plants among our popular favourites which seem to assert their claims to general favour in a manner which is quite irresistible, and, moreover, quite apart from the influences of fashion. Fashion, indeed, may set its mark upon flowers which, apart from such approval, would be looked upon as ugly, or as nearly ugly as flowers can ever become; but there is no mistaking those which seem to have been selected by Nature herself as

examples of her beauty and resource. Such a one, for instance, is the beautiful *Astilbe barbata*, the "*Spirea japonica*" of popular garden nomenclature, with its graceful, pure white spikes rising straight up from the centre of the elegant, spreading, dark green foliage; and other examples are furnished by the

Cyclamens, of which it is our present intention to speak.

The order to which the Cyclamens belong is one which, although small, contains a large number of ornamental plants. Such, for example, are the Primroses, British and foreign—from our own Primrose and Cowslip to the Chinese *P. prenitens*, the Himalayan *P. denticulata*, and the majestic *P. japonica*—not forgetting all the varieties of *Polyanthus* and *Auricula*, which were at one time much more popular than they are at present. Then we have the North American "Shooting Stars" (*Dodecatheon*), the various *Loosestrifes* (*Lysimachia*), including the "Creeping Jenny" (*L. Nummularia*), which is so frequent and so graceful an ornament of London balconies; *Pimpernel*, "of sorts," as the old writers would say; and the *Water Violet* (*Hottonia*) and *Winter Green* (*Trientalis*). All these are furnished by the Primrose tribe (*Primulaceae*), which is thus shown to have many and varied claims upon our admiration.

It is not because they are new that Cyclamens are

such important favourites among our spring flowers. Two species were in cultivation in Gerard's garden as long ago as 1596, namely *C. hederacifolium* and *C. coum*, while *C. persicum* was brought from the Island of Cyprus by Sibthorp in 1731. We follow Mr. B. Daydon Jackson in his identification of Gerard's species: Aiton, however, considered his plants to have been *C. hederacifolium* and *C. europaeum*, while he assigns the same date of introduction to *C. coum* as to *C. persicum*. Parkinson, in his *Paradysus*, enumerates and figures ten kinds of Cyclamens, some of which are mere varieties in colour. Among them, however, is a double variety, described as being "of Antioch," which is very rarely met with at the present day, though examples of it have lately come under our notice, and it has been described in these columns.

According to recent authors eight species of the genus are to be recognised, being natives of Central Europe, West Asia, and the Mediterranean region, in which North Africa is, of course, included. *C. hederacifolium*

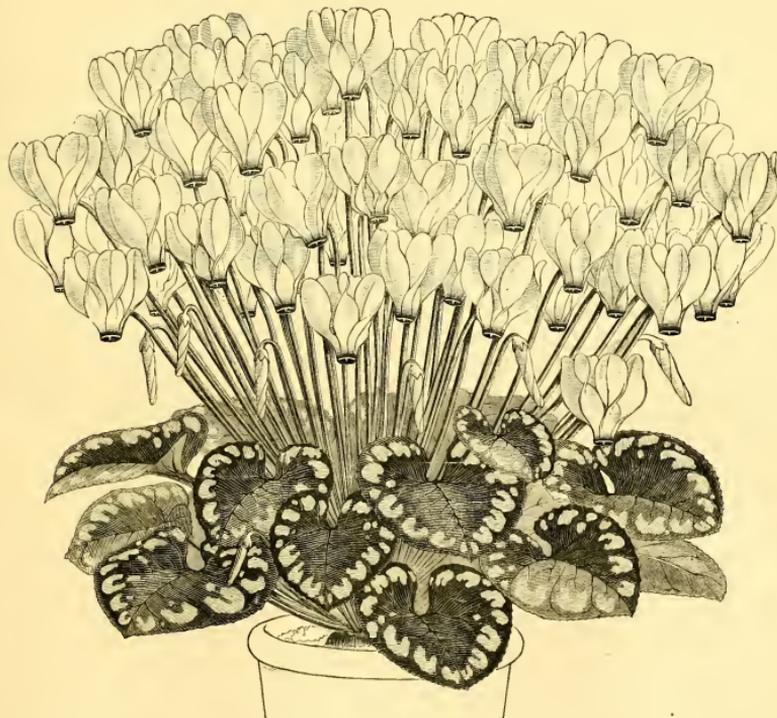


FIG. 1.—SPECIMEN PLANT OF CYCLAMEN PERSICUM (ABOUT HALF NATURAL SIZE), DRAWN FROM A PLANT IN THE COLLECTION OF MR. HENRY LITTLE.

was at one time regarded as a British plant, but the balance of evidence tends to show that, even if still found in the neighbourhood of Sandhurst, and Hawkhurst, in Kent, it is to be regarded rather as a naturalized than as a truly native species. It is not now, however, so frequently met with in cultivation as its merits deserve. This species, indeed, is not as handsome as *C. persicum*, and its flowering time is very different, as the blossoms appear from August to the end of October; they are purplish red or pure white, and several varieties are occasionally met with in gardens. It is a hardy species, doing well on rock-work, in borders, or in woodland walks.

C. persicum, the *Cyclamen parviflorum*, is a more tender species, which must be raised in warmth, and requires a certain amount of care. Of this most lovely plant there are many varieties, passing from the purest white to a rich deep red-purple; few of them, however, are prettier than the common form, in which the base of the flower is of a rich red-purple hue, and which is moreover deliciously and delicately fragrant. It is a native of Lebanon and other parts of the east, and is deservedly the most popular representative of the genus.

The round-leaved *C. coomii* is a pretty and attractive plant, with a neat habit and pretty bright red-purple flowers, which are much shorter than those of *C. persicum*; this is a spring bloomer. There is a handsome Algerian species (*C. africanum*) which is remarkable for its large leaves, and which flowers in spring; while the very pretty little *C. cypricum*, a recent introduction, has the habit of *C. persicum*, which it also resembles in the colour of the flowers.

The ugly English name of these plants—Sow-bread—is an equivalent not only of the old Latin name *panis porcinus*, but also of the French *pain da porcea*, and the Italian *pana porcino*. It is stated that pigs are very fond of the tubers in the districts where *Cyclamens* abound, and they are indeed said to be the food of large herds of swine in Italy and Sicily. The tuber of *C. europaeum* is purgative in a fresh state; and it is said that the juice of the tuber of one species (*C. africanum*) is used by the natives of Barbary for poisoning their arrows. The *Cyclamen* was also formerly endowed by the credulous with another remarkable and dangerous property; and any reader who will remember the good old herbalist's precaution "least any woman should by lamentable experiment find [his] words to be true." With this trifling exception, however, the *Cyclamen* is singularly devoid of popular history; from which we may perhaps conclude that the beauty of its appearance was sufficient to render it a general favourite, without the additional attraction of other properties, real or imaginary.

CULTIVATED CYCLAMENS.

When the horticultural records of the third quarter of the present century are carefully analysed, it will be observed that among many flowers brought forward several stages in the pathway of improvement, the *Cyclamen persicum* holds a somewhat important position. And not only has this improvement been seen in the production of larger flowers, and these, too, of brilliant hues, undreamt of a quarter of a century ago; but in respect to its cultivation there has been a marked advance. The requirements of the *Cyclamen* are better understood, and the cultural process is more intelligently apprehended. Perhaps human eyes never before looked upon such a marvellous exhibition of this beautiful autumn and spring flowering plant as was presented at the spring show at the Royal Aquarium at Westminster on April 12, 1876, when all the leading growers were found in competition, and the productions were in the highest degree excellent. Plants, too, three and four years old, were of great size, finely grown, and loaded with beautiful flowers in such numbers as to give fit occasion for the rapt expression of the poet—

"How lovely are the common things of God!"

It was about the year 1731 that *Cyclamen persicum* was introduced to Britain from Cyprus, and it would appear that three varieties were received, namely, albidiflorum, the white form; inodorum, the scentless variety; and odoratum, the scented kind. How it fared after it was introduced—whether any attempts were made to cross these forms, or what success attended the efforts of the early cultivators, it would be difficult to say. Perhaps it would not be unsafe to hazard the opinion that the *Cyclamen* was not very

well understood, and that ill success was the rule with cultivators rather than the exception. Some of the earlier horticultural works treat with inquiries for information as to the successful cultivation of the *Cyclamen*, from growers who had been disappointed in their productions; and it is noticeable that but little information was forthcoming.

In the first volume of the *Florist*, published in 1848, a writer on the *Cyclamen* remarks:—"Although this beautiful bulb has been upwards of a century in our possession, yet we do not seem to have made that progress in its cultivation which its merits would give us reason to expect." The difficulty seems to have been to flower it, for there were frequent complaints that the *Cyclamen* did not bloom. It was also considered a proper practice not to report frequently, and the late Mr. John Dobson, of Isleworth, a man of mark in horticultural circles in those days, writing to the *Florist*, in September, 1848, stated, "Mine (*Cyclamen* plants) were now starting into growth after their season of rest, and look very promising. This makes the fourth year since they were last potted. I merely take the green surface of the top, and replace it with a little fresh soil to give the pot and plant a neater appearance."

IMPROVEMENT OF THE FLOWER.

It must not be supposed that the fine varieties of the *Cyclamen* now in course of cultivation are wholly the products of the past few years. A quarter of a century ago Messrs. E. G. Henderson & Son, of the Wellington Road Nurseries, were among those who took the *Cyclamen* in hand, and were successful in obtaining new and improved forms. Then came a kind of pause, or the work was still going on, the results were not recorded, and the *Cyclamen* was only occasionally produced at the leading shows. Then Mr. J. Wiggins, of Isleworth, took up the cultivation of the *Cyclamen*, and was so successful that to him may be attributed a good deal of the notoriety the flower has achieved in recent years. Mr. Wiggins, and others working contemporaneously with him, not only succeeded in obtaining a larger size in the flowers through improved cultivation, but they originated forms displaying new colours, a greater breadth of petal, and a general advance towards that high degree of quality of which growers can now boast. Mr. Walsh, of Hillingdon; Mr. Clarke, of Twickenham; Mr. Edmonds, of Hayes; Mr. Egerton, of Twickenham; Mr. James, of Isleworth; Mr. Stevens, and, later, Mr. H. B. Smith, of Ealing; and, last but not least, Mr. H. Little, of Twickenham, with others too numerous to mention, have all materially aided this development, and helped to bring the *Cyclamen* to such a surprising degree of perfection.

The production of high-coloured flowers has proved a most valuable contribution to contemporary floriculture; these are surprisingly varied, and some of the most brilliant hues. Rich plum-coloured flowers approaching violet, purple, and blue; and bright flowers approaching carmine, red, scarlet, and crimson are now frequently seen; and altogether they are now very much earlier in the season than they were to be had years ago. Tipped, margined, and flaked flowers can now be seen, with the colours in charming combination; and some of the pure white flowers are most delicately beautiful, as well as large in size and of the finest form.

It is owing, no doubt, to the improved system of cultivation now followed, that the *Cyclamen* is to be had much earlier in bloom than it was a few years ago. Indeed, a most successful amateur cultivator, Mr. B. Hookes, of Bradford writing to us a short time since, states, "I most earnestly advocate the opinion that the *Cyclamen* is not a flower for March and April only, but for October, November, and December, and onwards; to be in bloom when there are fewest flowers in the greenhouse or conservatory." In a good and well-grown collection the *Cyclamen* can be had continuously in bloom for six months in the year, and longer.

Like most other plants, the fine development of a batch of *Cyclamen* depends mainly, if not altogether, on its cultivation, when a good strain is in the hands of a grower. Those who grow the *Cyclamen* so finely round London have to a considerable extent abandoned the old customs formerly observed, viz., the period of rest during summer—rest in the sense of withholding water for weeks, and literally roasting the plants in the sun—and the mode of propagation by dividing the bulbs. Now the *Cyclamen* is kept growing for a good portion of the year, and when

it may be said to be at rest is preserved in a cool place and supplied with water, to keep the soil moist about the roots. The production of stock is depended on from seed; in the dividing of the corms a great risk is run of destroying them outright, and cultivators state that any particular variety will be pretty certain to reproduce itself in some part of its progeny; and this fact has found abundant illustration in practice.

THE CYCLAMEN AS A WINDOW PLANT.

One of the best amateur cultivators of the *Cyclamen* that we are acquainted with thus writes concerning it:—"The property of the *Cyclamen* consists in its being one of the most easily grown of any of our winter favourites. It has a compact habit, lively foliage, exquisite fragrance in the flowers of some of its varieties, long continuance of bloom, and to these must be added its greatest recommendation, viz., being of all flowering plants the best adapted to indoor decoration. I have frequently had it in my sitting-room, and with ordinary care it will flourish as well, or almost as well, as in a conservatory. The only attention it demands is to have its leaves brushed over every morning with a soft camel-hair brush dipped in a little lukewarm water." Indeed, the *Cyclamen* makes an admirable window plant, as many cultivators can testify.

The same writer thus pictures a good specimen *Cyclamen*, and the fact that what he here sets forth can be accomplished, illustrates, in a remarkable manner, the improvement in the cultural process as compared with that of a quarter of a century ago. "I consider," he states, "that the *Cyclamen* at fifteen months' growth ought to be at least 1 foot in diameter, having a dense mass of thick variegated leaves standing almost erect, and the flowers not more than 2 or 3 inches above the foliage. The flowers themselves should be broad in the petals, about 2 inches in length, nearly round at the points, and having a slight regular twist in each segment of the corolla." It is a fact that such plants can be produced at the age of fifteen months.

HOW TO GROW CYCLAMENS.

To effect this the seed is sown almost as soon as it is ripe—at the end of July or early in August; the earlier the better. It is sown in shallow pans or in pots in a light rich sandy soil, and placed in a house or frame where there is some bottom-heat, in a temperature of about 65° or thereabouts. By the end of November the seedling plants are large enough to be pricked off into 60-sized pots, a dozen or so of plants in a pot, and still kept in a warm moist atmosphere. During the winter the young seedling plants, whether remaining in the seed-pans or potted off, require to be kept in a warm house, and near the glass, where the temperature will not fall below 45°. It is to be remarked that it is necessary that the young plants should be screened from the effects of hot sun during the summer by means of some material placed over the glass, which, while it will exclude the hot glare, will not interfere with the passage of light. The cultivator will do wisely to rush on his plants as quickly as possible, and to do this he should pot off singly into small 60-pots as long as he can that are large enough to be so treated. During the dead of the winter but little growth is made, but as soon as the days lengthen a little, the plants make speedy progress, especially if the weather becomes warm.

In March and April the plants potted in the autumn will require a shift into a larger sized pot, and those yet requiring to be potted off from the store-pots should be so treated, and all put into a frame with a little bottom-heat for a few weeks; then about the end of May put into a cold frame facing south-east, kept close for a few days, but eventually fully exposed during the daytime.

While the plants occupy this cold frame they should not be too much crowded. Space between them is absolutely necessary, so that the leaves can be well-developed, otherwise they will get a drawn appearance. One great desideratum in a well-finished *Cyclamen* is to have the habit of growth dwarf and compact, and at the same time bold and vigorous, so much does the general symmetry of the plant depend on a proper growth. Air, shading, and moisture, have much to do with this.

If the weather be hot during the months of June, July, August, and September, a sprinkling overhead

should be given once in the forenoon, besides the requisite watering of the soil about the roots; but it should be done with a watering-pot having a fine rose, otherwise the foliage will become bent down by the weight of the water, and the leaves will acquire a drooping rather than an erect habit; another necessary caution is, not to close up the lights for the night until the leaves of the plants are quite dry, as that is apt to induce a lanky style of growth.

The most forward of the plants treated in this way will come into bloom in October,—a great advantage, as it is a time of year when the greenhouse and conservatory is somewhat spare of bloom, and when the life and elegant floral expression of the Cyclamen will be found of great decorative value.

In the case of young plants, the prevalent system of culture may be said to embrace one principle, namely, never to allow the Cyclamen entire rest, but always to keep it growing till it flowers. This is how it is that such fine plants can be had in bloom in fifteen months from the time of sowing the seed. The application of this principle has done much to produce that fine character of development now seen at spring exhibitions, and to make it possible for almost any one having the convenience, to grow this plant in fine condition.

It may be remarked that, when the Cyclamen is getting well into bloom, a little weak liquid manure can be applied with great advantage, and the head of flowers will be both aided and prolonged by means of this timely stimulus.

Some of our growers bloom plants till they are five and six years of age, and those who have had an opportunity of seeing the fine plants produced at the spring shows, or in Mr. H. Little's collection at Hillingdon, or that of other cultivators, will remember the size of these plants, and their wonderful heads of flowers. Plants can then be retained till they are a few years old; and the usual custom is as soon as they have done blooming, they are placed in a cold frame in a shady position, but not allowed to suffer from drought. The plants are rested, but the bulbs are not permitted to become wholly dry and shrivelled. According to the earliness or lateness of the time when the plants flowered are they re-potted,—say in July, August, or September, if they flowered in October, November, or December: they are then placed in a cold frame, and kept close for two or three weeks. They soon push into growth, and begin to form their flower buds.

A good soil for the Cyclamen in all stages of its growth is one composed of two-fifths coarse leaf-mould, the same quantity of a light soft loam, one-fifth dry cow-dung, and sufficient fine white sand to keep it from running together. Some cultivators use less leaf-mould and more loam. The Cyclamen loves a rather open light rich soil, in so far as a plant may be said to show preferences. The cow-dung should be collected in fine weather, when it is somewhat dry, and put aside ready for use when wanted; and it is advisable, in all cases where called into requisition, after breaking it up small, to pour some boiling water over it to kill any insects that may have found a lodgment there, and also seeds that might become troublesome.

Formerly, in potting, it was deemed advisable to leave the bulb almost on the top of the soil. Now, the advice invariably given by successful growers is to bury it almost entirely in the soil, as it has been found that roots spring from all parts of the bulb, and this is found of great advantage to the plants.

It is observed that the yearly re-potting is now followed by growers. The old system of leaving the bulbs in the soil for three or four years undisturbed, as well as other fallacies connected with the culture of the Cyclamen, are quite exploded.

The Cyclamen is a warmth-loving plant, especially during the autumn, winter, and spring; and some who have experienced failures, have done so because the plants were grown in too cold a temperature.

Those who grow anything like a collection of Cyclamens take care to have the plants in a house by themselves. Mr. Little's house at Twickenham, was an excellent illustration of what a Cyclamen house should be; span-roofed, narrow, low, and with a rather high level stage on either side, so as to bring the plants as near the glass as possible. It is difficult to grow Cyclamens well when mixed with other plants; but if attempted they should have the most favourable position that can be afforded them; light, airy, warm, and near the glass.

INSECTS AND DISEASES.

The Cyclamen is liable to attacks of greenfly which infest its young leaves and cluster round the flower buds close about the crown of the corn. A moist warm atmosphere assists to keep them in check, and an occasional fumigation with tobacco-smoke, or a washing with Fowler's insecticide, will speedily cleanse them of the enemy.

Old roots are liable to suffer through decay from a kind of rot, the attacks of insects, &c. This rot will affect the bulbs near the level of the soil, and soon eat away a good portion of them. When they are reported they should be carefully examined, and even washed with a solution of Gishurst compound, or some other cleansing agent also destructive to insect life. Any labour so expended is rewarded by a decrease of failures.

A NEW RACE OF CYCLAMENS.

Or late years there has been originated a distinct large-flowered form of Cyclamen, which has been appropriately termed giganteum. The flowers are large and well formed, the florets long and broad, and the foliage and habit of growth in keeping with the unusual development found in other parts of the plants. In 1870 Mr. Edmonds, of Hayes, introduced giganteum, a form of great beauty; and in the spring of the present year a variety called magnificum, the subject of our coloured illustration, and for the opportunity of figuring which we are indebted to that gentleman. Mr. Clarke, Twickenham, also produced superbum, a very fine variety, in 1873. The bold character of these types single them out for special notice, and they are originating a race that will be of great value for decorative purposes. The varieties will no doubt extend as each season's seedlings come into bloom, and it may be expected that the large-flowered race will ere long embrace the range of colours found in the colder and smaller flowered types.

The Cyclamen is a free seeder; and from the peculiar construction and position of the flowers, they can hardly help fertilising themselves. In saving seed, the cultivator should select as seed-bearers, plants having compactness of habit, allied to finely-coloured flowers, possessing broad, stout florets; or a plant having flowers possessing some of these qualifications should be crossed with the pollen of other good flowers. Mr. Clarke, Mr. Edmonds, Mr. Little, and Mr. H. B. Smith have all done wonders in the direction of producing high-coloured flowers of a fine shape by judicious crossing. When the flowers are fertilised they are carefully marked, and screened from the delicate attentions of bees and other insects.

HOW TO RAISE NEW VARIETIES.

"The best time," writes one who has been greatly successful as a cross-breeder, "to fertilise the Cyclamen is as early in March as possible, but it may be done as late as April, although I consider the later it is done after the first week in March the less chance you have of obtaining the wished-for result, as all flowering plants are more or less fertilised and hybridised by insects and other agents in the spring and summer months. While the sun shines is the best time to cross the Cyclamen, and it should be done in the following manner:—Having selected a plant as the male parent, possessing good-shaped flowers, take hold of the stalk between the left finger and thumb, just below the flower, and with the right thumb flip the side of the bloom, and you will find the pollen lodged on the thumb-nail. Then apply this pollen to the blooms of the plant that has a good habit and a stiff, well-marked foliage, which should in all cases be indispensable in the seed-bearing parent. In performing this operation some care is required, as the parts of the flower are extremely delicate, and will not admit of much rough usage. The pollen should be gently applied to the stigma, and it will be found that at least a small portion has adhered, which is all that is required. I do not think it advisable to cross the ordinary form of *C. persicum* with a deep-coloured flower, except to obtain variety; but endeavour to keep them distinct, and improve each variety separately. However, if you have a flower combining good shape and high colour, but nothing else to recommend it, use this as the male parent, and cross with it another coloured flower possessing good dwarf foliage, and the result in most instances will be an improved habit, combined with a first-rate bloom. Endeavour to cross scented flowers, so as to get a heightened perfume. Not more than six flowers, on

even a large plant, should be allowed to seed, for if a greater number be retained the seed will be small, and the plants obtained from it in all probability be wanting in that vigour which is at all times an important item in the raising of seedlings. After fertilising the six best blooms, all others should be at once removed, and the plants put in a rather shady part of the greenhouse, but still having as much light as possible, and no place can better suit them than a shelf protected from the hot sun by woodwork, about 1 foot or 18 inches from the glass."

Some have condemned the practice of the Floral Committee of the Royal Horticultural Society in giving First-class Certificates of Merit to fine varieties of Cyclamen on the ground that any particular one cannot be propagated. This is altogether beside the question, even apart from the fact that cultivators have demonstrated that a particular variety will to some extent come true from seed. Any one who is successful in improving any particular flower deserves that his work should be recognised, and that entirely apart from commercial or other considerations. The highest recognition of the services of a raiser is found in awarding First-class Certificates to his productions. Even if it were certain that a new plant of high-class quality could not possibly yield any increase, that is no valid reason why a First-class Certificate should be withheld if deemed worthy of it; and, slightly altering a striking passage in the works of Fichte, it may be truthfully set forth that "The peculiar nature of the florist's occupation consists in this—that science, and especially that side of it from which he conceives of the whole, shall continually burst forth before him in new and farther forms. Let this fresh youth never grow old within him; let no form become rigid and fixed; let each sunrise bring him new joy and love in his vocation, and larger views of its significance."

CERTIFICATED VARIETIES.

The following varieties of Cyclamen persicum have received First-class Certificates of Merit:—

1870. giganteum (Edmonds)	1874. Meyer (Little)
grandiflorum (Edmonds)	Prince of Purples (Little)
1871. Queen of Crimsons (Little)	Rose Queen (Little)
1872. Snowflake (Little)	1876. Purple Gem (Little)
1873. friariorum (Wiggins)	1877. rosem grandiflorum (Edmonds)
1873. giganteum superbum (Clarke)	giganteum magnificum (Edmonds)
White Perfection (Little)	White Sun (Edmonds)
	Brilliant (Clarke)

This list may not be altogether complete, but it represents an attempt to give these flowers so distinguished in their chronological order.

It will be observed that one variety with frimbriated petals has been awarded a First-class Certificate. There is no reason why the frimbriated edge should be regarded as a disfigurement, or the smooth edge as the *Ne plus ultra* of perfection. While the florist looks chiefly to the smooth edge as representing his ideal of beauty, the frimbriated edge—as in the case of the Chinese Primrose, for instance—is recognised by him, and there is no reason why the Cyclamen should not be so privileged. Let us have all the variety we can in this attractive and useful flower, and not fetter the hands of raisers by setting up inelastic and arbitrary rules. The *Properties of Flowers* might be revised with considerable advantage to floriculture.

HARDY CYCLAMENS.

THE hardy species and varieties of the Cyclamen must not be altogether overlooked in this relation. There are *C. europæum*, the European species introduced from Switzerland in 1595, which bears reddish purple fragrant flowers. A form of this under the name of *Pækeanum*, from Holland, was awarded a First-class Certificate by the Royal Horticultural Society in 1865; *C. coum*, from the Greek Archipelago, flowering from December to March, the flowers pale rose purple; *C. hederifolium*, the Ivy-leaved Cyclamen, flowers pale pink rose, which is valuable for blooming in sheltered places during the autumn and winter months, especially under the shelter of tall trees; and *C. vernum* or *repandum*, from Southern Europe, blooming in April and May, the flowers pink changing to purple. Mr. James Atkins, of Paisnwick, Gloucestershire, a great lover of these hardy Cyclamens, has done something towards improving these beautiful forms, having raised, among others, *C. coum album*, awarded a First-class Certificate by the Royal Horticultural Society in 1868;

and *C. Atkinsii*, obtained from *C. coum*, hybridised with the pollen of *C. persicum*, the which, for profusion of bloom, fine colouring, and amplitude of beautiful leaves, is considered to surpass all the hardy Cyclamens.

Certain writers of a lugubrious turn of mind are found asserting that there is a marked decline in the cultivation of florists' flowers, whatever that statement may mean. It is much easier to generalise in this way than to substantiate the statement. Each generation of gardeners and lovers of flowers has its favourites, and there is a kind of unwritten fashionable rule in floriculture by which some subjects have their seasons of prominence and of apparent neglect. Some come to the fore while others fall aside, but are not wholly forgotten or altogether overlooked. Their day will

RAIKES' FAN-BOUQUETS.

THIS novelty in fans was designed about two years ago by the proprietor of the floral depot in Baker Street, Portman Square, and shortly afterwards he sent me the photographs, from which Mr. Worthington Smith has prepared the excellent engravings which accompany these notes. Upon my mentioning to Captain Raikes that I should like to say a few words in the *Gardeners' Chronicle* about the construction of these bouquets, he subsequently sent me one, the lasting powers of which were duly and practically tested at a ball, where its lightness and elegance were greatly admired, and where other bouquets of the ordinary type looked heavy and uncomfortable by comparison; in short, if bouquets had noses, and if

by a strip of swansdown, which is also carried along the straight edge of the board. Upon the semicircular space within this belt of swansdown are sewn three puffs of the same satin-ribbon, and the interstices are filled with pieces of swansdown, so that the whole surface of cardboard is concealed.

The floral part of the bouquet (which I pulled to pieces) consisted of the following:—Five sprays of *Dendrobium nobile*, five blooms of *Epiphyllum*, three *Rosebuds* (*Safrano*), three spikes of white *Lilac*, three of *Astibe japonica*, three spikes of Roman *Hyacinth* and three of *Lily of the Valley*, and a few *Neapolitan Violets*. The foliage behind the flowers consisted of fifteen fronds of *Davallia tenuifolia* laid upon a fan composed of five variegated *Croton* leaves, each stiffened with strong wire; the foliage amongst the

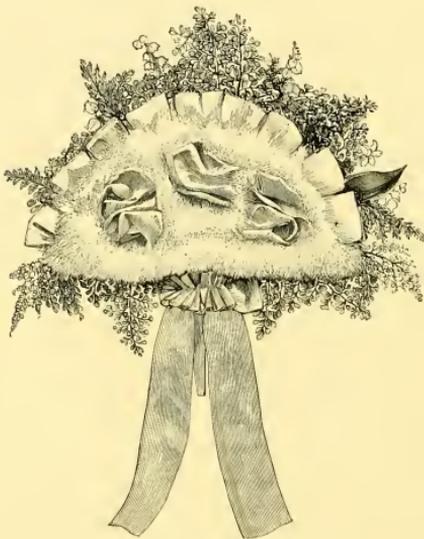


FIG. 2.—RAIKES' FAN-BOUQUET: REVERSE SIDE.

assuredly come again in the onward progress of time. As long as there are beautiful flowers, there will be hearts full of love for them, and delighted natures to tend them and bring them to perfection; and some that fall aside from the highways of floriculture are never or very rarely indeed wholly lost, for up and down God's earth there are those who tend them for their own sweet sakes, caring for them till some day they shall surely emerge again into a fuller sunshine of more general solicitude, challenging and compelling attention in newer and fairer forms, and more eloquent manifestations of beauty. *R. D.*

FLORAL HYGROMETERS.—Artificial flowers called barometers are being now exhibited in the London opticians' shops. When exposed to sun and dry air the petals become deep blue; when the air is saturated with moisture they become pinky.

noses had joints, there must have been a good many nasal dislocations on that occasion.

As might be expected from a glance at the engravings, Raikes' fan-bouquets are made in two parts, one being a flat arrangement of flowers and foliage, the other being cardboard covered on one side with satin and swansdown, and these two parts are fixed back to back. Let me first describe the latter part of the bouquet sent to me. The cardboard is a semicircle of 10½ inches diameter, of a firm consistency, without being hard, and one-eighteenth of an inch thick. To this is sewn a stout piece of galvanised iron wire, one end of which forms part of the handle of the bouquet. Around the curved edge of the cardboard there is a fringe, which consists of a quilling of white satin ribbon; the ribbon used is 2 inches wide, and the quilling, which projects 1½ inches, is stitched on to the board. The stitching is covered

flowers consisted of three small fronds of *Adiantum farleyense* and fifteen of *A. cuneatum*, of which last ten were dark green and five were light.

It would occupy more space than you could spare if I were to describe exactly how every flower was arranged; suffice it to say that almost every leaf and flower was wired, and that many had a little damp moss bound round each stalk. When I had released them of their wires the next day, I counted up thirty-seven *Camellia* wires, twenty-eight "stubs," and fine binding wires innumerable.

It will have been observed that the back of the cardboard, and the back of the floral part, were both furnished with stout wires. By slightly curving outwards these two sets of wires, the semicircular edges of the two halves of the bouquet are brought into close contact as soon as the respective handles are tied together, and there is no need for any further

fastening. A bow and ends of white satin ribbon form the finishing touch to the handle, which consists mainly of wires covered over with white paper or common ribbon.

Inasmuch as no part of the bouquet was more than 4 inches thick, it proved to be much lighter in the hand than the engravings would lead one to expect, and much surprise was expressed by several who took up the bouquet at finding how light it was. Next to the advantage which this flat form of bouquet has over the common round form in its lightness, there is this important difference to a lover of flowers—that when the bouquet is laid down, not a single flower or leaf is bruised, injured, or put out of place.

Lastly, these bouquets pack and travel much better than round ones, each going into a pasteboard

FLORA IN THE HOUSEHOLD.

The use of plants and flowers for decorative purposes on all occasions of ceremony, joyous or sad, has prevailed for ages. With the ancients Roses appear to have been principally employed; in the Book of Wisdom it is written, "Let us crown ourselves with rose buds before they be withered;" and the Romans exalted the Rose above all other flowers as a decoration, Cleopatra having, it is said, expended a talent (upwards of £200) on Roses to grace the feast to be given to Marc Antony, the banquet-hall being strewn knee-deep in flowers. Even this lavish use of flowers was surpassed by the Emperor Nero, who spent 4,000,000 sesterces (about £30,000) on Roses for one supper, not only the couches and apartments

Temple. They carried baskets of flowers in their hands, and wreaths of Myrtle encircled their heads.

In other times the Rose was introduced at feasts, not merely as an ornament, but as a symbol that all conversation held under it was to be kept private. Thus has arisen the saying "*sub rosa*." The practice of thus suspending a Rose over the heads of the guests is said to have had its origin from the fact that this flower was in ancient times dedicated to Harpocrates, the Egyptian God of Silence.

We have certainly improved upon the Romans in point of taste; we do not limit our ideas of indoor floral decoration to the use of one flower, we seek subjects of embellishment in almost every clime, and so modify the surroundings that we find plants decorating one apartment which have required divers condi-



FIG. 3.—RAIKES' FAN-BOUQUET.

box made to fit it, and merely requiring the handle to be tied to the bottom of the box.

Not long ago, Mr. John Day, of Tottenham, was kind enough to send me a box of very choice Orchids, out of which I made my first attempt at this form of hand-bouquet, and the result was so eminently successful, that I shall never again willingly make another Cauliflower-headed one. In former years, when Orchids were less frequently seen than they are now, I have more than once enumerated in your columns the beautiful varieties which have graced many a flower vase from the rich collection at Tottenham. Perhaps it would be more charitable on my part now to confine myself to the statement, that those which formed my fan-bouquet are not procurable in any flower-market, and doubtless then made their first appearance in a floral fan. A list of them would make some people jealous; so I refrain. *W. T. T.*

generally, but even the porticos and courtyards of the palace, being thickly strewn with the beautiful and fragrant blossoms. Nor were Roses employed solely on festive occasions; for Cicero in one of his orations, inveighing against the luxurious habits of the Verres, says that he made the tour of Sicily seated on Roses.

In the profuse use of flowers, thus cast in heaps upon the ground, to be soiled and trodden upon, there is a marked display of barbaric splendour, but no evidence of refined or cultivated taste; and it may be well conceived that such floral decorations were employed rather as a medium for the display of wealth than as a means of adding grace, sweetness, and beauty to the festival.

When the feast of Bacchus was held in Greece, flowers were strewn in front of the procession of virgins as they wended their way towards the

tions of growth; nor do we think it is claiming too much for London to say it is the great centre where the art of floral ornament is studied and carried out to the highest state of perfection, standing in this respect above all the other cities of the Continent, not excepting La Belle Ville de Paris itself. Roses have long been considered a *specialité* of French growth, yet greatly as the French florist has excelled in the cultivation of new and beautiful varieties of this favourite flower, when the Empress Josephine required a rosery choice was made of an Englishman (Mr. Kennedy) to lay out and plant the famous grounds of Malmaison; our national taste in floral arrangements has been long esteemed, both at home and abroad; for "English gardens," or the natural style of landscape gardening as it is sometimes termed, has been in favour ever since an improved taste in horticultural matters discarded the barbarities of the early Dutch fashion:

that which we then did for outdoor gardening, we are now doing for indoor horticulture, making it

"An Art

Which does mend Nature: change it rather, but
The Art itself is Nature."

We referred in the beginning of this paper to the hough-pot or Bean-pot of our forefathers; there seems to be some doubt as to the origin of the term, some believing that by hough-pot was meant a receptacle for cut flowers or houghs, others deriving the word from the French Bean-pot, since corrupted into bow-pot, meaning an ornamental vase in which growing plants were placed; for ourselves, we incline to the latter idea, and so consider the modern window garden, with all the addenda of Fern-cases, miniature conservatories, jardinières, &c., as the outcome of the old-fashioned Bean-pot.

But it is not alone as window ornaments that floral decorations have become popular; reception rooms on all festive occasions have become veritable indoor gardens, glowing with the brilliant colours of exotic flowers, graced by the feathery Palms and varied foliage of tropical countries, and replete of the perfumes of Persia and Araby.

From a domestic art practised by the ladies of the family, and limited to the arrangement of growing plants in windows and cut flowers for chimney-pieces, &c., floral decorations have grown to magnificent dimensions, and we have princes in the art of embellishment by living plants, as we have in many other departments of trade and commerce. Foreign potentates seek the aid of English artists to beautify their salons, and decorate their reception rooms now, as they sought the services of an Englishman for the out-door garden in the time of the Empress Josephine. If memory serves us truly, the present style of floral decoration, with its preponderance of graceful foliage, its pleasing abundance of cool and refreshing green, its trickling fountains and miniature cascades, had its origin in the prettily arranged Ferns and cooling jets d'eau, which were such an attractive novelty when the late-nineteenth century gave his popular entertainment, "Mont Blanc." The suggestion of plants as ornaments at all entertainments doubtless came from France, whence, no doubt, we obtained our first ideas of window gardening, for the very word *jardinière* is suggestive of the nation pre-eminent for artistic creations, and while the hideous oblong boxes on rickety legs were still keeping a place in English mansions, the Parisian *jardinière* was daintily constructed of Tulip wood inlaid with pretty Watteau-like pictures of a round or oval form, strongly supported on a pedestal of ebony relieved with ormolu. Instead of a few plants in the centre of a desert of soil, choice sweet-scented flowers were tastefully grouped in a surrounding bed of damp moss, the latter serving a twofold use—beauty and ornament. Although probably suggested by our neighbours, our indoor gardening has far outgrown the French limit; it has become a fashion to beautify our homes with living plants, and these whose tastes are not checked by a want of means to indulge them now revel in drawing-rooms, which emulate eastern gardens in a display of fresh blossoms, and conservatories which display miniature pictures of tropical forests. T.

A GARDEN ON THE HEARTH.

There is, we imagine, scarcely an English man or woman who does not cling fondly to that distinctive British institution—an open fireplace. During winter, the open fire, with its glowing coals and dancing flames, is a thing of beauty, and the greatest enjoyment of the season; but when our fickle climate has passed through its alternate arctic and equatorial phases of spring and early summer, and we have arrived at the conclusion that really the days are beginning to be longer—at such a time we generally have a spell of heat for a few weeks, which compels us to leave off fires; then housewives begin to look anxiously round for some pretty or novel design to form a screen to the unlightfulness of the empty fireplace, which, however ornate in character, always obtrudes itself upon the light, and mars the surroundings of a prettily furnished apartment.

The days of paper aprons, formed of stripes of tissue of many ill-assorted colours, are past, but these have been replaced by designs, but little less hideous in poorer homes; while the drawn muslin and

artificial flowers employed by persons of greater means, only become dirty and tawdry in a few days; or, to prolong their purity, the register of the stove is closed, and so the air of the apartment is rendered more close and unhealthy than it might otherwise be. In Lancashire, where intricate designs or gorgeous colouring in paper do not find favour, three or four handsome lumps of coal are found, and these being made to shine as brilliantly as possible with a thick coating of blacklead, a fire is laid, and masked with the pieces prepared for the purpose. In a county where to be house-proud is to possess one of the greatest virtues, it is almost needless to say that the whole fire-place, with its attendant fender and irons, shines like silver; but no degree of polish can take off the cold, dreary look of a grate which contains an unlit fire, and the chimney corner so eagerly sought for during winter is shunned during summer. But even during summer a comfortable, cold grate need not disfigure any apartment in the house. The old notion that flowers were unhealthy and vitiated the atmosphere of the rooms in which they were growing has been quite exploded. We have found that plants purify the air, and, such being the case, we would advise all who can possibly accomplish it to replace the comfort-imparting fire of winter by a beauty-imparting garden on the hearth during the hot weeks of summer.

When the well-known cry, "Any ornaments for yer fire sto'!" is heard in the streets, we may be pretty well sure that the flowers are blooming out in the country, and of these far more elegant and less costly decorations may be made, than any formed by the most expert fingers of the most tasteful artist.

At the present time the most beautiful of our flowering shrubs and some of our forest trees are in blossom, and a screen formed of boughs of Lilac, Laburnum, Hawthorn, or Chestnut, with some large leaves of the common Fern, is a beautiful and perfume-diffusing ornament for the fireplace, as much in keeping with the surroundings of a cottage parlour, as with the more costly furnishings of a drawing-room or a boudoir. We have mentioned these flowers first, as they are now in season, and because a gigantic bunch of Lilac placed on the bare hearthstone of a Parisian fireplace, suggested to our mind, many years ago, the feasibility of replacing the dust-accumulating devices of paper-aprons, &c., by something more easily changed, more suitable to the season, and more beautifying to the room. We need not, however, limit our ideas of "the garden on the hearth" to flowering shrubs; every garden, every field, almost every common or hedgerow bears something suitable in flower or foliage; all that is necessary is the energy to find plants, and the taste to arrange them when found. When branches of flowering shrubs cannot be had, monster bouquets may be made of some of the commonest wild flowers, such as wild Geraniums, Lady-smocks, Buttercups, wild Hyacinths, dead-nettles, Gorse, Broom, and any of the handsome leaves which may be found from early spring until autumn in every lane and on every wayside bank. In employing wild flowers for the purpose it is absolutely necessary to bear a few primary rules in mind; the plants must be sufficiently long in the stem to bear placing in a deep receptacle, without any danger of their toppling over; they must be in sufficient quantities to make a mass of one colour, not frittered away in unmeaning dots of blue, yellow, and red; and the vase must contain sufficient foliage for green to predominate; it is Nature's own colour, cool and refreshing to the sight and always welcome.

On the banks of fields the delicate green, deeply serrated leaves of the Cow Parsley, and the fine foliage of the Hemlocks, Hogweed, and similar large-leaved weeds, are almost always to be had; falling these the forest trees will furnish a supply.

Those who reside near streams need scarcely lack a most charming bouquet throughout the summer, for the large free-growing Forget-me-Not, found so abundantly in moist places, will not only live, but unfold fresh flowers while in water. We have made an excellent effect with a large bunch of Myosotis in the centre and Creeping Jenny and leaves from the water-side arranged to fill over the vase, so as entirely to hide the common receptacle in which the flowers were placed. The Forget-me-Not will flourish continuously for two or three weeks if kept supplied with sufficient water, but the flowers grow very pale by degrees, from being kept in a position where there is not sufficient light. The wild yellow Iris of our rivers and ponds is magnificent either alone with

foliage, or introduced among Myosotis. In the centre of towns, where wild flowers cannot be obtained, and there is no garden to supply plants, a few common things, such as Wallflowers, Stocks, &c., can generally be had for two or three pence, and these, with care on renewing the water to keep them fresh as long as possible, will not, at the end of the season, have amounted to a larger sum than is generally expended on an ordinary fire-grate ornament.

We would not, however, limit ourselves to cut-flowers. The garden on the hearth may be made of growing plants in pots. The situation is a trying one, being far from the light, and draughty, but there are many subjects sufficiently hardy to brave these two drawbacks to plant-life during the few weeks of our summer, when fires are not required, and almost unlimited scope may be found for tasteful and artistic arrangement.

Some pretty climber, like the Japanese Honey-suckle or small-leaved variegated Ivy, might be kept in a pot for the purpose, and trained on sticks to form a background to a group of bright scarlet Geraniums, the pots of these being hidden by some creeping plants. Lycopodiums do excellently, never appearing to suffer from the ineligibility of the spot for plant growing.

The Virginia Creeper, Ivy, Geranium, and many other of our popular summer garden plants, are suitable; to give a long list were useless, for the arrangement of the garden on the hearth must depend upon the resources and taste of the designer. It may be formed of glowing exotics gathered from the glass palaces of the wealthy, or it may consist of a bunch of wild flowers culled from Nature's garden treasures, which may be obtained at the cost of a country ramble. J.

AMATEUR GARDENING.

THE USE OF LEAVES.

IF roots, as we said in a former article, are important as the plant mouths, leaves are no less so as the lungs and digestive organs. The vigour of the flower and seed, the success of the cutting, or of moving, all are connected with what the leaves have done or are doing.

Fluid gathered from the ground and gases from the air are changed inside the leaf into the living food of the plant, and the disassembles from cutting kitchen garden crops till they are weakened past use, clearing away leaves in the flower garden whilst yet green, and the miserable condition of drawing-room plants, are often just so many examples of what comes of cutting off food, or the power of forming it.

Take a leaf and tear it. It is made of thin skin outside, green granular substance inside, with fibrous

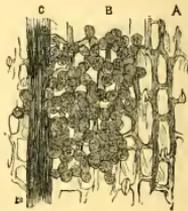


FIG. 4.—THE WORKSHOPS OF A LEAF MAGNIFIED.

veins usually in a network. Under the microscope these parts all show as made up of separate bladders or cells, as in the figure of a piece of the leaf of Sweet William magnified; those of the skin flat and colourless, with occasional small openings amongst them (A); those of the green granular mass roundish and loosely packed together (B); whilst the spindle-shaped and long cells or vessels forming the tough fibres of the veins (C) and leaf-stem give support to the leaf, and connection with the bark and inner part of the stem.

Here is the living machinery: fluid with the plant food in solution flows to it from the root; gas is imbibed through the thin outer coat from the air, and, under the influence of sunlight, colouring

matter is formed in the green cells, and starch and the various matters that build up the plant structures are formed or deposited, whilst the spare moisture from the fluid constantly bringing in the supplies from the root is given off by evaporation through the skin.

WHY PLANTS SHOULD NOT BE MOVED IN HOT WEATHER.

In this evaporation we have the reason why plants do not move well in dry sunny weather, and of the second item of the metrical maxim—

“This rule in gardening never forget—
To sow dry, and to plant wet.”

• The gardener puts out his plants on a damp day. If the sun comes out they droop—and why? Because all the moisture evaporates, and the newly disturbed roots cannot supply it as fast as it is needed; and the leaf is overheated for want of the evaporation that keeps it at a proper temperature, consequently it droops and dries, and very likely dies.

Therefore we move plants when there is moisture in the air, but not hot sunshine to dry up their small supplies; or we shelter them from the sun-rays, that in the cool dark shadow there may be little evaporation and they may suffer no check till the roots can resume work.

WHY PLANTS REQUIRE SHADING.

Whether we call it transpiration or perspiration, the plant or the labourer exhausted by loss of moisture through the skin in the sunshine are in much the same case, but the remedy is different. The labourer needs drink simply to restore it; with the plant we shade rather than give much water, because the leaf system works in the sunlight, and water and sunshine together would force on the growths, which are already beyond the supporting powers. Here we need only to keep what we have got in health till the roots are right again.

For the same reason small climbers suffering from over-exposure on a hot wall may sometimes be restored by simply placing a quantity of Ivy so as to form a mass up the wall close by their side. The thick mass of leaves gives a reservoir of cooler air, stops some of the glare of reflected heat, and gives shade occasionally, consequently diminishes the over-evaporation.

In the case of rooting cuttings, moderate light and damp surroundings carry on the same process; and even a hole in the earth deep enough for flower-pots to stand in, so that the cuttings in them may be beneath the ground level, with a hand-glass over that can be shaded, is a simple apparatus that is often very successful. Thorough draughts and hot, dry rooms are both bad for plants from simply drying the leaves.

WARD'S CASES.

Ward's cases do not always meet the difficulty, for we wish to have beauty and scent to enjoy at our ease rather than a great affair of glass and metal with a vision in a mist inside. Something may be done by occasional airing, or damping in a shower outside the window, but perhaps nothing does as much good as a thick coat of fresh moss laid on the surface of the pot; its light spongy mass lets the water (with which it should be kept constantly moistened) evaporate in good quantity, to the great benefit of the leaves above, and in itself it is very pretty.

We must be content to sacrifice some plants to our own love of their beauty, but by choosing what may suffer least, keeping them as short a time as possible in the house, and on no account whatever letting them remain on their passage in the hot, dry air of the kitchen, something may be done.

ACTION OF LIGHT.

Another point to be borne in mind is, plants need light. Under the influence of sunlight the viscid fluid that fills the cells beneath the outer skins of the leaf changes, and is re-formed into the green granules that colour it, and is re-formed into the green granules that colour it, the cellulose that builds the walls of the multiplying cells, and the starch and other materials that, dissolved in the flowing sap, nourish the plant. Without daylight we have the white growth of the grass under a turned-down cloud, or of *Senkale* in the bleaching-pot—a growth that goes on for a time but comes to nothing healthy, and shows in its pale tint the absence of the material that gives the colour, and changes into various kinds of plant food; a growth, in fact, that is often apparent rather than real, consisting in a stretching of the old rather than a formation of new fabric.

HOW TO GROW SEEDS AND BULBS.

Therefore seed-pans put in dark holes and corners should be brought to light as soon as the seeds begin to come up. The adage “So thick sown, thin soon enough,” should be carried out in both parts with regard to clumps of seedlings, or there will only be a sprinkling (as in figure 5) of plants thriving from having gained light and life together in the race for existence, with the rest choked below. Bulbs put in so deeply that their leaves are blinched, shoots and leaves buried under manure carelessly thrown on the



FIG. 5.—THE BATTLE FOR LIFE.

border, and shoots of herbaceous plants “drawn” from being so crowded that sunlight cannot get properly between them—all tell the same tale.

RESPECT THE LEAVES!

Some plants, such as Ferns, Periwinkle, or Ivy, do not require much light, but generally speaking, if the bush or plant is to prosper the leaves must have plenty of daylight, and some degree of direct sunshine. Whilst the leaves are green the plant is probably well. The pale hue of sickness shows something is amiss, and the hint should be followed out, and no account should the leaves be stripped whilst the green colour continues. Rhubarb and Asparagus in the kitchen garden, wall fruit trees, and Hyacinths, Crocuses, and spring bulbs are especial sufferers: for house supplies—to strengthen the trees!—far “tidiness” of come the leaves, and the plants suffer accordingly. The leaves that make the plant food and spread it, being taken away, the plant is starved, new bulbs must be bought, over-cut crops are weakened, and the Peaches are bad, besides what happens to the bearing wood for want of its food.

As long as the leaves are green they should be carefully preserved, not in over-crowded masses, but according to their method of natural growth. If the plants are squeezed up close together, or trimmed back with shears, there will often be a mere crust of leaves outside with bare boughs inside, as in diagram A (fig. 6), whilst if allowed to grow, or trimmed into natural shape, letting sun and air into the centre, there will be a larger surface exposed, as at B, and a healthy growth. With the change of tint—the brown of decay, the gold and red of autumn—the leaves may be removed; the green granules have



FIG. 6.

broken up, the food is stored elsewhere, the work of the leaf upon its stem is done.

Other circumstances, such as the nightly absence of light, have very important effects on leaf-action, consequently on plant growth: but as darkness returns regularly, whilst the light of day is not so certain of admission to the plant, practically it does not require the same notice.

What the amateur has to bear in mind is, that what the leaf imbibes as gas and fluid from air and earth, is changed in its cells under the action of sunlight to plant-food. This builds the cells and fills them, consequently nourishes the flower, the fruit, and the growing shoots, and lays up the store for future use; and, according to the healthiness of the leafage, so will be the prosperity of the plant. O.

THE GARDENING EXPERIENCES

OF MR. MULBERRY GILLYFLOWER.

I HAVE BEEN making a study of gardening literature as it is found in catalogues. I have obtained lists from leading nurseries and seedsmen, and I find half-a-dozen of them so full of matter as to suffice for a lifetime. I am astonished at their size, at the brilliancy of their gaudy illustrations, at the quantity and variety of their contents; and at the usefulness of human nature seen in the spontaneous offering of so many unsolicited testimonials on the part of so many disinterested individuals which are found in those catalogues, among other considerations of a scarcely less weighty character; and I have properly passed when induced to compute the cost of five thousand copies; contenting myself with estimating the value of the postage—for one copy cost in postage the sum of twopence-halfpenny when sent to me. I have no desire to underrate the value of the information given in these elaborate works; but in my own case I found it utterly bewildering.

And why? Because to a great extent I am ignorant of flowers. I wanted a few pretty things for my little garden, and I turned to one of these catalogues for information. It was there, no doubt, but I failed to find anything suited to my necessities. I was recommended to grow a few *Asters* and *Stocks*, and I turned to the former and found about a dozen kinds, all highly recommended, but which was I to choose? I turned to *Stocks*, and here again was a similar number, and all more or less praised by the vendors. I also found that *Stocks* and *Asters* alike (at least those that were most highly recommended), were sold in what seemed to me to be needlessly large “assortments,” as they are termed. Then the details given for raising the seed might have been understood by a gardener acquainted with the technicalities of his profession, but they rather damped my floricultural ardour than otherwise. I felt that the anticipated pleasures of my garden existing in my imagination were rapidly receding to a distance, and I said, “Where shall such a perplexed one as myself turn for counsel in my gardening extremity?”

Then I thought me of the adviser whose counsel had proved of so much benefit at the time of planting, and he recommended me to grow two of the many *Asters* offered, viz., the *Victoria*, for its large, full, and perfect flowers; and *Boltz's Dwarf Bouquet*, because dwarf and branching in growth, and so useful as decorative border flowers, and a cut flower. Instead, therefore, of purchasing an assortment of each of these *Asters*, I obtained a mixed packet of each, and I was informed by the vendor that the quality of the seed in the mixed packet was equal to that contained in the assortment. Then of *Stocks* I was recommended to try the large-flowered *German*, which I was informed would give me all I required. In this way I obtained my seed.

The directions for raising *Stock* and *Aster* seed given in the catalogues were in all probability faultless, but they were written for those who may be supposed to be in possession of cold frames, &c., or a greenhouse or hotbed in which these things could be raised with but little trouble. To get seed-pans in which to sow the seed was an easy task, so it was to get some soil as recommended; a neighbouring jobbing florist supplied these, but when it came to the matter of a position for my pans after the seed was sown, I was somewhat at a loss.

HOW I MADE A FRAME.

I thought, however, I could not do better than endeavour to construct something like a frame. In one corner of my garden laid some brick rubbish, which was gathered together and piled up so as to form a foundation, and on this was placed a layer of rough cinder-ashes. Then some pieces of rough boarding were placed round the outside of the foundation, but reaching a foot and a-half above it, and sloping from back to front, as in the case of an ordinary frame. By this means I got my bed, but now arose the difficulty of a suitable covering. I thought me of some light white covering stretched across a wooden frame, but it would scarcely answer, as I was informed it would exclude too much light when it was much needed, and also not be sufficiently impervious to wet. Then I determined to have a rough sash constructed and glazed with glass, which was done, and thus the framework of my homely bed was constructed. The bed now required completion, and some rough soil

was laid over the ashes, and on this some finer soil, till it was within 9 inches of the glass. I took care to provide proper fastenings for my light, to preserve it from being blown away by the wind.

This much done, I thought I was in a fair way to the accomplishment of my purpose.

I SOW THE SEED AND WATCH.

Next came the work of sowing the seed. Advised thereto, I took care to have my seed-pans with holes in them round the bottom, so that the water that freely pass away. In the bottom of the pans I laid some crocks, then a layer of charcoal broken fine, then a little rough fibry loam pulled to pieces, and, lastly, my fine soil. It was then pressed gently down, the seeds sown thinly on the surface, and lightly covered with some of the finest of the soil, again gently pressed down till the surface was smooth. The whole was then very carefully moistened with water.

The pans were next placed in the frames, and a piece of glass large enough for the purpose placed over each, and the light covered over the top. As the weather was dull and cool at the time, no shade was necessary, but when a gleam of warm sunshine shone out, a piece of newspaper was laid on the pans in the frame, and some air was given at the top by means of lifting the light; but all the time the nights were cold it was carefully closed down.

I was much interested in my experiment, and gave my venture daily attention. Presently the seeds grew nicely, and as they made advance the glass was gradually tilted on one side and finally removed altogether, and the pans raised on bricks to bring them near the glass. And here I may observe that my success in raising a good crop of plants, in having them stocky and strong, and free from mildew, and undiminished by losses from any cause, was entirely owing to constant attention being given at the time the seeds were germinating. Of the thousands of failures with seeds that occur annually, the very great majority of them is traceable to neglect, not so much a wilful neglect as that of failing to give frequent attention, and thus it is blame is cast on seeds and on the vendors of seeds that should be borne by the cultivator.

As soon as the plants were large enough, they were pricked out singly in the bed in which the plants were raised, and being kept close for a few days, have made good plants, and are now in their places out-of-doors. The recent rains have given the plants a good start, and, as they will receive every encouragement, they should be all that can be well desired when the time for flowering comes round.

I LAUNCH OUT MORE BOLDLY.

But my homely frame has been turned to another account. When I saw how well the Stocks and Asters were doing, I thought I might attempt something further, and a gardening friend made me a selection of half-hardy plants that, if raised, would come in useful for bedding. It necessitated the procuring of other pans, but my garden being small, and my requirements by no means large, I was enabled to sow two lots in each pan, laying a slight piece of stick across the middle as a dividing line. I have sown *Ageratum Imperial Dwarf*, *Alonsoa Warscewiczii*, which I am told is a beautiful plant, too much known in these days; *Balsam*, *Petunias*, *Phlox Drummondii*; *French*, *African*, and *dwarf Golden Marigolds*, *dwarf* and *tall Nasturtiums*, *Thunbergias*, *Amaranthus melancholicus*, *Rubra*, *Pellia nankinensis*, and *Centaurea candidissima*, for bedding; *Verbena*, and some *Everlastings*, viz. *Aztecum* and *Blue*. Some of these grew plentifully, others more sparingly, but all sufficiently well to give me a crop of each. My hands have been full in getting the forwardest plants pricked out where it was possible to find room for them in my frame, potting off a few, and placing some in the open ground. In this way I have obtained quite a choice assortment of summer-flowering plants, and though I am acquainted with some of them, there are others of whom I have but little knowledge; and, according to the catalogues, they have many charms to commend them to my attention.

I have come to the conclusion that it is a very pleasant occupation in gardening to begin at the beginning; that is, to purchase seeds and raise them, trusting to attention and the chapter of accidents to bring forth a precious harvest. As my crops grew up, as they were, amid the kindness of imprudently known, I have been kindly and gracefully led by my instincts without much blundering or many false steps. The experience so gained is an almost priceless possession to an amateur gardener endeavouring to master the alphabet of the occupation; and so long as there be in the human heart some germs of a kindling love for flowers, so surely will the pursuit of gardening life for this regard till it burn brightly.

MIGNONETTE.

THE origin of the common garden Mignonette is somewhat involved in obscurity, the subject so far as we know never having been satisfactorily cleared up. It is said to be a native of Barbary, but nothing is known about the plant in a wild state. I appear to have been introduced many years ago into the south of France, where it was welcomed by the name of Mignonette—Little Darling, and is said to have been brought to England in 1742 (by Paxton as having been introduced in 1755), which if the dates are correct, prove Sir Walter Scott to have been in error, when he introduced the plant into his novel, *The Fortunes of Nigel*, as decorating the London windows during the reign of James I. However that may be, it is certain that the fragrant weed soon became as popular in this country as in France, and may now be considered as a naturalised subject. Of its cultivation in the open air we need say nothing, but as its successful culture in pots is not of very common occurrence, except amongst the large growers for market, we may state in a few words that one of our most extensive growers, Mr. Reeves, of Acton, sows the seeds during the months of August or September. The size of pot employed is the favourite "48," and after covering the



FIG. 7.—MIGNONETTE FOR MARKET.

crocks of these with good rotten dung to the depth of 1 inch, they are filled with any ordinary garden soil that the grower can get. The soil is pressed down tolerably firm, and the seeds are sown sufficiently thick to allow of their being thinned out to about four or five plants in a pot. After sowing, the pots are placed in a cold frame, where they remain all winter, and during the duller months only sufficient water is given them to prevent the soil from becoming quite dust dry. Our illustration (fig. 7) was prepared from a photograph of an average sample selected from the splendid batch of 3000 plants which Mr. Reeves exhibited recently at South Kensington, and which our artist has shown with its supports and one twist of matting, as prepared for sale in the market.

FASHION AND FLOWER SHOWS.

EXPERIENCE is not wanting to show that flower shows held under fashionable auspices, and intended to secure the patronage and support of the fashionable world, are pre-decided to failure so long as they repose for their success upon that element of the community alone. The Crystal Palace grand exhibitions, those at the Alexandra Palace, the Royal Aquarium, Sandown Park, and now the recent Orleans Club Show at Twickenham, all testify that shows promoted merely to attract the fashionable and the wealthy inevitably fail of their purpose, and that the attendance is almost invariably short of anti-

ciations. The rich of the community, always excepting the few who are genuine lovers of flowers, have either been satiated with floral exhibitions, or have lost the natural taste and love for flowers which so largely distinguishes the poor. How sadly this is evident may be seen if any one will take the trouble to observe the demeanour of the rich visitors. They dawdle through the tents with an air of languor, scarcely deigning a look here or there, and such rare events are characterised by an effort, just as though the whole thing was a bore, of which they would gladly be rid.

Without doubt, their indifference to floral exhibitions is more real than assumed; and realising this fact, managers of shows in the future will do well to cater less for the "upper ten," and more for the lower million, who in spite of their many social and moral defects, are yet deeply imbued with a taste and love, natural and healthy, for all that relates to the garden. In all good provincial shows the shillings of the trading class, and the coppers of the poor, are found to be an assured support to the financial success of the exhibition. Here local interest has a potent influence for good, as the visitors have in most cases some personal knowledge of the exhibitors, and therefore special interest in their products; and, further, the flower show has grown to be almost a permanent institution, demanding support and receiving it with as much favour and assistance as any other local object. Perhaps in country districts there is more real love for horticulture permeating the breasts of all sections than is found in the metropolis; but in many of our large manufacturing towns the intense interest displayed by the poor in floral exhibitions is most marked, and the singular love and earnestness shown for flowers, or any garden products, is one of the most beautiful characteristics of our town-bred and confined working classes.

Any one fond of studying character will find a flower-show tent filled with the poorer classes a special opportunity for favourable observation. Under the benign influence of the beauties of nature around, the best human elements are brought into play, and the criticisms, surprises, and exclamations of delight are all evidences of the existence, even in the workers in the field, factory, shop, mill, or mine, of that one touch of nature which makes the whole world kin. Perhaps looked at in a hard, business light, the nurseryman cares little for such visitors as these, but, putting this aside, it is impossible to doubt that any flower show so attended must be a great educational as well as pecuniary success. It will probably be long before our metropolitan flower shows will be gazed upon by thousands of the toilers of life admitted at 6d. or 3d. per head, the whole thing would be so very *infra dig.*; but even these, if not clad in silks or broadcloth, would be better than a listless, uninterested few, who find a wearisome toil in sitting for an hour or two to listen to a military band.

POPULAR PELARGONIUMS.

THE production of Zonal Pelargoniums for the London markets is one of those specialities of horticultural work that is done on a very extensive scale, so extensive, indeed, that one cannot realise it till he is favoured with the look through such a nursery as that of Messrs. Hawkins & Bennett at Twickenham, and others in the neighbourhood of London. These plants are grown by the thousand, both for vending in pots, and for cut blooms. One sees long broad houses completely filled either with pink, scarlet, or white Pelargoniums in a very healthy condition in the regulation 48-pots, and blooming profusely. The varieties are Dr. Lindley, scarlet; *Vesuvius*, scarlet; *Leonidas*, crimson; *Christine*, pink; and *Madame Vaucher*, white, with a few doubles, *Madame Lemon*, being the leading variety. There are several houses 200 feet in length, and of a good width, and some idea of the great quantities of each variety grown may be inferred from the fact that in the two houses of Madame Vaucher there were from 4500 to 5000 plants. The plants are mainly from spring struck cuttings of the previous year, of branching growth, clean and healthy, with fine heads of bloom. The plants are sent to market in round baskets, a dozen or so of plants in a basket. It is a remarkable fact that of the many new varieties produced since the advent of the above old sorts, they are yet the best for the particular purpose. The vast number of plants raised and distributed in a year by Messrs. Hawkins & Bennett is so large that were statistics given they would be thought incredible.

NOTICE.

The Valuable PRIZES offered by
MR. WILLIAM BULL
Will be competed for at the Great Summer Show of the Royal Horticultural Society on June 19.
For Particulars *vide* Schedule of the Royal Horticultural Society, or Mr. William Bull's Catalogue for 1877.

ESTABLISHMENT FOR NEW AND RARE PLANTS,
KING'S ROAD, CHELSEA, LONDON, S.W.



CHOICE FLOWER SEEDS

For Present Sowing.

Our own superb strains, guaranteed of unsurpassable quality, sold free on receipt of P.O.O. or Stamps.

	Per packet—s. d.
AVRUCULA, choicest mixed, alpine	6d. and 1 0
CALCEOLARIA HYBRIDA, very choice, mixed ..	2 6
CINERARIA HYBRIDA, from named flowers ..	2 6
CARANTHUS and PICOTILE, from stage flowers ..	2 6
HOLLANDICUS, Free English	6d.
INDIAN PINK, splendid double, mixed	0 4
MIMULUS, Capituliformis, very fine	1 0
MYOSOTIS DISSITIFLORA—Forgee-me-not ..	0 6
PANSY, choicest mixed English	6d. and 1 0
FRIMULA SINENSIS, choicest mixed	1 0
POLYANTHUS, finest gold-laced, choice	1 0
STOCK, Prompton, scarlet Giant	0 6
East Lothian, splendid	0 6
SWEET WILLIAM, very choice, mixed	0 6
WALL FLOWERS, splendid double, mixed ..	6d. and 1 0
GREENHOUSE PERENNIALS, 12 fine varieties ..	6 0
HARDY PERENNIALS, 12 choice sorts, Pansy, Holly- hock, &c.	4 6

DANIELS BROS.,
ROYAL NORFOLK SEED ESTABLISHMENT,
Norwich.



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

E. G. HENDERSON AND SON are now sending out the following plants—several of which are being offered for the first time. See the May Bedding and Self-seeded Greenhouse Plant Catalogue for descriptions, which will be forwarded on application to the nearest branch.
PELAGONUM Queen of Stripes, large flowered species, with Corolla like striped flowers.
" Ixyleaved Nemesis, the finest alone in the group.
" Dame Blanche, very delicate colour.
BOUVARDIA ROZEI, new species.
LORELLA Fine-spice Gem and Princess of Wales.
MIKANTIA SCANDENS VAREGIATA, a useful plant.
CUPHEA MIKANTIA IGNEA, brilliant.
DACTYLIS KLEGAN TISSIMA AUREA, fine.
MIMULUS, a collection of new colours, and double-flowered.
VERIENAS and PETUNIAS, new colours and varieties.
SALVIA SPLENDENS BRUNTI, the finest.
ABUTILON DARWINI TESSELLATA, useful.
SEED—the best quality that can be grown—Calceolaria, Cineraria, Primula, single and double; Cyclamen, Pansy, &c. See Advertisement May 5, or our SEED CATALOGUE, for prices, &c.

CRANSTON'S NURSERIES.

ESTABLISHED 1875.

SPECIALITIES.

ROSES, FRUIT TREES,
CONIFERS.Address—CRANSTON & CO.,
KING'S ACRE, near HEREFORD.

QUANTITY AND QUALITY.

NEW ROSES, IN POTS.

TEA and NOISETTE ROSES, IN POTS.

CLEMATISES, IN POTS, of best New and Old Sorts.

ORCHARD-HOUSE TREES, IN POTS.

VINES, IN POTS.

Also, by far the largest and most carefully grown Outdoor NURSERY STOCK in this part of England.

LISTS FREE.

EWING & COMPANY,
THE ROYAL NORFOLK NURSERIES, FATON,
NEAR NORWICH.

THE NEW SEEDLING ROSE,
"QUEEN OF BEDDERS"
(NOBLE).

See Coloured Plate (after Mrs. Duffield), "Gardeners' Chronicle," May 5, 1877.

Perhaps the finest of all the English Seedling Roses of recent introduction. It is *par excellence* a really Bedding Rose in every sense of the word—requires no pegging down, support, or training of any kind, and is a continuous early and late bloomer.

First-class Certificate Royal Horticultural Society,
August 2, 1876.

Its influences may be imagined when it is stated that a plant 28 inches high had eighty-four buds and expanded flowers upon it on September 6, 1876.

A constant supply of buds was obtained from early June to November of that year—over five months.

Good Plants are now being sent out in strict rotation at

10s 6d. each.

Coloured Plates 12s. each.

CHARLES NOBLE, BAGSHOT.

TEA SCENTED ROSES.

SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 1s. to 18s. per dozen.

.. extra size, in 6-inch pots, for Greenhouse, set with buds, 24s. per dozen.

.. extra size, in 8-inch pots, for Greenhouse, set with buds, 30s. to 36s. per dozen.

.. Half Specimens, 5s. to 7s. 6d. each.

NEW FRENCH ROSES of 1877, 30s. per dozen.

HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 36s. to 42s. per dozen.

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

Address—CRANSTON & CO.



TREE FERNS.

THE LARGEST AND BEST STOCK IN EUROPE.



WILLIAM BULL, F.L.S.,

Respectfully invites the Nobility and Gentry to an inspection of the above; also of his

MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

STRAWBERRY,

THE DUKE OF EDINBURGH

(MOFFAT).

THE LAWSON SEED AND NURSERY COMPANY (LIMITED),
EDINBURGH and LONDON,

Have made arrangements with Mr. Moffat, Coldwells, to send out, for the first time, the above-named splendid Strawberry. Fruit very large, firm, and of excellent flavour, bright scarlet colour. A most prolific bearer, and as a main crop for market purposes it is unsurpassed.

Strong Plants, 42s. per 100; 25s. per 50; 15s. per 25; 9s. per dozen.

Trade Price on application.

1, GEORGE IV. BRIDGE, EDINBURGH; 54, BISHOPSGATE ST. WITHIN, LONDON.
April, 1877.

NEW ENGLISH-RAISED SEEDLING ROSES.

MESSRS. PAUL & SON,

THE OLD NURSERIES, CHESHUNT, N.
(THESE NURSERIES ESTABLISHED IN 1860),

Have great pleasure in announcing as a continuation of the series of English Roses raised or sent out by them since 1860, inclusive of LORD CLYDE (Paul & Son), DUKE OF EDINBURGH (Paul & Son), CHESHUNT HYBRID (Paul & Son), ANNIE LAXTON (Laxton), DUKE OF CONNAUGHT (Paul & Son), &c., &c., and containing never a bad one in the lot.

TWO NEW ENGLISH SEEDLING ROSES.

H.P. EMILY LAXTON (Laxton), a large full flower with globular, pointed bud, opening into large globular flower. In the way of Monsieur Noman, but of a rich cherry-rose, deeper and fuller than that kind, and with strong vigorous habit, making a grand pillar Rose.

First-class Certificate Royal Horticultural Society; First-class Certificate at the Leeds and Crystal Palace Rose Shows, and 1st Prize at Exeter for twenty-four of any one kind.

H.P. MARCHIONESS OF EXETER (Laxton), clear, rose-flushed, light cherry-rose, large, finely built up flower, very sweet, and of strong vigorous growth; a larger more double Annie Laxton, yet perfectly distinct from that kind.

Plants in pots of the above, ready early in June, 7s. 6d. each, 14s. the two varieties; Blooming Plants, in 24-pots, 10s. 6d. each, 20s. the two varieties.

The two kinds described above have been proved two seasons at Cheshunt, and can be recommended as continuing the race begun by this raiser with H.P. Annie Laxton.

PAUL & SON,
THE OLD NURSERIES, CHESHUNT, N.

(These Nurseries Established 1860)

THE THAMES BANK IRON COMPANY,

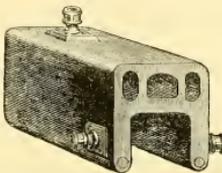
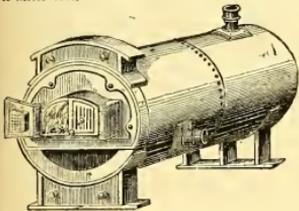
Old Barge Wharf, Upper Ground Street, London,
SURREY SIDE, BLACKFRIARS BRIDGE.

HOT-WATER BOILERS, PIPES, CONNECTIONS.



NEW PATENT "CLIMAX" BOILER (1874). See p. 666, 1874, *Gardener's Chronicle*.
"GOLD MEDAL" BOILER (Birmingham, 1872).
PATENT "EXCELSIOR" BOILER (1871).
The largest and most complete Stock in the Trade; upwards of Twenty Thousand Pounds worth to choose from.

"WITLEY COURT" BOILER (Silver Medal 1874).
"TRENTHAM IMPROVED" BOILER, with Water-way End and Smoke Consumer.
"TUBULAR," and every other Boiler of known merit or excellence.
First Medal Awarded at the National Contest, Birmingham, 1874.



("TRENTHAM IMPROVED" BOILER.)

("GOLD MEDAL" BOILER.)

MILL'S PATENT AUXILIARY FUEL ECONOMISER,

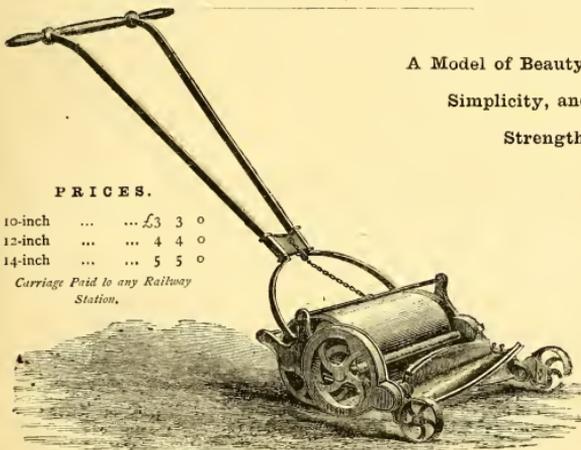
Which can be attached to any ordinary Boiler. These Tubes are the greatest Economisers of Fuel and Preservatives of Boilers, Fire-bars, and Furnace Fronts ever yet introduced to the public.

STAINTON'S NEW PATENT FROST DEFYING LIQUID (see "Gardener's Chronicle," Aug. 19, 1876).

HOT-WATER APPARATUS ERECTED COMPLETE.

PRICE LIST on application; or, Six Stamps for DESCRIPTIVE CATALOGUE, 4th Edition.

"THE PRESIDENT," Latest and Most Improved American Lawn Mower,



A Model of Beauty,
Simplicity, and
Strength.

PRICES.

10-inch	£3 3 0
12-inch	4 4 0
14-inch	5 5 0

Carriage Paid to any Railway Station.

EVERY MACHINE UNCONDITIONALLY WARRANTED.

The "President" is the best Lawn Mower in use in the United States. The new and important improvements which have been made in these machines have wrought a complete revolution in their manufacture, resulting in their being celebrated throughout the world.

In offering to the Public this beautiful Machine, we desire to call attention to many valuable improvements. It has a noiseless positive ratchet, a full roller, and an adjustable iron handle, allowing the machine to follow an uneven surface on slopes, terraces, and borders, without any inconvenience to the operator.

This Mower is of lighter draught, and we feel warranted in saying, will outwear any in the market. The workmanship and material far surpass anything of this character now manufactured, and we invite inspection and comparison with any Lawn Mower yet produced.

The machine is simple, easy to adjust and keep in order, and the knives can be sharpened without removing them from the machine. The gearing is all perfectly enclosed, rendering it entirely free from clogging.

In brief, if you want a Lawn Mower that will run easy, do good work, last you longer than any you can buy, and give you less trouble, we recommend the "President" with perfect confidence to your favourable consideration.

THOMAS MCKENZIE & SONS (LIMITED),
79, MARK LANE, LONDON, E.C.;

DAWSON STREET, DUBLIN; and VICTORIA STREET, BELFAST.

New Plants for 1877.

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

W. F. BOFF offers the following, all fine stuff, in small 60's:—GERANIUM, V. *vesiculosum*, 14s.; Madag. *Vaucher*, 16s.; *Master Christian*, 15s. per 100. V. *ER. BENAS*, 12s. per 100; DAHLIAS, 16s. per 100; HELIOTROPE, 12s. per 100; CALCEOLARIAS, Gen. of aurea, 14s. per 100; COLLEUS, 12s. per 100. PYRETHRUM AUREUM LACINIATUM, 20s. per 100—203, Upper Street, Islington, N.

To the Trade.

BEDDING PLANTS.—Fine, well grown, in separate pots:—
VERIENAS, *Redje* (scotch), Prince King, and *Boule de Neige* (pure white), in splendid stock, 25s. per 100.
GERANIUMS, Zonal, to name, 14s. per 100.
CALCEOLARIA, aurea *dentata*, 14s. per 100.
AGERATUMS, HELIOTROPES, IRESINES, LOBELIAS, ALTERNANTHERAS, ALYSIMUM VARIEGATUM, CINCERARIA MARTIMA, COLIUS VERSCHAFFELII, GAZANIA SPLENDENS, GNAPHALIUM LANTANA, MESEMBRYANTHEMUM, coed. var., NIEREMBERGIA GRACILIS, PERILLA, TAGETIS SIGNATA, R. pl., GOLDEN THYME, YERBENA YENOSA, and VIOLA CORNUTA PERFECTA, 12s. per 100.
CENTAUREA RAGUSINA, 15s. per 100.
SALVIA PATENSIS, 2s. 6d. per dozen.
ACACIA LOPIHANTHA, 4s. per dozen.
ARTEMISIA ARGENTEA, 2s. 6d. per dozen.
ABUTILON THROMBOPNEUM, 2s. 6d. per dozen.
COPROSMA BAUERIANA var., 4s. per dozen.
SEDUM GLAUCUM, 12s. per 100.
ECHEVERIA SECUNDA GLAUCA, 15s. per 100.
F. W. COOPER, Florist, Huntingdon.

BEDDING PLANTS, BEDDING PLANTS.

—Zonal and Nosegay GERANIUMS, 2s. 6d. and 3s. per dozen, 10s. and 20s. per 100; *Hycoler* 20s., 3s. and 3s. 6d. per dozen, 12s. and 22s. per 100; Silver-edged 20s., 3s. and 3s. 6d. per dozen, 12s. and 22s. per 100. CALCULARIAS, 2s. and 2s. 6d. per dozen, 10s. and 20s. per 100. AGERATUMS, IRESINES, VERIENAS, IRESINES, HELIOTROPES, ECHEVERIAS, MESEMBRYANTHEMUMS, FUCHSIAS, CANTHUS, 2s. 6d. per dozen, 10s. and 20s. per 100. GOLDEN PYRETHRUMS and best SEDUMS, for carpet bedding, 2s. per dozen, 6s. per 100. FUCHSIAS, CHRYSANTHEMUMS, and COLIUS, 3s. per dozen, 20s. per 100. Golden PYRETHRUMS and best SEDUMS, for carpet bedding, 2s. per dozen, 6s. per 100. Various BEGONIAS, both kinds, *Seaside* Victoria, and magnolia, for bedding, 6s. per dozen.

CATALOGUES on application. WILLIAM CLIBBER, AND SON, The Oldfield Nurseries, Altrincham.

Bedding Plants, the Million.

JAMES HOLDER AND SON'S GUINEA HAMPER consists of eight dozen plants, comprising scarlet and variegated Geraniums, Veriensas, Calceolarias, single and double Petunias, Dahlias, Ageratum, Lobelias of sorts, Gazanias, Salvias, Coleus, Iresines, Alternantheras, Heliotropes, Konigs, Echinerias, Scempervivums, Campanulas, Tropaeolums, Mesembryanthemums, Fuchsiads, &c.; all strong healthy plants, to single pots. Crown Nursery, Reading.

Surplus Bedding and Other Plants. REDUCED PRICES.

WOOD and INGRAM offer the following, fine established plants, in single pots:—
AGERATUM, Countess of Saxe, 10s. per 100.
ALTERNANTHERAS, sorts, 14s. per 100.
CALCEOLARIA AUREA FLORIBUNDA, 12s. per 100.
CALCEOLARIAS, in variety, to name, 30s. to 40s. per dozen.
CENTAUREA CANDIDISSIMA, 18s. per 100.
CANDIDISSIMA COMPACTA, 25s. per 100.
CLEMATIS, best varieties, to name, 1s. 6d. to 2s. 6d. each.
DAHLIAS, Show and Fancy, 3s. per dozen, 21s. per 100.
ECHEVERIA SECUNDA, 12s. per 100.
FUCHSIAS, in variety, to name, 4s. per dozen, 25s. per 100.
GLOXINIAS, in variety, to name, 18s. to 30s. per dozen.
GAZANIA SPLENDENS, 12s. per 100.
HELIOTROPES, sorts, 12s. per 100.
HERBACEOUS and ALPINE PLANTS, in great variety, 4s. to 6s. per dozen.
HOLLYHOCKS, seedlings from a superb collection, free from disease, 6s. per dozen.
LANTANAS, sorts, 21s. per dozen.
LEUCOPHYTON BROWNII, 8s. per 100.
LOBELIAS, in variety, 10s. per 100.
LOPHOSPERMUM SCANDENS, 4s. per dozen.
MAURANDYA BARCLAYANA, 4s. per dozen.
PELAGORHUM, Show, Spotted, and Fancy, in 5-inch pots, fine flowering plants, 6s. per dozen, 45s. per 100.
single Zonals, in variety, 15s. per 100.
Ivy-leaved, in variety, 2s. 6d. per dozen.
PETUNIAS, single, 10s. per 100.
double, to name, 14s. per 100.
PHLOX, Herbaceous, best named sorts, 6s. per dozen.
PYRETHRUM, Golden Feather, one of 100s, 4s. per 100.
CALCEOLARIA, new, 3s. per dozen.
SALVIA, sorts, 2s. per dozen.
SEMPERVIVUM, *Seaside* and *Fancy*, 8s. per 100.
STOCKS, Ten-week, from imported seed, 3s. per 100.
VERIENAS, in great variety, 10s. per 100.
in great variety, in variety, 15s. per 100.
The Nurseries, Huntingdon.

Bedding Plants, Bedding Plants.

JOHN PERKINS and SON beg to offer the following, in strong healthy plants, in single pots:—
LOBELIA, Golden Gen., 12s. per 100.
HELIOTROPES, 12s. per 100.
IRESINE LINDENI, 12s. per 100.
IRESINE HERBERTI, 12s. per 100.
PYRETHRUM AUREA, 10s. per 100.
MESEMBRYANTHEMUM CORDIFOLIUM VARIETAS, 12s. per 100.
LOBELIA SPECIOSA, from Cuttings, 10s. per 100.
LOBELIA, The Bride, the finest White Lobelia in cultivation, 4s. per dozen, 25s. to 30s. per 100 on application.
57, Market Square, Northampton.

ROSES, ROSES, ROSES.

SPECIAL NOTICE.

THE GARDENERS' CHRONICLE

For JULY 7 will contain a SPECIAL REPORT of the

GREAT ROSE SHOW AT ST. JAMES'S HALL, ON JULY 4,

ALSO A

TWELVE-PAGE SUPPLEMENT

DEVOTED TO

THE ROSE,

And a Double-Page (18 inches by 13 inches)

BEAUTIFULLY COLOURED PLATE

Of a GROUP of ROSES, by FITCH, entitled

“OUR BOUQUET.”

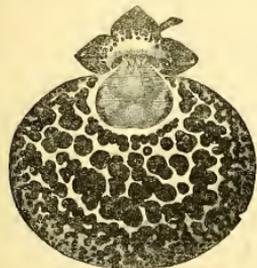
PRICE FIVEPENCE, POST-FREE FIVEPENCE-HALFPENNY.

NOTICE TO ADVERTISERS.

As a very large EXTRA CIRCULATION of the above Number is anticipated, Advertisers are particularly requested to send in application for space as early as possible.

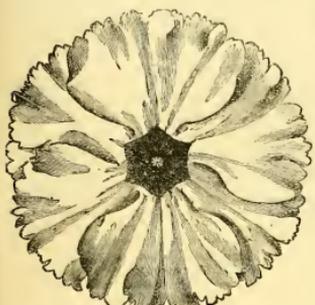
W. RICHARDS, 41, WELLINGTON STREET, STRAND, W.C.

B. S. WILLIAMS' NEW AND CHOICE FLOWER SEEDS FOR 1877.



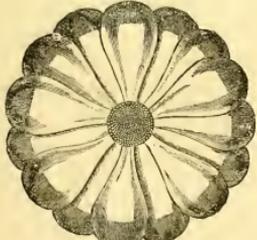
Per packet—s. d. CALCEOLARIA, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and 1 6

From Capt. Coomes, Aberystwith, May 13, 1877. "The Calceolaria, from the seed Capt. Coomes lent from Mr. Williams last year, have been greatly admired—they leave nothing more to be desired."



PRIMULA, Williams' Superb Strain, Red, White, or Mixed 5s., 3s. 6d., 2s. 6d., and 1 6 PRIMULA SINENSIS FIMBRIATA COCCINEA (new), colour brilliant scarlet with bright sulphur eye, exquisitely fringed and of great substance 5 0

From Mr. F. DENNING, Gardener to J. Featon, Esq., Yardley, February 25, 1877. "Dear Sir,—I may inform you that at the Birmingham Chrysanthemum Flower Show, held last November, I took the 1st prize, with twelve Primulas, six red and six white, in the Gardeners' Class, with seeds supplied by you."



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

From Mr. J. WEST, Gardener, Cheldon Park, May 21, 1877. "Sir,—Your strain of Cinerarias, which have now been in bloom some time, have been and are now the admiration of all that have seen them, and are considered by gardeners to be the best ever seen in this neighbourhood. Hadst very dwarf and compact, quite equal to the drawing in your catalogue." CYCLAMEN PERSICUM GIGANTEUM (new) 9s. 6d. and 5 0 Do, do, do, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and 1 6

VICTORIA and PARADISE NURSERIES, Upper Holloway, London, N.

SEEDS OF PRIZE FLOWERS.

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



[ALL HALF NATURAL SIZE.]

Mr. William Bull's PRIZE STRAINS OF PRIMULA SINENSIS.

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

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

From Mr. T. GODFREY, Gardener to Lady Jolliffe, Southwood House, St. Lawrence.

"From the Primula seed I had from you I have such a variety of colour I never saw before—white, violet, pink, a beautiful rose, lilac, and a brick-red; without exception I never saw their equal."

From Mr. WYNN, Gardener to J. R. Lowe, Esq., Withorpe, Sleaford.

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

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

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SATURDAY, JUNE 16, 1877.

THE BULRUSH AND THE REED.

BULRUSH appears to be an altered or mistaken spelling of Pool-rush—the Rush, that is to say, which grows in pools of standing water as distinguished from mire. In the sixteenth century this name was also written Pole-rush. The original application was plainly to the Scirpus lacustris. Gerard calls this plant "the great Water-rush or Bulrush." The name occurs also in other old writers, whose allusions point unmistakably to the same thing. In the Golden Boke we have a "girdel of Bulrushes," and in Spenser—

"To make fine cages for the nightingale And baskets of Bulrushes was my wont."

For more than two centuries after the time of Gerard the name seems to have held its place. At last the spelling begins to change to Bull-rush, as in the English Flora of Sir J. E. Smith, 1828. In 1839 Loudon applies it to the Penicillaria spicata, an Indian grass, calling the Scirpus "Tall Club-rush," though allowing Bullrush to stand as a synonym. Lindley, in 1836, says Bullrush is the English equivalent of Typha, though the name, he continues, is "sometimes applied to the Scirpus lacustris." Mr. Bentham, who restores the sixteenth century spelling, also makes Bullrush the equivalent of Typha, and translates Typhaceæ as the Bulrush family (Handbook British Flora, 1838). Lastly, in Chambers' Cyclopaedia, 1861, it is stated that "Bulrush is a popular name for large Rush-like or Reed-like plants growing in marshes, not very strictly limited to any particular kind." Some persons, the writer goes on to say, "restrict it to the Typha. Perhaps it is more commonly restricted to the larger species of Scirpus." The expansion, not to say the change of meaning, in the days we call our own, may well be a source of confusion and perplexity. The older botanists certainly never gave the name to the Typha, which was always "Cat's-tagle or Reed-mace," though with the synonym, so it is said, of Bul-seg, literally Pool-seg. Spelling the name differently, and thus obscuring the etymology, modern authors have also come to regard the "bull" as a metaphor for "large," which in Bullrush it certainly is not.

The name of Bulrush being familiar in the sixteenth century as that of a plant suitable for ligatures, and for weaving into a coarse counterpart of basket-work, it was very natural that it should come to be employed in the Old Testament as a representative of the Hebrew gôme, which latter is so translated in the Authorised Version. The first occurrence is in the narrative of some famous events that once happened on the banks of the Nile. When the mother of the infant Moses, after three months' hiding of her babe, for his life's sake, could no longer conceal him indoors, driven to a new and forlorn expedient, she "took for him," it is said, "an ark of gôme . . . and put the child therein, and she laid it in the flags by the river's brink. . . . And the daughter of Pharaoh came down to wash herself in the river, and her maidens walked along by the river-side, and when she saw the ark among the flags she sent her maid to fetch it." The remainder of the story, so simple and natural in all its incidents, needs no recounting; we have

here only to consider what the *gômé* was—it was certainly neither the Typha nor the Scirpus palustris. To pause, however, for a moment on the word "ark" is well worth while, since the Hebrew word thus translated in the story before us, *tebah*, is the same as the one employed in the history of the Noachian Deluge, whereas the "Ark of the Covenant," which was constructed of Acacia-wood, is in the original called *aron*. The latter was a kind of chest or coffer, for use on land; *tebah*, on the contrary, denoted a vessel intended to float. The sense of the word "ark" is most correctly preserved in the second of the two Authorised Version uses, as illustrated very clearly in the old poets. Surrey has—

"In the rich arke Dan Homer's rimes he placed,"

and Herrick, in one of his pretty little pictures—

"You have beheld how they
With wicker-arks did come,
To kiss and bear away
The richer Cowslips home."

The "meak-ark," constructed of oaken boards, is still to be found in old-fashioned farmhouses in the North of England. In bygone days the making of such chests was a matter of importance, so considerable as to have originated the surname of Arkwright.

THE PAPPYRUS.

Gômé, the above-mentioned Hebrew word, essentially denotes the far-famed and immemorial Papyrus, the plant, above all others, which takes the mind back to ancient Egypt and its mighty river. The Papyrus is at once the most beautiful of its diversified race, and the most useful. The ancient Egyptians plaited the stems not only into little boats, but into sails, mats, and sandals. The fabrication in particular of little boats appears to have been practised by them to an immense extent, and to have commenced in the very earliest days of their time-worn history. They were constructed, in all likelihood, much in the same way as the reed-canoes still in use among the Peruvians who live on the borders of Lake Titicaca. There the reeds are tied together in bundles, which are then united longitudinally; the sail is woven of similar but smaller parallel bundles, and in these little skiffs all voyages are undertaken. M. de Castelnau says that the Peruvian reed-boats exactly resemble the pictured representations of the Egyptian ones, as preserved on the walls of the tomb of Rameses III. at Thebes. The little wherries thus manufactured were exceedingly light, and in movement very swift. Like the coracles of the ancient Britons, they held only two or three persons, and often sufficed for no more than a single occupant. When the navigator came to a rapid or to a part of the stream where he thought himself in peril, he quitted the water, and, taking the frail little craft upon his shoulders, walked till he found a suitable place for launching again. A covering of bitumen, as described in the account of the ark in which the infant Moses was laid, is of course to be understood as having always been added. Beautiful must have been the scene on that once gay and glorious old river, as these tiny skiffs, gliding hither and thither, and dancing on the ripples, pursued their innumerable ways of business or pleasure. Doubtless it would be in boats of this description that the pleasure-seekers made their visits to the groves of Nelumbo, on the occasion of the joyous "Lily feasts." Their swiftness would recommend them also for the transmission of news to distant places. In relation to their use for this, the Old Testament again alludes to the *gômé*, and again the translators give "Dulrush" as the most suitable rendering. "Voe to the land shadowing with wings, which is beyond the rivers of Ethiopia, that

sendeth ambassadors by the sea, even in vessels of *gômé* upon the waters" (Isaiah xviii. 2, 3). Probably it is to these self-same boats that reference is made in Job ix., 26, in the phrase *chih anyioth*. The connection is in favour of so regarding the passage, but linguistic difficulties stand in the way of positive proof. Plutarch says that Isis traversed the waters in one of these Papyrus boats when seeking the remains of Osiris. Theophrastus refers to them, so does Lucan, in the *Pharsalia* (v. 136); Pliny, also, in several places. They continued to be used for many ages. Bruce found them in Abyssinia, and probably they are not yet obsolete upon African streams, where either the Papyrus or some congenerous plant exists in adequate plenty. The Papyrus was employed in ancient Egypt in several other ways. Bundles of the stems furnished models for the shafts of some of the pillars of the temples, and the bases of these were ornamented with representations of the sheaths that encircle the foot of the flower-stalk. That this famous plant supplied the material of which paper, both rough and fine, was manufactured in ancient times hardly needs mentioning. Papyrus paper made 3000 years B.C., or anterior to the time of Abraham, is still in existence. It was an article of commerce long before the time of Herodotus, and it remained in use till the seventh century. When Pliny says that it was not in use before the time of Alexander the Great he probably means not in Europe. Upon two occasions Papyrus paper is mentioned in Scripture—namely, in 3 Macc. iv. 20, and in 2 John 12.

The early Hebrews, as a rule, appear to have preferred to write upon dressed skins of animals. Another Egyptian name of the plant, according to Herodotus, was *hyblos*. Perhaps more strictly this word denoted the inner portion of the stem. It passed from the Egyptian language into the Greek; in the latter it came in time to signify a book, especially one in which sacred verses were written, not to be seen by the profane, as in the *Supplants* of Eschylus, 947; and again, in course of time, it acquires the shape of Bible, literally "Papyrus pith." Papyrus stems were likewise twisted into cordage, as mentioned by Homer, *Odyssey*, xxi.

In the original of the Old Testament *gômé* appears upon two other occasions. Here, however, it may perhaps be questionable whether it denotes the Papyrus definitely, or reedy plants in general. In Job vii. 2, it is said, "Can the *gômé* grow up without mire; can the *achu* grow without water?" And in Isaiah xxxv. 7, we have, "The parched ground shall become a pool, and the thirsty land springs of water. In the habitation of dragons, where each lay, shall be grass, with reeds and *gômé*." The Authorised Version reading in both these verses is simply "Rush." The spiritual sense remains the same. The Isaiah passage makes it plain that grass and reeds and *gômé* stand in Nature as representatives of something which spiritually is very beautiful and desirable. The explanation of what these things stand for in the language of metaphor is an appendix to the rejoicing of the desert and the blossoming of the Rose. It is identified with the flourishing of the kingdom of Christ, and for all practical purposes that is enough.

Of late years it has been thought by some that the Papyrus is a plant of two distinct species, the plant familiar in our conservatories representing, not the ancient Egyptian Papyrus, but an independent Asiatic and European one. Instead of letting Papyrus antiquorum stand for the whole idea of the plant, it has been proposed to call the African one *P. nilotica* or *egyptiaca*, and the Asiatic and European one *P. syriaca* or *siciliana*. The well-known globular umbel of the so-called *syriaca*, with its short and comparatively short bractes and a reflexed involucre, is exchanged in the so-

called *nilotica* for a besom-shaped umbel; the bracts are very numerous and much longer, and the involucre is erect. There is also a considerable difference in the stature of the two plants, the *syriaca* attaining the height of 12 to 14 feet, whereas the *nilotica* rarely exceeds 6 or 7. But, as in many other cases, these characters break down on comparison of a long series of specimens from various localities. Syrian examples correspond with African ones, and *vice versa*, and Professor Oliver is no doubt right in asserting that the alleged differences are trifling and inconstant. The unlikeness which no doubt exists between individual extremes he considers to be largely due to the age and maturity of the particular specimens.* The form called *syriaca* is certainly the most beautiful of the two varieties, the innumerable long green filaments which constitute the great globular umbel depending from the apex of the stem in the lightest and most graceful way imaginable. When the stem leans sideways, as it is prone to, nothing in Nature presents a picture of more rich and elegant languor. An eastern princess, faint with sunshine, could not hang her arms more delicately. This Syrian plant, though not met with in the wild state very generally, still abounds in some of what would seem to have been its original localities. It occurs on the borders of the Sea of Galilee, and in great plenty in the marshes of Héhé (the "waters of Merom" of the Old Testament), which are situated, it will be remembered, in the immediate neighbourhood of the Upper Jordan. The condition in which it appears in the Héhé marshes is most extraordinary. The plant, as well known, has a very large, massive, and horizontal rhizome. This rests, half-submerged, upon the water, into which the roots descend, 3 to 5 feet in length, while a vast jungle of aerial growth is elevated above.† When the water is not deep enough to allow of the floating, the rhizome burrows in the soft mud of the pools and stream-sides which the plant inhabits. As regards Sicily, whether truly indigenous in that island, or introduced at some early period, is not known.

In Africa, at all events within the tropics, the Papyrus is probably a characteristic member of the flora. All the ancient writers who have occasion to mention the plant connect it with the Nile. Dried stems are found in the ancient Egyptian tombs. Ovid calls the Nile *amnis papyrifera*. Though identified with this famous stream from the earliest times which literature talks of in the important part of the river, or along the strip of country where the Egyptians as a nation chiefly dwelt, where the Nelumbo it would appear to have existed only as an importation. Bruce came very decidedly to this conclusion, and the fact of the plant being now no longer found in Lower Egypt certainly gives weight to the belief. The disappearance can scarcely have come of any natural cause. That it is now lost from the Lower Nile is probably referable to causes identical with those which have shorn the river of the beauty anciently conferred by the Nelumbo, and which involve the idea of human intervention for its maintenance. By readers of the Authorised Version the disappearance in question is very naturally thought to be in fulfilment of one of the prophecies in Isaiah:—"The paper-reeds by the brooks . . . and everything sown by the brooks, shall wither, be driven away, and be no more" (xviii. 7). The prophecy of course has reference to the Nile and the little canals or canicues connected with it. But the Hebrew word here rendered "paper-reeds," *arôth*, whatever it may hold of latent or figurative meaning, conveys no literal or direct reference to the *gômé*, or to any reedy plant whatever. It simply signifies open and exposed grass-land, such as usually borders rivers in level countries. The Papyrus (in the Sicilian or *syriaca* form) is sited by Loudon to

* See, for all particulars, the *Gardener's Chronicle*, January 16, 1875, p. 9, a very interesting article, accompanied by an illustration, by Professor Thakshel Dyer. Also the *Garden*, July 13, 1874, p. 394.
† See the very interesting account in the *Red Roy on the Jordan*, by J. Macgregor, chap. xvii., 1869.

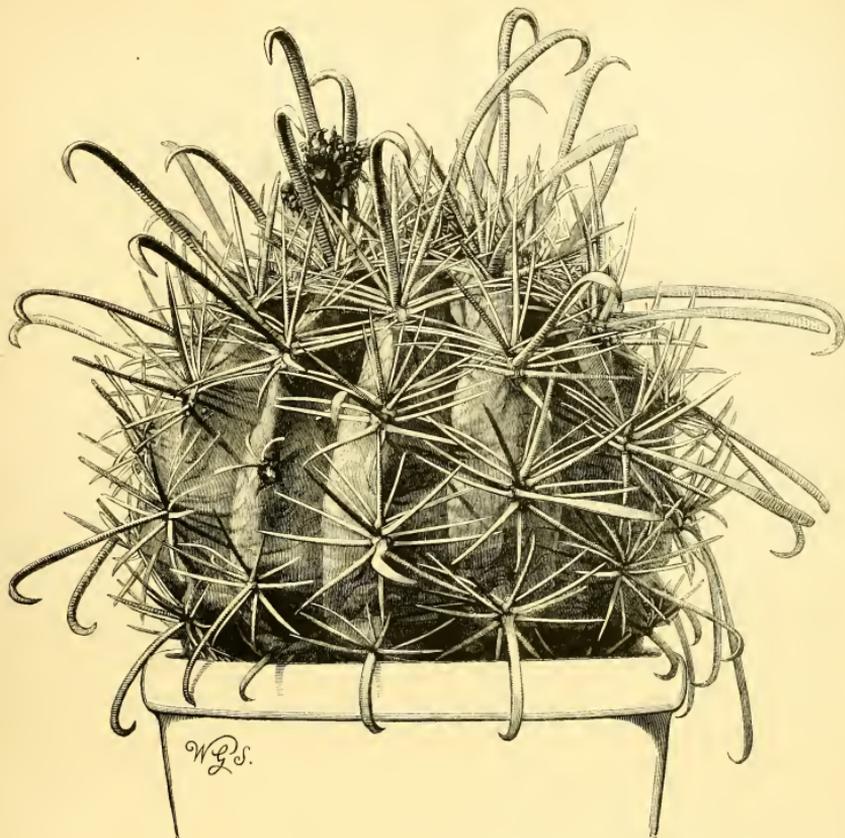


FIG. 119.—THE EAGLE'S CLAW ECHINOCACTUS.

have been introduced into English conservatories in 1803. The form called *nilotica* appears not to be known in them.

(To be continued.)

THE EAGLE'S CLAW ECHINOCACTUS.

THE handsome Echinocactus of which we give an illustration (fig. 119) from a plant in Mr. Peacock's collection is probably, as we learn from Dr. Engelmann, to whom we submitted the drawing, closely allied to *E. Wislizeni*, a species characterised by the central spine of each tuft being stout, flattened, ribbed, and hooked at the point; others of the spines are weaker and straight, the outermost setaceous, often twisted. Mr. Croucher, who has the two plants side by side, tells us that the present species differs from *E. Wislizeni* in the larger number of spines, the central hooked one being channelled, and much longer than in the species just named, reaching to 3½ inches. The ribs of the stem are, also, less prominent. The flower is a pale yellow colour. In any case it is a very striking plant, sure to be appreciated by Cactus lovers. Its botanical position must rest for the time undetermined, though the probability is that it is an undescribed species. Meanwhile, to distinguish it temporarily, we may call it the Eagle's Claw Echinocactus.

New Garden Plants.

VANDA CÆRULESCENS, *Griff.*, var. *BONALLII*, n. v. This may be the plant represented by gallant Dr. Griffith for its short conical spur, yet the authentic specimens preserved in the herbaria belong to the now well-known plant, acknowledged to be a most gracious distichous Orchid, a sweet *Vanda* passing herself off as an *Aerides* or a *Saccolabium Blumei* in inflorescence. The old one we have already had for a while has a slender bent spur, and the blade of the lip more dilate at its top. It may, however, be that those variations in the spurs and lip's shape have just nothing to do with colours, on which our new variety is chiefly founded; and I much suspect this from several reasons, the most decisive of which is that I find among my wild specimens one which is nearly blue, and yet it has the spur and the lip's blade of our new variety.

Our plant has leaves and growth of the old plant, yet the sepals and petals are white. The lips are of a lavender tint, with "porcelain-blue bars." There is an earnest belief with some strong Orchidists, as I see from recent letters at hand, that this beats the old *Vanda cærulescens*; ah, yes, it is your youngest *enfant chéri*! My private opinion in the matter is that one may grow both and feel much pleased if the two flower side by side, and bear the event with resignation if they do not. I need not say, it is a high pleasure to name it in the memory of the intrepid, persevering and successful discoverer, whose name tells us at once it comes from Mr. Low, whose rich importations are

proverbial. *H. G. Rehb. f.*—P.S. I add that I have at hand a newly imported plant, with two inflorescences, and another inflorescence kindly sent by Mr. Low. The colours are just as described, only the darker blue stripes of the lip are just longitudinal, as I had expected. *H. G. Rehb. f.*

DENDROBIUM (STACHYOBIMUM) STRICKLANDIANUM, n. sp.*

This is a very surprising novelty, and one that may form a peculiar section in the *Stachyobium* standing next *D. ramosissimum*, Wight, and herbaceous, Lindl. One might also compare it to *D. aduncum*, Wall, yet it has a three-lobed, not trifid lip. The thin stem is dark green, shining. Leaves oblong, apiculate, nearly 2 inches long, and ½ to ¾ inch broad, partly on the stem at the time of flowering. The flowers are larger than those of *Dendrobium aduncum*, Wall. They are yellowish-white, and there were three purplish blotches on the lips in 1876, which were not seen in 1875. The lateral teeth of the column are violet, and there are many reddish spots on its anterior side under the stigmatic hollow. If the plant had come from the East Indies, Polynesia, or Northern Australia, we should not have been much

* *Dendrobium (Stachyobium) Stricklandianum*, n. sp.—Caulis cæciliatus covinus crasso; foliis oblongis apiculatis; racemis 3-4 floris; bracteis triangularibus, mento obtuso retuso diuivis; sepalis ligulatis triangularibus acuminatis; tepalibus lineariliguatis acuminatis; labello oblongo-ligulato obtuso acuto viridique medio obtusangulo disco antico punctulato furfuraceo; columna apice trilobata; anthera conica acute extensa. Ex Japonia spissima; introduct. Sir C. W. Strickland.

surprised; but it has the great merit of being Japanese. It was introduced with *Cymbidium viciense* and *Luisia teres*, by Sir C. W. Strickland, Hildenny, Malton, who twice most kindly sent me materials. I feel very pleased to dedicate this curious novelty to a gentleman who has a heart for Orchids, even though the diameter of their flowers do not exceed a line, and the colour be green. *H. G. Rehb. f.*

DENDROBIUM PRECINCTUM, n. sp.*

This is a botanical novelty. The narrow, erect stems are dark and furrowed, and the leaves lanceolate, nearly bidentate. The flowers scarcely exceed half an inch in length and are of a pallid ochraceous colour with a dark purplish limb. The lip is trifid, and of a sulphur-yellow colour, orange-coloured in front, central lobe of lip velvety and three-keeled. I have to thank Messrs. Veitch for it, and they kindly inform me that it was introduced with *D. Devonianum*. It is strange this nice little thing has been overlooked so long a time. *H. G. Rehb. f.*

THRINSPERMUM FREEMANTI, n. sp.†

This is a dwarf small species, yet an elegant thing. The roots may be compared to those of *Phal-nopsis Schilleriana*. They are rounded, thick, anguliform, and clothed with small warts. The leaves are ligulate, here and there undulate, bidentate, usually unequally so at their apex, 6–7 inches long by 1½ inch wide. The raceme bears numerous flowers. The bracts are semioval and larger than the small ovary. The sepals very long, narrow, linear, the petals a little shorter. Altogether they give the raceme the appearance of a yellow brownish spotted broom. The small lip is saccate tridentate, the centre white, the lateral parts yellow with brown streaks. There stand four-stalked globose bodies before the base, which are covered with small warts.

The plant comes near *T. divitiflorum* (*Sarcochilus divitiflorus*, F. Muill.), an Australian species, represented on the cover of Mr. Fitzgerald's *Australasia* Orchid-book. A scientific investigation of this proves it to be widely different, though very much alike outside. There are no striate globules in this which bears a retuse tridentate lamina over the very small middle lobe of the lip. It is very interesting that this species was found on the hunting grounds of several exceedingly experienced botanists. It was gathered in Assam by Mr. Freeman, whose name it bears. It flowers last winter at Mr. Bull's establishment, obtained a fresh spike, a second spike very carefully dried by Mr. Bull, and I saw the living plant lately. *H. G. Rehb. f.*

THE BOTANIC GARDENS, BIRMINGHAM.

AN extraordinary group of the Mucosae plants of North America, the *Tricostema* plant of *Tricostema speciosum*, is now to be seen in bloom here, and in luxuriant health. One plant has thirty flowers, each very large compared with the blooms usually seen, and borne in pairs, and in many instances three blooms on each shoot. There is considerable variation in the group, some being much darker than the others, whilst others are striped, and one is very pale in colour. Then there is also a difference in the formation of the pouch, some being circular and others oval. There is also a marked difference in the foliage, some of the varieties having broad lanceolate foliage, whilst others are much more cordate, and the botanist would soon establish varieties in this highly interesting and lovely group. Mr. Latham, the Curator here, has succeeded in showing us what can be so easily done with this beautiful plant when we know how to do it. The plants in question were received from Canada by the gentleman then Mr. J. B. Goode, Esq., in a dormant state in the usual way. They were potted into good fibrous peat and kept in a cold frame, and very little

water given to them until they began growing, when water was applied copiously; and were kept in this frame until in flower, when they were removed to the conservatory. Some of the foliage is 5 inches long and 4 inches in breadth, and all the plants are in most vigorous health. Adjoining this group are a couple of fine plants of *Cypripedium parviflorum*, a small-growing species with yellow flowers and in the most perfect health, having received the same treatment as *C. spectabile*. Close by were plants of *Doctocleone elegans*, *Primula farinosa*, *Lycalis alpina major*, a very charming Saxifrage, allied to *S. Alizon*, received from Mr. George Maw, of Broseley; and a fine plant of *Orchis foliosa*. In the conservatory are fine examples of the old *Erodium anemone-folium*, and *Lilium giganteum* in flower. How *Lapageria luxurians* here, and what grand objects they are at the blooming time. Mr. Latham has a strong plant of the white variety, with young vigorous growth now 6 feet long; and this is planted to intermingle with the rose-coloured variety.

When did China Rose White Pet originate? There is a plant of it now in flower in the conservatory, which is indeed lovely, Mr. Latham having obtained a plant in a Cheltenham nursery, where he met with it, but has never seen it elsewhere. It is a small-growing kind, and has the appearance of being the result of a cross between the Fairy Rose and a Noisette. The flowers are white, erect, small, and well-formed, and just what we should value for bouquet purposes, and it is a very free bloomer. Can any of your readers give further information respecting it? Several large plants of *Euxia myrtilloides* are blooming in the conservatory, which also contains two very rare Ferns—one, a superb specimen of *Dicksonia arborea*, probably unequalled in the kingdom, and a fine plant of *Cyathea Cunninghamii*. Orchids are extensively grown here, and a block of *Dendrobium calceoliferum* has just with twenty-five fine blooms upon it, and *Chysis Limminghi* and several other Orchids are now in bloom.

The Anthuriums under Mr. Latham's treatment are examples of first-class culture. There is one plant of *Anthurium Scherzerianum*, large variety, with sixty expanded blossoms, with spathe of the largest size I have seen. *Disa grandiflora* is on the point of blooming, and this glorious plant is too seldom seen in really good condition. The best lot I ever saw was at Mr. Ewins's, of Fernhurst, near Leeds, when they were grown in the shaded part of a front garden, in a house, and were as much at home as at the top of the Table Mountain at the Cape.

There is a very good collection of hardy Ferns here, and amongst them the truly lovely *Polypodium vulgare elegantissimum* is a gem, but prone to revert to its normal state of *P. vulgare*, from which it is a sport. Mr. Latham has a crested form of *Lastrea marginalis*, sent from Canada by Mr. Goode. Is this variety to be found in other collections? The pretty *Lastrea fragrans* (*Aspidium fragrans*) does well here, and has a just claim for its specific application. *Ceterach aureum* is also to be seen here in fine character. Excellent specimens of *Gleichenia dichotoma* and *G. Splendens*, in good health, may also be seen, and a fine plant of *Asplenium septentrionale*, a most distinct and charming Fern, is a prominent object of interest. One of the most interesting plants in the garden is *Utricularia montana*, natural order Lentibulariaceae, of which the *Pinguiculae* are members. These are all big bog plants; and on referring to *Curtis's Botanical Magazine*, vol. xxvii., I find an admirable representation of the plant, and that it is a native of the West Indies. The plant is a most interesting one, almost in flower, and is in excellent health. An outdoor frame full of *Trichomanes* and *Hymenophyllum* in admirable condition richly deserves a passing notice; and the garden altogether, with its rich collection of alpine and herbaceous plants, its charming position, its well-laid-out and well-kept grounds, calls forth well merited praise. *D. C. F.*

WANTON DESTRUCTION.

EVERY season when the Whitsun holidays come round there comes with them an annual saturnal, so to speak, of wanton destruction. It is a sad but incontrovertible fact that in regard to parks and gardens kindly and gratuitously opened to the recreation of the people, public holidays that abuse not use is so often the case. A recent instance may be cited in Lord Stamford's park, where the mischief done by the holiday seekers was so great as to necessitate the closing of the grounds on similar occasions; but such wanton destruction is not limited to large domains, rarely accessible—it desolates every neighbourhood in

the vicinity of large towns, and sad evidences of it may be seen in every suburb around the metropolis.

With the exclusiveness natural to the Englishman, when mansions and large villas are erected the gardens of such residences are, as a rule, screened from public observation by high walls or impenetrable park palings, and the flowering trees and evergreen shrubs are thus guarded from the sight as well as from the destructive fingers of thoughtless youths; but between these carefully protected grounds and the town itself there often lies an intermediate district which, marked by the ominous boards bearing the well-known words, "Land to let for building purposes," becomes the prey of all the idlers of the vicinity.

Such neighbourhoods have, at first, more or less of an air of rusticity about them; a few fine trees may still be standing, the fields about to be immolated on the altar of the builder are still partially free from bricks and mortar, and handsome hedges in many places enclose the land or mark the boundaries of cottage gardens. Such spots are refreshing to look upon, but no sooner are they laid open to the public, or their future destination pointed out by the boards above mentioned, than the work of wanton destruction begins, the trees—not one of which can be well spared—are needlessly cut down, or ruthlessly destroyed by being dragged away a branch or a bough at a time in mere wantonness, for no sooner are they obtained than they are torn leaf by leaf and scattered to the four winds of heaven.

In spring, when the tender green of the opening foliage imparts an air of refinement and a touch of beauty to the surrounding neighbourhood, then is the moment of attack; the beautiful flowering trees and shrubs, the Laburnums, the Lilacs, and the Hawthorns are torn away for a momentary gratification, and then left to fade and be trampled under foot in the very place where they so lately shed beauty and fragrance.

In the suburbs of London on Whit Monday last an old and very handsome Hawthorn hedge, the fence to a row of private gardens, was torn almost away—young men of twenty pulling off boughs as large as they could carry, running frantically about waving the beautiful blossom-laden boughs above their heads, and then throwing them down. So generally, indeed, was this the case that the field was soon literally covered with fragments of Hawthorn. Nor did the mischief end with the hedges; wherever there was a gap large enough to admit a hand and arm, the Wallflowers and other spring plants within reach were torn off, and scattered about in a similar manner.

In the present day, when the town is so fast absorbing the country that every space of open green field and every sheltering tree is a boon to the neighbourhood in which it flourishes, and the destruction of vegetation may well be watched with a jealous eye—for barrenness and sterility follow the footsteps of the builder with as little reason, and more surely than they do those of the holiday folk and the children, for when houses are built in the suburbs the first thing done towards the formation of what is in the future to be called a garden is to eradicate every trace of vegetable life, trees are cut down, shrubs rooted up, grass trodden, and the surroundings made as desolate as possible. Under such circumstances, it is not surprising that the suburbs of our cities become less verdant than the town itself, and that it requires years to come before we can restore, by painstaking cultivation, any of that rural aspect which the place once possessed, and which a little forethought and care might have so easily retained. *P. J.*

ORCHID RARITIES.

I QUITE concur with the writer of the succinct report of the recent Manchester show that possibly never has there been such an assemblage of really well cultivated Roses and Orchids. About the latter particularly would I have a word to say, and that with reference to a few distinguished varieties which are of more than ordinary importance to every Orchid amateur and grower.

Possibly the gem of the exhibition was *Dendrobium Ainsworthii* roseum. This is a most remarkable seedling, partaking of the character of both its parents' (a noble and heterocarpum), and in some respects superior to either. In point of floriferousness none of its parents can lay claim to such a quantity of nodes in the deciduous stem, each bearing, or rather emitting, its quota of flowers. I counted on one stem

* *Dendrobium precipitum*.—Eudendrobium. Caulibus teretibus bidentatis; this cuneato ligulatis angustis apiculis lobatis; pedunculo apice bifloro, pappo virgato, medio orbiculato-lanceolato ribbo, bene evoluto; sepalis ligulatis orbiculis acutis; sepalo rhombico; petalis; lobis, cuneato dilatato trilobis lobis lateralibus linearilobatis obtusis; lacinia media ligulata producta, emittit lobatus, carinis teritis angulatis per dichum, lacinia antica filis cristallinis velutinis; columna breviter angulata. Caulis obscure viridiflorescens. Vaginis emittit affido ciliatis. Bractee perianthiales minutae. Flores albido viridibus, sepalis, petalisque atropurpureo-marginatis. Labello flavo aut aurantiaco. Columna sulphurea infra lobos. Cultus *Dendrobium Devonianum* improprie dicitur. Veitch. *H. G. Rehb. f.*

† *Thrinpermum Freemanii*.—Humilis radibus angustis, caulis densissime minutis; lacinia lobata; sepalis lanceolatis, subaequilobis bidentatis; racemis pluribus separatis; bracteis semi-ovatis ratione ovariorum majoribus; sepalis lanceolatis carinis apiculis cristallinis velutinis; columna breviter angulata solido hemisphaerico, lacinia lateralibus semilobatis, lacinia mediana triangula transversa minutis, callis saccaribus subaffido pediculis ovatis. Bractee perianthiales minutae, truncatae. Labello medio albis, lacinia lateribus sulphureis, mucroni fuscato.—*Sarcochilus Freemanii*. Assam, Freeman, Ex coll. dom. Rehb. *H. G. Rehb. f.*

sixteen short racemes, each two and three flowered. The flower itself has the sepals and petals of moniliform rather than mobile, white, shaded with an almost imperceptible tint of rose, and tipped distinctly with that soft pleasing colour. The labellum is flat, like an expanded heterocarpium, reflexed a little towards the centre, with a blotch covering three-quarters of its surface with deep veined purplish, or rather mulberry, crimson, edged very distinctly with white, and the extremity slightly tipped with crimson. This I look upon as one of the greatest gains in hybridisation, whether we regard the colour of the flower or the general floriferousness of the plant, or its free although not awkward habit. As an Orchid enthusiast of the last five-and-twenty years, I would pronounce it one of the greatest gains that may be counted up in the whole known Orchid family; and I have to congratulate Mr. Mitchell, Dr. Ainsworth's enthusiastic gardener, for the successful growth of this extraordinary beautiful variety.

DENDROBIUM AINSWORTHII is also a most beautiful subject, of precisely the same habit, with the same form of flower, the same floriferousness as its rarer compeer, figured, when first flowered, by the *Gardener's Chronicle*. The plant shown was a comparatively good-sized specimen, and full of flower, even fuller by comparison than was Mr. Shuttleworth's splendid *D. noble*. I counted some twenty pseudoballs, all more or less crowded with flowers, and that for fully three-fourths of their whole length. The principal colour-difference in the original variety is in that of the labellum, which is only partially blotched with crimson, or rather purplish crimson, and broadly margined with white. It is very elegant and very chaste, but will never be so telling a variety as its companion, *roseum*.

MASDEVALLIA HARRYANA SAOQUINEIA, in Mr. O. Wrigley's collection (the whole of whose plants were cultivated in a masterly way), is a variety of rare beauty, having great size in the segments, and a wonderful intensity of colour to recommend it. It is nearest in point of merit to the famous Dawsonian "ball's blood" variety, which was dispersed into several hands during the various sales, and which has not yet been equalled. The variety to which I at present refer is of a shining sanguineous colour, rather enhanced by having a pale orange eye at the point from which the monopetalous sepals spring. Unlike some of the varieties, this one, in its inferior lobes—which, by the way, are in all cases very ornamental—are nearly entire, and does not split into lobes wide apart, but is compact and well formed. It is remarkably fine variety, and it was brought to a high state of cultivation, having quite sixty flowers on the plant exhibited. The violacea variety was good, too, but scarcely fit to be placed among the rarities I am at present dealing with.

DENDROBIUM CREPIDATUM, in the same exhibitor's collection, is no doubt one of the best forms of the species in cultivation. There are several different varieties of this beautiful species, but the one shown at Manchester is a gem. The sepals and petals are white, heavily tipped with rosy pink. The labellum is all but circular, with a large orange central blotch shading out to a greenish yellow tint, which is rather attractive than otherwise, and then again surrounded with white and edged with pink—quite after the ribbon fashion of decoration. The pseudoballs are best grown in pendulous style, and are very prominent with white streaks up the intermediate. These plants are evidently quite at home in Mr. Hubberstey's hands.

ONCIDIUM LEUCOCHEILUM NANUM.—There are so many varieties of this *Oncid* in cultivation that have a lanky, lean appearance in respect of long, loose spike, or rather branching raceme of flowers, that it is a pleasure to see it standing, quite pyramid-like, without support, and bearing several hundred flowers. In the whole exhibition there was no such distinguished variety of a common *Oncid* as this one exhibited by Mr. Williams. I counted some twenty-one branches on a raceme, 2½ feet long, and each individual flower distinct and beautiful, the colouring being more popular than in many of its seminal fellows. The labellum was white, and the sepaline and petaline segments of the usual colour, although the Indian-red spotting was more distinct. It was a leafy plant, and very large, and was found growing alongside of *Cyrtorchilus maculatum*, and could have been sold in dozens instead of units.

ODONTOGLOSSUM VENILLARIUM ROSEUM.—This remarkable variety is one of the most deservedly popular among new *Oncids*. Its great size of

flowers and remarkable free inflorescence bespeak for it, even under the most disadvantageous circumstances, ready buyers. Beautiful as were the half-dozen, or nearly a dozen, shown by various exhibitors, none could vie with the variety which I have ventured to call *roseum* in the Messrs. Rollisson's winning stand. The sepaline and petaline segments of this flower, together with the great labellum, were on a plane surface, stout to appearance, on a piece of the finest finished cardboard. The colour was a deep fleshy pink over all the surface, with the exception of the base of the labellum, which was a white ground, with Indian-red venation radiating from the centre in focus-like sun-rays. The flowers smothered the leafage of the plant quite over, and captivated every one who had the pleasure of seeing them. There were many other fine things, but the above were the chief. *James Anderson, Mendocomb Nurseries, Uddingston.*

THAMNOCALAMUS FALCONERI.

As yet these plants, better known as *Arundinaria falcata*, show no signs of life, and as the tops of the canes are dry and sere there is but little hope of the plants starting into growth again, unless they do so from the bottom, of which I am now very doubtful. It is remarkable that the flowering and seeding should have had such an exhausting effect, and more so that the thing should have been so general, as your reports of last year showed to be the case, and it would be interesting to know how they are now behaving in other places. The plants with us were so large and such strikingly beautiful objects in the positions they occupied as to render their death quite a loss, as it will take many years to get up others to anything like the dimensions some of these had attained. On measuring one of the rods just cut, I find it is a trifle over 28 feet, so that some idea may be formed by those who have seen plants of this elegant Bamboo growing and arching over in the graceful manner they do, what a fine effect such specimens produced when clothed with their slender pale-green foliage, of which unfortunately they have now for the past year been entirely bereft.

It is surprising that such a highly ornamental shrub as the above forms in favourable situations should not be more extensively used to plant near the margins of lakes or in damp shady retreats in connection with dress grounds, in either of which positions it is quite at home and shows off to great advantage. Although fond of moisture at the root, it will grow and do well almost anywhere, except in bleak exposed situations, where, from the fragile habit of the slender stems and the amount of foliage each usually has, they get sadly knocked about. With us they are about as hardy as the Pampas-grass, and just as accommodating in the way they adapt themselves to any position to which they may be assigned, with the exception alluded to, and as they are worth any trouble we always make a practice of putting some dry leaves or brakes around them before winter sets in, so as to protect the canes from whence the young soft shoots emerge at different intervals during the year.

The *Arundinaria falcata* strikes readily from cuttings made from the hard mature rods, and put in any time during the autumn in some sheltered place among shrubs where drying winds cannot get at them. They do best cut in lengths of from a foot to 18 inches, with a joint left close at the top, in order that no water may lodge in hollow, tubular stems and cause them to rot or become split by the action of frost. By inserting them sufficiently deep in the ground to leave only just the top of the cuttings exposed, each will remain fresh and plump, and scarcely a failure occur. *J. Sheppard.*

THE USEFUL PLANTS OF MEXICO.

In the Great Exhibition at Philadelphia last year Mexican products came in for a very fair share of representation, the useful plants of the country being not only abundantly shown, but fully described in the catalogue of Mexican exhibits. This catalogue, useful as it is, would have been much more so had more care been taken in the scientific nomenclature; not only in the spelling faulty, but the specific names of many of the plants are absolutely unidentifiable. The occasional descriptions of Mexican scenery

give a tolerable idea of the natural features of the country. Thus,—“Besides the beautiful landscapes presented to the traveller by deep ravines, the elevated mountain-tops, and the splendid vegetation found all along the road, there are other objects which increase the attractiveness of the picturesque views. On leaving the city of Mexico, the beautiful lakes of the valley and the elegant tops of the Popocatepetl and two Xtatlehuatl, ever crowned with whitest snow, are presented to the eye of the observer. In San Juan Teotihuacan again, are seen the pyramids raised by the Toltecs, and dedicated to the sun and moon. Farther on are seen the extensive Maguay fields, that precious *Agave* (*A. americana*), which intoxicating liquors and the famous *palique* are extracted.” This *palique* is as much a national beverage in Mexico as beer is in England. In small or moderate quantities medicinal or hygienic properties are attributed to it, but in large quantities it is intoxicating. The fibre is valuable, not only for making ropes and cordage, but also for paper, which is said to be remarkable for its whiteness, elasticity, and strength. It is made in large quantities in Mexico, and so abundant are the plants that the supply is inexhaustible, and the cost of the material very trifling.

Between the high summits of the Mexican volcanoes which tower at about 8,000 feet above the level of the sea, down to about shores on the Pacific and the Gulf, there are a great many intermediate degrees proper for the most varied types of vegetation. The “*Guayabas*” (*Psidium*), the *Anacardium*, *Acacias*, and other plants live and grow abundantly in the lowlands, where Coffee and Sugar can be cultivated under the most favourable conditions; Leguminosae and Ericaceae notably occupy the medium heights, and the Coniferous and Cupuliferous plants climb up to the limits of perpetual snow. Several families seem to be adapted to a variety of climates, and their genera are found at different levels, living even in dry and rocky grounds. Among these may be mentioned Bromeliaceae and *Amaryllidaceae*, which occupy the greater part of the Mexican mountains. In the list of medicinal products eighty-six plants are enumerated, showing that this application of the vegetation of the country received a large share of attention. Gums, resins, and vegetable waxes were also numerously exhibited. The resin obtained from *Hymenaea coccinifera* seems to be known by the name of “*Coapinole*.” It is used extensively in the manufacture of varnishes, in the same way as tree copal. Large quantities are collected in the State of Oaxaca, and sold in the city of Mexico at one dollar a pound. A resin called “*Pencea Copal*” is exceedingly abundant, and is said to be produced by *Elaphrium copaliferum*. Under the name of “*Brea*” is described a resin which is said to be “the result of the distillation of the turpentine from the *Pinus tecotit*, which grows in the cold districts of Mexico.” This “*Brea*,” when dissolved in warm alcohol, precipitates after cooling, becomes pure, and takes a white colour. It is used for the preparation of illuminating gas and in the manufacture of soap.

From a description of the “*Chayote*” (*Seschium macle*) we learn that the plant grows luxuriantly, yielding abundant fruit in the first year. Under favourable circumstances a single plant produces annually from eighty to one hundred fruits. It is very easy of cultivation, and is grown largely for the sake of the fibre, as well as for the large tuberous roots, which contain a quantity of starch or arrowroot, both of which are eaten. The fruits are occasionally to be seen in Covent Garden Market.

PLANT PORTRAITS.

ALLIUM STRAMINEUM, *Gartenflora*, t. 856, and **BECKHEIA FAVULUA**, t. 856, seem as represented of no special horticultural interest.

ALPISOLIA GLAUCA, *J. Sm., Flore des Serres*, t. 2264.—A noble Tree Fern, frequently called *A. contaminans*. The glaucous tint of the lower surface is a distinguishing characteristic. The stem is downy above, and the leafstalks of a rich purplish colour. Native of the Indian Archipelago.

ANCHUSA SEMPERVIRENS, *Belgique Horticole*, t. 1, 1877.—A very fine favourite, but one, as it appears, heretofore unfigured in a horticultural publication.

AZALEA INDICA HIBERNATA, *Flore des Serres*, t. 2284-5.—A double white *Azalea*, figured in our columns, 1876, p. 187, vol. v.

BAUHINIA PETIOLATA, *Botanical Magazine*, t. 6277.

—A stove shrub with stalked ovate acuminate 5-nerved glaucous leaves, and white flowers 3 inches long in terminal clusters. The plant flowered at Kew, where it was sent by M. Lindau under the name of *Casparia speciosa*. It is a native of New Grenada.

BILBERGIA LIBONIANA, Morr., *Belgique Horticole*, 1877, t. 3.—A handsome Brazilian Bromeliad, with large branched leaves, and loose inflorescence, consisting of numerous long, slender flowers, with orange-coloured calyxes and purple corolla.

BOLBOPTHYLLUM CAHUIENSIS, Rehb., *Flore des Serres*, t. 2268.9.—A parusid species, with creeping, scaly rootstock, compressed pseudobulbs, and oblong acuminate petiolate leaves. Flowers racemose, borne on scapes issuing from the rootstock. Perianth about 6 inches long, segments yellowish pink, lanceolate, prolonged at the apex into long tails; lip much shorter, cordate, acuminate, of a pale claret or plum colour.

BORONIA ELATIO, Bartl., *Botanical Magazine*, t. 6285.—A charming greenhouse plant, with pinnate leaves; the pinnæ linear, the flowers crowded on short, axillary, pendulous stalks and of an ovoid form, resembling that of some Heaths, and of a reddish purple colour. The plant was introduced from Western Australia by Messrs. Veitch. It is a very desirable plant for cultivation.

CALATHEA LEOPARDINA (*Gartenflora*, t. 893) has elliptic lanceolate leaves, with lateral bands of dark green on a lighter ground.

CAMASSIA ESCULENTA var. LEICHTLINI, *Botanical Magazine*, t. 6287.—This is said to differ from the ordinary form in its more robust habit, broader leaves, longer sometimes compound raceme, and larger flowers with more numerous nerves in the keel of the segments of the perianth, which are moreover white, not blue.

CATTLEYA SCHILLERIANA, *Flore des Serres*, t. 2286.—A handsome Cattleya with brown sepals, dotted with darker coloured spots, and a deep rose-pink coloured lip streaked with yellow.

COLEUS DUCHESNI DE EIMBURG, *Flore des Serres*, t. 2287.—A well known variety with rich claret-coloured leaves edged with a narrow margin of greenish white.

CORDIA DECANDRA, *Botanical Magazine*, t. 6279.—A very beautiful Chilean shrub, suited for a warm greenhouse. The leaves are somewhat like those of the Gum Cistus, but rough and not viscid, the flowers borne in loose panicles like those of the Catalpa. Each has a bell-shaped calyx covered with rusty hairs, and a pure white funnel-shaped corolla, with a ten-lobed limb rather more than an inch across. The wood is greatly sought after in Chili for firewood, for which it is especially well adapted, and also for turnery purposes. The plant was introduced by Messrs. Veitch, and is one of much beauty and interest.

CYANANTHUS LORATUS, *Gartenflora*, t. 888.—A beautiful hardy perennial of the Campanula family, with procumbent stems, deeply pinnately cut hairy leaves, and solitary, terminal, bell-shaped, 5-lobed blue flowers, nearly 1½ inch in diameter. It is a native of the Sikkim Himalaya, and has been figured in Royle's *Illustrations*. This is a plant to be inquired for.

CYRIPEDIUM DRURYI, Beddome, *Illustration Horticolæ*, t. 265.—A species found in Mysore by Colonel Drury, and described in our columns by Professor Reichenbach, 1876, i., p. 68. In habit the plant resembles *C. insignis*, but the flowers are smaller and of a yellow colour, with a dark central band traversing the upper sepal and lateral petals.

× CYRIPEDIUM EURYANDRUM, *Flore des Serres*, t. 2278.9.—A cross between *C. Stomei* and *C. barbatum*, raised at Chelsea by M. Seelen, and intermediate between the two parents. It was originally described by Professor Reichenbach in our columns for 1875, p. 772.

CYRIPEDIUM HAYNALDIANUM, *Botanical Magazine*, t. 6296.—A handsome species, described in our columns this year, p. 272, by Professor Reichenbach. It is evidently closely allied to *C. Lowii*. The plate is from a plant which flowered with Messrs. Veitch in February last.

DRACOEPHALUM SPICOSUM, *Botanical Magazine*, t. 6281.—This is a grand hardy perennial Labiate plant with bold rugose cordiform leaves, and dense terminal spikes of labiate flowers of a pinkish blue colour, the lip being spotted with darker spots. Introduced from Sikkim by Mr. Elwes.

GYCIA FRIGIDA, Hook., *Botanical Magazine*, t. 6294.—A tufted Bromeliad with linear lanceolate spine-topped recurved leaves 1—2 feet long, and a

branched flower-spice covered with pale down. Flowers very numerous, ¼ inch long, orange-yellow. Native of Brazil probably. It is the *Pourretia frigida* of Hort. Linden.

FIGUS PARCELLI, Hort. Veitch, *Flore des Serres*, t. 2273.4.—A well-known plant at English flower shows, where its elegantly spotted and marbled leaves always attract attention.

GLOBBA SCHOMBURGKII, *Botanical Magazine*, t. 6298.—A stove perennial with lanceolate glaucous leaves, and panicles of yellow flowers, of the same shape as those of the well-known Dancing Girl plant, but yellow.

GONGORA PORTENTOSA, Rehb., *Botanical Magazine*, t. 6291. (*Gardener's Chronicle*, 1876, p. 502.)—Of this curious Orchid the flowers are 1½—2 inches long, pale flesh-colored and more or less speckled with small violet-purple spots. The plant was introduced from Bogota by Mr. Wallis. The specimen figured following with Mr. Bull, of Chelsea, in April, 1874.

GLEN EYRE, SOUTHAMPTON.

WITH singular aptness this charming place, the residence of an enthusiastic horticulturist, Mrs. Eyre Crabbe, has been thus designated. Less than a quarter of a century since it was a wild spot, half moor, half common, with a deep dell on its lower margin looking to the east, and offering a somewhat deterring aspect to any one in search of a place whereon to build a habitation. Difficulties would seem, however, to have presented to Mrs. Crabbe and her excellent gardener, Mr. Stewart, only so many inducements to endeavour to convert a desert into a garden, a desolation into a paradise; that their efforts have met with complete success the charming place as it now is can eloquently testify. The approach to Glen Eyre from the fine old town of Southampton, a distance of 3 miles, is one of great beauty, as for a considerable distance the broad highway runs through the magnificent common, or more properly speaking wild park, of more than 300 acres, which lies to the north of the town, the road being bordered by noble avenues and clumps of trees, whilst vistas of the surrounding common continually break upon the eye. A continuous rise to the well-known Red Lodge Nurseries, from whence Mr. Rogers enjoys one of the most delightful looks-out in the southern counties, brings us to the higher ground of Basset, and but a short distance further to the estate of Glen Eyre.

It is one of the peculiarities of the formation of the ground here that whilst the carriage-drive enters from the higher land, the house though lying below is scarcely seen until a turn in a belt of trees finds it close at hand. Thus the approach reveals little or nothing of the many garden beauties to be seen beyond, and it is not until the stranger has been led to the windows, or upon the higher terrace here illustrated (fig. 129, p. 753), that the whole of the charms of Glen Eyre become visible. The house (fig. 121, p. 757), which is of goodly dimensions and built in strict keeping with the surroundings, is placed exactly at the head of the dell, looking eastward, the gardens immediately in front and on the south side being composed of a series of terraces connected with each other by steps and winding paths, whilst on the long expanse of slope on either side are planted Conifers of all kinds, Rhododendrons, Azaleas, Kalmias, and other flowering plants in glorious profusion, deciduous trees, evergreen shrubs, including a great variety of Camellias, intermingling with woods and heather, all making up a very delightful and beautiful combination. Having said this much—but very imperfectly—by way of general description, we proceed to point out certain features for which Glen Eyre is especially famous; and these are its outdoor Camellias, its Conifers, and, not least, its charming spring flower gardening. If we deal with the latter first it is rather because, unlike the other features, it is not permanent, but varies from year to year, and, therefore, perhaps is not calculated to leave on the mind of the visitor so profound an impression. Glen Eyre is most favourably situated for the development of the beauties of early hardy flowers, not only because naturally and artificially well sheltered, but also because the soil is light and warm, and admits of early growth and bloom. To this end all the beds on the several terraces are not large, but of such convenient size and arrangement as to permit of pleasing designs being planted, as also of duplicates in sections, thus securing at once variety and a well-balanced effect.

In the larger beds Hyacinths in colours and Tulips in masses are productive of beautiful effects, standing up out of carpets of Daisies, Aubrietias, Sedums, or other neutral-coloured flowers, whilst in the smaller ones single and double Primroses, Violas, Pansies, Polyanthuses, Daisies in colours, Forget-me-nots, Aubrietias, Arabis, and many other useful plants are utilised to form pretty combinations and gay masses. Of Tulips in flower at the time of our visit (in April) specially beautiful were the lovely rose white Griselida, the brilliant scarlet Pottebakker, and the rich Golden Prince; these were particularly effective, and scarcely less worthy of mention were the grand Kaiser Kroon and the pure white Pottebakker. The earliest and most favoured yellows in hardy plants are obtained at Glen Eyre from Pansies Yellow Boy and Bedford Yellow, *Myosotis dissitiflora* and *Cliveland Blue Penny*, the earliest blues; *A. abrietas* in variety, and *Primroses alba* and double *lutea* for shades of lilac and purple; deeper tints being furnished with double purple and single purple Primroses, &c. The superb double quilled Daisies White Globe and its variegated form, double and single Primroses, *Polyanthus White Bedder*, *Viola White Swan*, and other things, present the most reliable whites; whilst pink, red, and crimson tints are found in double Daisies, double and single Primroses, and other early plants. In one small bed *Primrose Ross Morn* was in rich bloom, in another *Queen of Violets*, in another the fine old double crimson, in another the deep-coloured *Aubrietias Hendersoni* and *Eyre*, everything being selected not so much for its costliness as for its intrinsic value to give pretty little masses of flowers in a neat way, and at the earliest possible period of the year. The stereotyped spring bedding, which is at its best just as the season calls for the ordinary bedding-out, has no place at Glen Eyre; if plants, however beautiful, will not bloom at their best through the month of April, they must give place to others that will, because Mrs. Crabbe aims to secure a great unity of colour and beauty as possible with the flowering of the bulbs, that the garden might thus become an entirety at the proper season. This is real spring flower gardening. How it first came about that *Camellias* should be now found growing in the grounds of Glen Eyre with as much impunity as the common Laurel, is one of those things for which it is difficult to give a reason. Probably an excess of plants rendered it necessary to find room for some of them elsewhere, and therefore it was determined to let them try their best in the open ground. Certainly it was a most happy thought, and has been attended with splendid results.

On the west side of the conservatory, standing between it and a wing of the house, growing upon a grassy surface, is one of the earliest and best of these outdoor plants, and it is now probably one of the very finest bush trees to be found out-of-doors in the kingdom. It is the old double-striped kind, stands now about 9 feet in height and nearly 40 feet in circumference. It has a luxuriant growth and leafage, blooms every year most profusely, stands second to no plant under glass for health and foliage, and yet it gets but little sunshine, and is at times swept by fierce cold winds; further, it is never protected in any way—indeed, Mrs. Crabbe laughs at the notion of protection for outdoor Camellias.

Over on a sloping lawn facing due north are a couple of beds of *Camellias* growing luxuriantly and blooming abundantly. These have formed literally masses of shrubs, just as though they were *Rhododendrons* or *Laurels*, and consist of such kinds as *Lady Hume's Blush*, *Storey*, *Tricolor*, *Florida*, *Double-striped*, *Mathotiana*, *Edipce*, &c.—all old sorts of course, but differing little in the question of hardiness from more modern varieties. Now it has been asserted that an abundance of sunlight is essential to the healthy growth of the *Camellia*, and especially to the perfect setting of its flower-buds, but here were plants as healthy and robust as could be, upon which, for the greater part of the year, the sun scarcely shone, for near by was a plantation of tall Firs, and, as we stood close to these *Camellias* at mid-day in the middle of April, we found that the sun then only just peeped over the tall trees on to the plants lower down the slope—a very practical illustration of the truth of what we have stated. *Camellias* are now so largely planted that they meet the eye everywhere, and in the course of time these will form a very distinct feature, but for older and notable specimens we have now to traverse the valley and climb to the top of the southern slope—and there find, on the wall that encloses the stables, some grand fellows that are in luxuriant

bloom; one of these, a noble plant of the double white, would prove worth a small fortune if owned by any London florist. This covers a space of wall 11 feet in height and 12 feet in width, and is not trained to the surface like a fruit tree, but projects so that the lower part of the plant is quite 6 feet through. It presents literally a mass of buds and flowers, of fine form and pure in colour, scarcely inferior to any blooms cut from under glass. Luxuriant as this plant is, it is an undoubted fact that both it, and others only less in size, growing close by, seldom, if ever, see the face of the sun; within a few feet in front rises a dense plantation of trees and shrubs that shut out the sun's rays all the day long, and these Camellias are the perfection of health and vigour. On the eastern aspect of this wall are other large plants rapidly covering the surface, one of these exceeding 12 feet in width from the top to the bottom.

9 feet at 6 inches from the ground. It now cones freely, one small branch having fourteen fruits, and it is believed that this particular plant was one of the first to cone in Europe. Near by is a superb specimen of *Picea Nordmanniana*, of that deep dense green hue so peculiar to this fine Pine. This is 34 feet in height, and has a breadth at the base of 24 feet. When planted it was but 10 inches in height, and has now developed into a grand tree. A very fine *Cupressus Lawsoniana*, 29 feet in height and about 10 feet through, is a fine companion tree. *Cupressus macrocarpa*, a noble specimen 50 feet high and 48 feet in circumference, a very handsome *Pinus Pinsapo*, a fine *Thujaopsis borealis*, and a particularly good specimen of *Libocedrus chilensis*, present a few of the fine trees of this group. At the bottom of this slope is a fine example of the flowering *Paulownia imperialis* that came from the Pine-apple Nursery nineteen years since

range of glass-houses facing the south are devoted exclusively to the growth of plants for conservatory and house decoration, and to supply the great demands for cut flowers. Here are grown one of the largest private collections of the double *Primula* in the kingdom, as many of the best-named varieties now in commerce were raised here. The value of the flowers of these Chinese *Primroses* is well understood, and hence their extensive cultivation. Tea Roses enjoy the protected aspect this range of glass affords, and the plants trained on the front walls are seldom without flowers. Double Violets are grown in beds in the kitchen-garden, and we record with pleasure Mrs. Crabbe's declaration that the fine new double *Marie Louise* was the finest and most abundant bloomer.

These are the records of but a few of the features of this charming garden, which, beautiful at any time, is especially so during the spring months. To Mr.

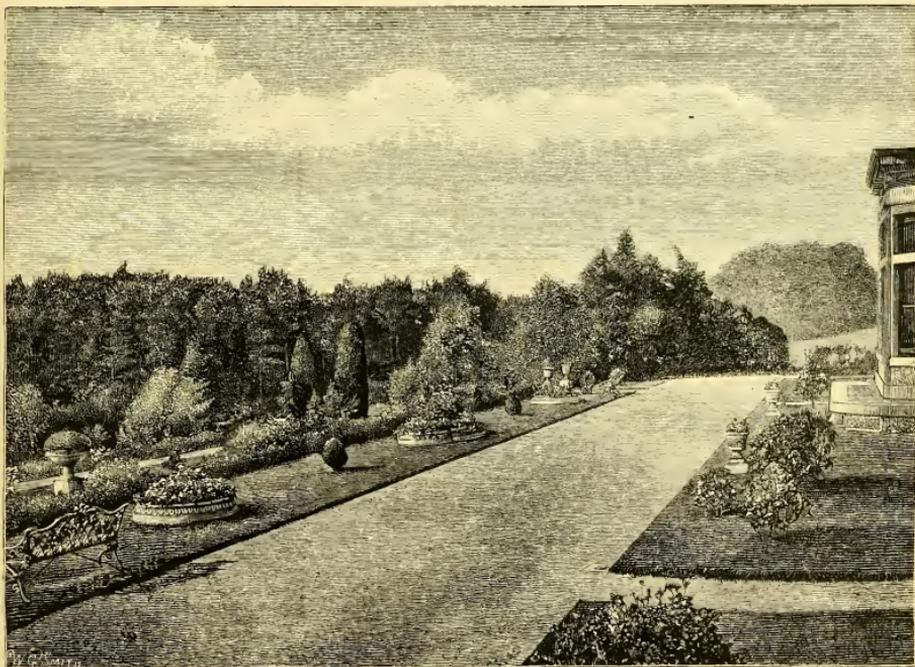


FIG. 120.—VIEW IN THE GARDENS AT GLEN EYRE, SOUTHAMPTON.

Of course Glen Eyre has what in modern parlance is termed a Pinetum, but how unlike the flat formal groups of specimens with which we are too familiar. Although several noble specimens are growing on the northern aspect, yet the finest group is found on the steep slope looking south, and it is a matter of special regret that no photograph of this fine collection has been taken from the other side that will do it justice. So sharp is the sloping bank of grass that it is much easier to roll down its surface than to climb up it, and yet in natural soil, with but little artificial aid, the *Pinuses* planted here some eighteen years since are scarcely exceeded in size and vigour by any growing under the most favourable conditions. A noble *Wellingtoia* forms a central figure; planted nineteen years ago a diminutive plant 9 inches in height, it forms now a perfect cone of branches 31 feet in height, with a diameter of 17 feet 6 inches. The bole of the stem is exceedingly massive, and measures in circumference

in a 48-sized pot. It now has a bole that measures near the ground 6 feet 6 inches round. On the opposite slope are very fine examples of *Cupressus macrocarpa*, *Cryptomeria japonica*, *Abies Douglasii*, and a specially fine specimen of *Cupressus funebris*, 22 feet in height and of relative proportions.

The extensive *Rhododendron* shrubberies include all the best kinds, and these grow so luxuriantly that it is necessary every few years to remodel the whole by thinning, and thus by extending the planted ground the shrubbery has grown to one of considerable dimensions. At the time of our visit only a few were in bloom, specially noticeable amongst them being a fine plant of *Cliveatum*, bearing a mass of rosy pink flowers; *cliatam*, a particularly beautiful variety, and a mass of bloom; and *Brodartianum*, a delicate pale pink. Towering up above all others were some grand heads of scarlet hybrids, giving an unusual glow of colour for such an early period of the year. The long

Stewart let the praise be given that, under Mrs. Crabbe's directions, he has made Glen Eyre what it is. A. D.

Apiary.

NEW SWARMS.—We all know the old bee proverb—

"A swarm of bees in May,
Is worth a load of hay;"

but we have noticed a few swarms during the past month which, although they are called for convenience sake "May swarms," are really not worthy of this title. A genuine May swarm is, without doubt, valuable, and will realise about 20s. if placed in a new skep. The swarms we are now about to bring before the notice of our readers are worthless. About the 20th of the past month we were delighted during a fine, calm evening to hear the well-known swarming

hum, and to see a large quantity of bees buzzing in the air. For a few minutes we could not detect with any degree of certainty the hive from which they had made their exit. After flying about in a very unsettled state for 20 minutes, they made an attempt to enter a Woodbury hive, but were fiercely repelled. The occupants evidently thought, like all Englishmen, that their house was their castle, and they would not welcome such intruders. The reason we will presently explain. Then they wisely re-entered their own tenement, and for the time settled again to hard work.

We need scarcely remind our village readers that the last two weeks in May was anything but genial weather; in fact, old people began whispering, "Oh, this is not like May; it is more like February," for cold easterly winds prevailed to an alarming extent, so that vegetation looked as if a blight had passed over the face of Nature. During this weather our bees could gather very little honey, and also but little pollen. One hive we observed throwing out several immature bees. This convinced us that starvation was showing itself.

We never once thought, however, that any of our stocks lacked needful food, and as little did we expect hungry swarms. Again, the same swarm made its appearance on the 23rd, and after troubling several hives was repulsed, leaving many of their dead members behind. They a second time went back to their own hive. Now our curiosity was aroused, though we did not meddle with them, because the day following they were carrying pollen, and seemed again to work peacefully. All went well until the 30th instant, when the stock swarmed twice during the day, on each occasion settling in a convenient spot. It was hived in the usual way, but would not stay in the skep. At length during the evening it re-entered the original hive. After four days' quiet, on June 3 the stock again swarmed twice, and the swarm succeeded in entering a neighbouring hive after the loss of the queen and about two-thirds of the workers. These were carried forth dead, being killed in the attempt.

Now we overhauled the hive thoroughly, and imagine our grief when we discovered every cell empty of stores, though it contained a large quantity of brood, in all stages of growth. We were learned, when too late, that the swarm was actually starved out, and was justly named a hunger swarm.

But why did the other hives so persistently refuse to entertain the strangers? In case of any ordinary swarm they are gladly welcomed. It can easily be explained: when a swarm leaves the old home to seek out a fresh pasture or home they are filled with honey, because it may from wet weather and other causes be reluctantly detained for several days within doors—during this they would all perish if devoid of food. This is providentially prevented, but in the case of hunger swarms, not having any honey in the hive, they of course are unable to take any with them on their flight; therefore bringing no grist to the mill, but entering only as beggars, they are refused admittance or taken in only with reluctance. We have kept bees for many years, but we never knew so many lost stocks as during the past spring. Our stocks—we speak generally, and including the entire pair of which we reside, which is very extensive—appeared to do well and to promise a good bee year until March, when all at once the hives in scores of instances dwindled away and died. We have gone over many rich apiaries, and in some few cases half the hives on the stands are empty.

We believe this may be explained partly on the ground that we robbed the stocks too much last autumn, instead of the old-fashioned plan of taking the old stocks for honey and leaving first swarms, especially if heavy on the stand, to work the following year. We now take the old stock, and, after smoking the new swarms, rob them of the best combs, viz., those at the side of the hive.

If they could be fed up after this cruel robbery they might not suffer so severely after all, but many very farm apiaries they are left to care for themselves as best they can. We trust, after the bitter experience of the present season, apiarists will learn wisdom, and either leave the stocks intended for the future labourers with the stores they have collected, or, if they think it the cheapest method to take a part of the honey, let them be liberally fed with syrup from the top of the skep. Not only should this be attended to in the autumn, but they should be carefully examined the first fine day in March, and if devoid of stores, as a "stitch in time saves nine," feed them then. We feed

our stocks each spring, whether they require it or not; we have always found it an excellent method, for it seems to put new life and vigour into the entire colony, and makes them work more heartily. R.

WORK FOR JUNE.—Each stock should be watched or noted every day; if any sign of swarming is perceived they ought to have supers placed on them without loss of time. It is a very unwise plan to put any kind of supers, either glass or wood, over the stock if they do not appear overcrowded; but if they are noticed hanging about the entrance like a bunch of Grapes, then put on the super. If this be done too early it often happens that they refuse to enter the super, and our object of procuring a nice lot of honey free from the dark-coloured breeding cells is frustrated, and the hive will probably swarm. If your wish is to increase the number of your stock, then do not super them; but, on the contrary, if you desire a little pure honey, and think you have as many hives as you can profitably attend to, super them on the top directly they appear to be full of bees.

It is also a good plan to place a small bit of empty comb at the top of the super, to induce the bees to take to it. It may easily be fastened by melting a little wax on the glass, then, before it cools, let the comb adhere to it. Many beekeepers prefer a moderate-sized bell-glass for supers, more for the appearance, perhaps, than anything else. It matters very little which is used—glass, or small, square wooden boxes. The latter are the cheapest, and our bees seem to take to them, and to work better in them than in the glass receptacles. Whichever is most convenient for our friends they should not forget to make them both dark and warm. We wrap old flannel and odd bits of cloth around them.

Most lovers of the apary will now be very busy preparing new hives, or fitting up new stands or beehives for the early swarms. If you purpose using the Woodbury bar-frame hives, before transferring the swarm to them see that every bar has a small guide-comb affixed to the upper part; or, what we much prefer, pour melted wax the entire length of each bar-frame. This is much more easy to accomplish than fixing the guide-combs, and answers quite as well; notwithstanding every precaution be exercised to make your stocks build straight combs, it is often in vain. However, it is a very simple and easy matter, after smoking your newly-hived stock, to appease their anger, or to render it quite safe to open the hive every third or fourth day, and if you then find any combs being built crooked, carefully straighten them; afterwards, or later in the season, when you have occasion to take the bars out to secure honey, or for any other object, you will feel glad you took a little extra trouble to have straight and even combs.

Always have the swarms first in a common skep, as used by our cottage bee-keepers; then, when they are settled, transfer them immediately to the bar-hive. We invariably knock them out on the top of the bars, as being the most ready method. R.

The Villa Garden.

BLISTER ON PEACH TREES.—We have already alluded to the general failure of the outdoor crop of Peaches, and so universally has this been experienced that all trees, whether old and decaying or young and vigorous, appear to be devoid of fruit. Our own trees, which are getting near the end of their work, are decidedly bare, and a neighbour's trees, that are young and vigorous and just getting into bearing, have lost every trace of the rich promise of fruit the fine long evening of the year. If there is any comfort to be got out of bewailing misfortunes in concert, neighbours can forget all differences and condole with each other upon the scarcity of their crop; and to make matters worse, the horrid blister is putting in appearance, and to such an extent in some cases as to threaten the loss of the leaves almost entirely. Villa gardeners having trees so affected may rejoice to find themselves in excellent company, for a noted fruit cultivator states his trees are as bad as they can well be; and he is gardener to our Lord Marquis of Carabas close by, and has a kitchen garden famous for the admirable management it receives and the fine crops of fruit generally taken from it; but the blister is no respecter of persons or trees, and his lordship and his gardener and we have a common cause for sorrow.

We asked the gardener at Carabas Castle what he

thought was the cause of the blister on the leaves a Peach trees; reminding him that some writers who assumed to write with authority (as indeed most scribes do, whatever may be the nature of their message) had stated that the blister on the Peach leaves was caused by insects, and who also state that if a leaf or two be picked off insects would be found on them. We have frequently examined these examples of vegetable disorganisation, but failed to observe any general testimony confirmatory of the fact that these leafy eruptions are the results of the action of insects, and my lord's gardener settled the question off-hand by stating that he did not believe a word of the insect theory, but held the opinion that the blister on Peach leaves was the result of cold and chill either in the roots or the branches. Well, there has been no lack of chills, and a good deal of the weather of the past month has been anything but joyous times for insects to sport and play among the leaves. And my lord's gardener went a step further, and stated that the blister was never present in the case of the trees under glass. This fact appears to militate against the insect theory.

Then we enquired what is the best thing to be done in the case of these blistered leaves; and he suggested picking them off, even to the partial stripping of the trees. We asked if any remedy could be applied to stay the plague, and he said he knew of none; and again advised, to pick off the leaves, assuring us that as soon as warm growing summer weather sets in (and we are still looking for it in the second week in June) the trees would start into growth, and soon become clothed with fresh shoots and leaves. Meanwhile, the Villa gardener can do all that was recommended last week, and assist as far as possible the effort Nature must put forth ere long to replace the damage caused by this blister.

ASPARAGUS BEDS.—The Asparagus-bed is one of the glories of the Villa Garden. The first bunch of Asparagus, or the first Carabon, or the earliest dish of Strawberries, are all gardening achievements of the highest order, and their realisation affords immense satisfaction. But there is the danger that Villa gardeners, in their desire to get all the Asparagus done as their own growing, may make too large demands on their beds. There is a time to cut, and a time to refrain from cutting.

As a general rule, gardeners cease to cut Asparagus about the middle of June. The theory held is, that if Asparagus be cut late, and especially when growing on a damp, cold soil, there is danger of losing the plants should a wet, sunless, and cheerless autumn follow. The fact is, there is scarcely time for them to make a good vigorous summer growth, which is a great advantage in the case of Asparagus. In some districts, where there is a drier, later soil, it may be safer to cut Asparagus later in the season, but a wise gardener will husband his resources, and not waste them by undue lavishness. It is therefore best to spare the knife at cutting time, or impoverishment and failure may follow.

PANSIES AND VIOLAS.—While learned gardeners are discussing the difference between a Pansy and a Viola, and pointing them out where they exist (though it is difficult to say that it is being done with much clearness and satisfaction), it is our desire to point out the advantage of having a bed of these, if only for the sake of cutting from to make up little posies, and for placing in vases, &c. The Pansy (or perhaps we should say Heartsease, as that is the dear old common name) is so attractive in its way, so free of bloom, and so pleasantly scented, that a bed of them is invaluable.

We have now in bloom a little plot of what is termed hybrid Violas, and while some of them are like Pansies in the shape and size of their flowers, there are others so much smaller, and so free of bloom, that they may be taken as representatives of the Viola. They are of very bright and varied colour, and all charmingly fragrant. A bunch of these picked twice or thrice a week fills a room with an agreeable perfume, while the little patch of them, when in full bloom, is a particularly attractive sight in the open air.

One cannot have a little group of these Violas without having some inferior forms among them. It was so in our case, for there were not only ragged, loose, inexpressive flowers, but also the long, lanky habit of growth peculiar to some of them. These have all been pulled out, and there is a positive advantage gained in that more space is allowed for

THE
Gardeners' Chronicle.

SATURDAY, JUNE 16, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, June 19	Royal Horticultural Society: Great Summer Show: Meeting of the Fruit and Floral Committees at 11 A.M., and Scientific Committee at 1 P.M.
WEDNESDAY, June 20	Lee and Blackheath Horticultural Soc'y's Exhibition (two days): Sale of Mr. Herbert's Collection of Orchids at Stevens' Rooms (three days).
SATURDAY, June 23	Crystal Palace Great Kiosk Show.

WITH a view of again drawing attention to SILK CULTURE in Great Britain we here print some remarks on its practicability in our English climate, based on a communication forwarded to us by Dr. WALLACE, of Colchester. In cereal produce the British farmer, having to compete with all the world, is very seriously handicapped; and even in meat production the seemingly illimitable supplies of dead meat coming over from Canada and the United States threaten a reduction of price, to say nothing of the serious losses from pleuro-pneumonia, rinderpest, foot-and-mouth disease, &c.

It is, therefore, high time that a lucrative and highly important industry, as is silk culture, should be seriously and attentively regarded by the agriculturist, not merely at home but also in our colonies, many of which are by Nature most admirably adapted to the production of silk as a raw product. Silk culture, occupying about three months only in the year (in England the months of June, July, and August), and of these only one month, that of July, is at all a busy time—the necessary labour being chiefly provided by women and children—can only be regarded as a supplementary, not as a principal industry. The food plants also, *Morus alba* and its many varieties, are also planted here and there, wherever convenient, not as a main but as a supplementary crop; yet, as will be seen, it is most lucrative, and commends itself the more inasmuch as it can be carried on without interfering with other agricultural operations. It is also an employment peculiarly adapted to women and children, and therefore meeting one of the requirements of the age.

When it was discovered ten years ago that about £1,000,000 of our money was annually sent from Europe to Japan by those interested in sericulture to purchase fresh, healthy "grain," or silkworms' eggs, their own stock having been either worked out or enfeebled by disease, it occurred to Dr. WALLACE that some of this money might be diverted to this country to enrich our own people. Several scientific Frenchmen of eminence—notably M. GUÉRIN-MÉNÉVILLE, Government Inspector in France—were very favourably disposed towards "silk," or rather "grain," in England. On the borders of Hampshire and Surrey Capt. MASON had for years grown the White Mulberry tree, and produced silk which had been exhibited with first-class honours. Dr. WALLACE's trials at Colchester, being dependent on bought or borrowed Mulberry leaves (an uncertain supply), were not very successful; but having now a good supply of White Mulberry trees in thriving condition (about 2 acres are planted out), his experiments during the last three years have been very successful. Dr. WALLACE tells us he has had shoots on three trees which in one year grew 5 feet to 6 feet long, and has reared and fed the worms, derived from one of the healthiest and best sources in Europe, in a room, without disease, and almost without fire, in June, July, and August, and he has produced in successive years a small lot of fine "grain," the parent cocoons of which have been pronounced excellent by good judges and perfectly free from disease.

Moreover, the introduction of Dr. CARRETT'S stoves, which create a high temperature in the silk-room, have without giving off any deleterious gases, have this great advantage, that they hasten most rapidly the rearing of the worms, reducing the period of the caterpillarstage from six to three weeks; they render the cultivation of the worm independent of any weather; no carbonic oxide or other noxious gas is given off to injure their health—in the words of the inventor, "Healthy silkworms can by means of these stoves be reared in any country where the Mulberry tree grows, independently of any weather;" therefore the rearing of Mulberry silkworms in England ought to be an assured fact.

Now, as to the commercial results. Japan as a grain-producing country is now worked out, all her best grain has been exported to Europe, and in 1876 the purchases of grain did not amount to one-eighth of former sales. The south of Europe alone can take from us 500,000 oz. of eggs, if we can only produce them at a price of 15s. to 21s. per ounce of 30 grammes, and will be very glad to get eggs, provided they are healthy, from us. If properly managed 1 oz. of eggs will produce in grain 100 oz., or £1 will produce £100, leaving a large margin for profit after all expenses have been paid.

The rearing may be effected by women and children. The southern, midland, and eastern districts are admirably adapted to the growth of the White Mulberry tree. It has not been prominently stated that in our equable and cool temperature we have a great advantage, in one respect, over Southern Europe in the matter of silk culture. The southern growers lie between Seylla and Charybdis; witness the spring of 1876, in which late frosts and cold inclement weather in April and May destroyed the entire crop. On the other hand, a sudden accession of sultry weather, with thunderstorms (*les chaleurs étouffantes*), may set in earlier in the summer than usual, just before and instead of just after the worms have spun their cocoons; and then good-bye to a crop—the whole perish. After cocooning the insects are protected from the heat by their silken covering, and then remain unaffected by sultry weather. Both early and late a risk of a total loss is thus incurred.

But in England, having nothing to fear from too sultry weather, we may delay our hatching-out even till the first week in July, by simply keeping the grain in a cool cellar, thus selecting too a moment for incubation when the Mulberry trees have advanced to such a point as to give us the greatest possible amount of suitable food.

In conclusion, attention may be drawn to Capt. MASON'S figures, as published in the *Times* of January 26, 1877, simply premising that this gentleman has been occupied in silk culture for the last ten years, and is probably better informed on the subject than any other person in England.

He states that last season from 13 poles of his land, which is of a light and poor description, planted with Mulberry trees, he gathered 1094 lb. of leaf. Of the 1300 cocoons obtained from feeding on this leaf 1635 were selected for the production of grain. The result was 10 oz. of grain, valued at 20s. per ounce, or £120 the whole; leaving 1965 cocoons for reeling, which with the pierced cocoons would pay for the labour. Reducing this to an estimate per acre we have—1 acre producing leaf enough for, say, 20,000 selected cocoons, estimated to produce 120 oz. of grain, valued at £120 clear profit per acre, expenses being paid by the soft and pierced cocoons, as before. This sum must be reduced to one-half, as every other year the trees ought to get a rest, and not be stripped of their leaf in order to maintain them in full vigour. But, even so, where is the farmer who would not be glad to obtain a return of £60 per

acre, which his wife and children could mostly procure for him.

To illustrate what is done at Colchester we append a few thermometric and other observations, and refer those in possession of a White Mulberry tree (not the common fruiting Mulberry) to commence a little experiment on their own account. They will find in Messrs. CASELLI'S *Technical Educator* (vol. iii., Nos. 53, 57, 60, and 64) sufficient to guide their first essays, and they will be able to procure grain or young silkworms from Mr. S. H. GASKELL, 147, Brinnington, Stockport, for a trial.

Temperature of Silkworm Room.

June	Night, Min.	Day, Max.	W. A. F. A. M.	12 M.	3 P. M.	6 P. M.	9 P. M.	Hygro-meter.	Wind.	Rain.
1	44	—	—	—	—	—	—	—	—	—
2	35	55	—	—	—	—	—	—	—	—
3	63	—	—	—	—	—	—	—	—	—
4	63	—	—	—	—	—	—	—	—	—
5	64	—	—	—	—	—	—	—	—	—
6	59	—	—	—	—	—	—	—	—	—
7	38	—	—	—	—	—	—	—	S.W., breezy	Slight in night
8	39	—	—	—	—	—	—	—	S.W., slight	—
9	60	—	—	—	—	—	—	—	S.W., slight	—
10	64	—	—	—	—	—	—	—	—	—
11	64	—	—	—	—	—	—	—	Ditto	—
12	64	—	—	—	—	—	—	—	Ditto	—
* 12	61	55	66	—	—	—	—	—	E.	Heavy in night, with thunder and lightning

— We learn with much pleasure from the Philadelphia *Public Ledger*, that upon the unanimous nomination of the members of the Pennsylvania State Board of Agriculture, Governor HARTRANFT has appointed as botanist of the Board Mr. THOMAS MEEHAN, the well-known naturalist. This is putting the right man in the right place, for Mr. MEEHAN is one of the industrious experts who are working hard in the cause of natural history in Philadelphia. About thirty years ago he, then a young man, made the State of Pennsylvania his adopted home, and since then he has won for himself a name that entitles him to the rank of representative man of both the State and the branch of natural science to which he devoted his study, his labour and his industry. He arrived in Philadelphia without friends and without acquaintances, except two to whom he brought letters; he now, after thirty well spent years, makes a brief trip to the "old country" to revisit his native land, an honourably distinguished man, known throughout the United States, and a member of thirty learned societies, agricultural, horticultural, literary and scientific, commencing with the Wernerian Society of Edinburgh, to which he has been elected in recognition of his contributions to natural science. Mr. MEEHAN sailed for Europe on June 7.

— With reference to the GREAT PROVINCIAL HORTICULTURAL SHOW decided to be held by the Royal Horticultural Society in June, 1878, at Preston, in Lancashire, we are informed that the needful guarantees have been secured, and that a good Local Special Prize Fund (in addition to the prizes offered by the Royal Horticultural Society) will also be provided. T. M. SHUTLEWORTH, Esq., of Howick House, Preston, has undertaken the office of Local Secretary, and under his indefatigable management the show will no doubt prove a great success. The exhibition at South Kensington on Tuesday next promises to be an unusually good one, and a good company is expected to meet the Prince and Princess of Wales, who have announced their intention to be present.

— If we do not have an abundantly BERRIED HOLLY crop next Christmas to decorate and cheer that festive season, it will not be because of the present deficiency of flower. The bloom everywhere on the Holly is simply marvellous, and as frosts must be

* 1 Silkworm hatched out—on a *straw* cocoon. † 23 hatched out. ‡ 106 hatched out. § 200 hatched out. ¶ 66 hatched out. ** 50 hatched out. †† 30 hatched out. ‡‡ 100 hatched out. §§ 436 out of 436 out of an especially valuable race from Southern Europe. Of my own grain—about three-quarters of an ounce—brought up into silkworms—on June 1—about 300 hatched out, June 10; a great number hatching, June 12; and on June 13 a great number hatched out.—Frosts not applied during the twelve days.
Note.—The Mulberry leaf began to bud about June 1, and the sprays are now from 1 inch to 2 inches long, planted on a cold bank north soil. The great bulk of eggs remain in a cool cellar at a temperature of 60°, but already some begin to hatch out.

now out of the question, failure to berry can scarcely be looked for. Weather-wise folks will presently assert that this abundance of Holly berries bodes a severe winter, but the ripening effects of the past summer doubtless had much more to do with it. Like all vegetation, the Holly is late in blooming this spring, and this will doubtless prove the saviour of the crop. Should the expectant severe winter, however, follow, horticulturists may perchance find it rather a cause for rejoicing than otherwise; as soft winters, when followed by late cold protracted springs, generally prove the most disastrous seasons.

— It sounds somewhat paradoxical to assert that EARLY PEAS will be late this season, but such will be

that gentleman was recently presented by the *employés*, past and present, with a handsome timepiece in black marble.

— The *Maidstone and Kentish Journal* regrets that it is unable to give a good account of the FRUIT PROSPECTS IN KENT. It appears that Gooseberries, of which a large crop was expected, will in many parts fall short. Red Currants are plentiful, and the black promise an average. The early Cherries are a failure, and the later ones have in "swelling out" fallen off in large numbers. The Plum crop will be even smaller than last year; some few kinds will grow about a quarter of a crop, but on the majority of trees there is not a Plum to be seen. Pears,

will the "good tenor" be forthcoming, but that also, amid the many vicissitudes of weather and climate to which the garden labourer is subject, the owner may be long enabled to retain it.

— The committee meeting of the NATIONAL ROSE SOCIETY was held on Tuesday, the 5th, at the Horticultural Club-room, and all details connected with the forthcoming exhibition were arranged. Judges were selected, and we are told that very favourable anticipations of a successful show are entertained.

— A French Rose cultivator is offering for sale, under the name of Mathilde, what he states to be the best of all the white Tea Roses "known for a long

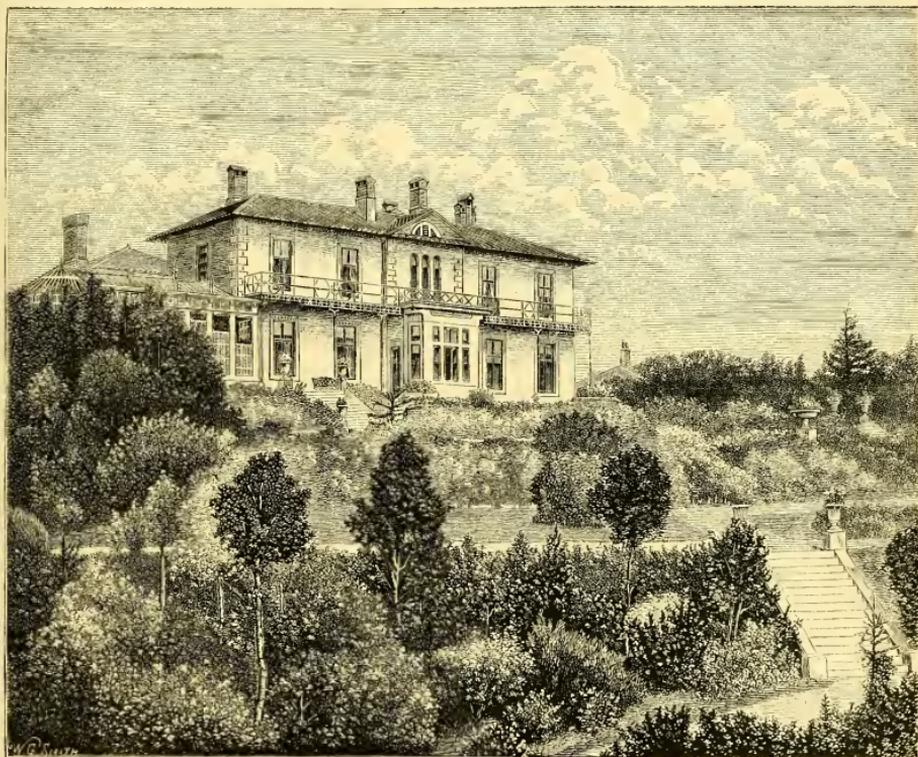


FIG. 121.—GLEN EYRE, SOUTHAMPTON, THE RESIDENCE OF MRS. EYRE CRABBE (SEE P. 752).

the case nevertheless as far as the crops all through West Middlesex are concerned, and picking will hardly be in force until Midsummer at least. In spite of this backwardness, however, the crop promises to be an abundant one, as all Peas look remarkably well, and the earlier sowings are blooming most luxuriantly. So many persons get a "picking" out of the green Pea crop in addition to those who do the picking, that a general failure is a much greater misfortune than is perhaps usually esteemed, whilst not least amongst the benefits resulting in a plentiful season is the physical good produced to the indifferently fed town poor of the metropolis, who are thus enabled to obtain many hearty meals of this nutritious vegetable.

— In view of the approaching marriage of Mr. WILLIAM THOMSON, jun., of the Tweed Vineyard,

which never appeared better in bloom, have almost entirely disappeared in fruiting. Apples promise a large crop, but many kinds have suffered from the attacks of vermin. Cob-nuts appear plentiful, although the maggot has made its appearance in large quantities.

— An advertisement inserted in our columns last week is worthy of comment, inasmuch as it seems to indicate that the few remarks recently offered by us in favour of the introduction of MUSIC and other suitable modes of recreation into our garden establishments, have not been made in vain. A garden labourer is required who possesses a "good tenor voice." Now as we know of no use in gardening for "tenor voices" we can but conclude that a part choir is being formed amongst the *employés*, and that the indispensable tenor is found wanting. We cordially hope that not only

time under several names (Mousseline, Niphetos, &c.)" As it is so much grown and so well-known in this country under the name of Niphetos, there does seem to be danger of leading to confusion by reverting to the original name Mathilde, supposing that priority can justly be claimed for it.

— We mentioned last autumn that the setting of the blossom-buds on the AMERICAN PLANTS at THE KNAP HILL NURSERY, and the consequent promise for the present season's bloom, was more abundant than it had been for many years past, and that consequently—winter permitting—the present year's show of Rhododendrons must be more than usually gorgeous. The bloom is now about at its best; and, as giving some indication of the display, the term "gorgeous" is by no means an exaggeration. Notwithstanding,

however, the bloom has not altogether escaped injury from the bitter cold of May 4, the effect of which, though not noticeable to the general observer, is seen by those who are more familiar with the plants in the occasional want of the terminal flowers, or their stunted and crumpled appearance. Fortunately, the hardy *Ascleas*, which have for several years been 50 unclucky as to be severely punished by the late spring frosts, have this season escaped injury, and the consequent glorious masses of their brilliant colours more than compensate for any little damage sustained by the *Rhododendrons*, which in reality is unobservable except to a practised eye. Those who are desirous to add to their plantations of this finest of all hardy flowering shrubs should see the varieties as they bloom here, and select for themselves. They will be in good condition for at least another week; and Mr. WATERER'S liberality is such, that even those who only go to look and admire, are made welcome to the floral treat.

— A specimen of *HYDRANGEA THOMAS II*OGG, with six trusses of snow-white flowers, the largest measuring 16 inches in diameter, was presented at a recent meeting of the Pennsylvania Horticultural Society, and a special vote of thanks to Mr. ROBERT BUST, the exhibitor, was awarded.

— We are sure our readers will peruse with very great interest the following communication from Mr. BUST (whose name has been mixed up in this matter), relating to the GROWTH OF VINES UNDER BLUE GLASS:—

"Your number of May 12 has an item on blue glass and Grape growing. The theory was fully treated. I think, in *Lindley's Magazine* over fifty years ago. My wealthy and jovial friend, General PLEASANTON, has closely associated me with his theory. His grapery is about 100 feet long and 25 feet wide, with four rows of Vines the whole length. The excessive growth of the Vines, from my standpoint, could readily be traced to warm, rich, dry, elevated borders at the foot of a hill. Every shoot, laterals and leaf was allowed to grow and carefully trained their whole length; the entire house was a mass of wood and foliage. The following spring the laterals and main shoots were cut to a line about 8 feet from the bottom of the glass, the crop was prodigious; every Vine carried from five to forty bunches of well-coloured fruit and of good size. The Vines were only eighteen months' planted. The succeeding years I considered a failure. Your Grape growers can readily infer whether it was blue glass or rich culture, or both, that produced the crop. The General, you will see by the accompanying pamphlet, does not say that I attributed the crop to his theory of blue glass. *R. Bist, Philadelphia, May, 1877.*"

— The usual monthly dinner of the HORTICULTURAL CLUB, on Tuesday, the 5th, was one of the most successful that has hitherto been held. Several foreign horticulturists were present, and a most pleasant evening was spent. MESSRS. ALFRED WEEKES, Chelsea, and J. ASHBY, Ascot, were admitted members.

— *CARDAMINE FRAXINOSA* can be seen growing in large patches in Mr. SAMUEL BARLOW'S garden at Stakefield House, Chidderton, for the sake of the leaves, which are picked in December, January and February, and eaten as Cress. Mr. BARLOW states that it is very delicate and most enjoyable at that season of the year, and much appreciated in his family circle. The leaves are slightly pungent, and the taste is by no means disagreeable. By some it is esteemed as a remedy in scorbutic diseases, obstructions to the liver, and jaundice, &c. Mr. BARLOW allows the Cardamine to seed itself, and is never without a crop.

— According to Mr. W. CRAIG a solution of chlorhydric acid, in the proportion of a grain and a half to an ounce of water, serves as a PRESERVATIVE OF VEGETABLE TISSUES, even retaining their natural colours. This is an experiment easily tried.

— The last number of the *Bulletin d'Arboriculture* opens with a biographical notice and portrait of the late Dr. RODIGAS, one of the most celebrated hybridists, and one of our raising seedlings acted, not in a haphazard way, as so many still do, but with predetermined aim and well reasoned method. Numerous fine varieties of Ranunculus, Anemone, Hepatica, Iris, Lily, Dodecatheon, Phlox, Peonies, &c., attest his skill. In

1858 Dr. RODIGAS became Professor of Horticulture and Botany at Liege, where he remained for twelve years, and afterwards established himself at St. Trond as a physician, giving occasional lessons and demonstrations on fruit culture and agriculture, and always taking a foremost part in horticultural affairs.

— A new part of HOOKER'S *Icones Plantarum* has just been issued, comprising illustrations and descriptions of twenty-five new or rare plants, chiefly of botanical interest.

— Mr. G. S. BOULGER writes from the Scientific Club, 7, Saville Row, W., to say that Mr. HARKEE, of Southgate Street, Gloucester, is associated with him in the preparation of the GLOUCESTERSHIRE FLORA, previously mentioned by us. Communications on the subject may be sent to either of these gentlemen.

— Dr. M. C. COOKE has just published a volume entitled *Contributions to Mycologia Britannica*, and comprising an account of the *Micrococci*, arranged according to the method proposed by Dr. ROSTAFINSKI in his *Monograph*, with all his figures, on twenty-four plates, and comprising full characters of all the orders, families, and genera, and descriptions of the British species, with the original analytical tables, translated from the Polish. All communications should be addressed to 2, Grosvenor Villas, Junction Road, London, N.

— The French have a proverb to the effect that a cold May and a hot June yield bread and wine. In this country, at any rate, fruit will be very scarce. Never do we remember to have seen such havoc among outdoor Peach trees, Cherries, Pears. The strong gale of the 1st of the month completed the mischief, and even the young leaves and shoots of the Ash are blackened and twisted off.

— The *Revue Horticole* has a coloured figure of *ARIA HOSTII*, a species allied to our common White Beam, but with coryms of rosy pink flowers. It is the *Sorbus Aria* var. *suetidica* of LINNÆUS, and has other synonyms. It is grown by M. SIMON LOUIS, of Metz, under the name of *Craucosus Hostii*. We have not seen the plant in English nurseries, but judging from the figure it should be very ornamental.

— In 1873 there were 474,661 hectares [a hectare = 2½ acres about] in France devoted to market gardens and the culture of vegetables, which produced a value of 461 millions of francs (the average yield is nearly 500 millions [$\pounds 20,000,000$ sterling]). According to the investigations carried out in 1862 the land under these cultures was 443,000 hectares, and the aggregate value of the produce 444,000 francs. The value of the hectare of produce appears to range between 915 fr. and 1200 fr.

— The last part of the *Transactions of the Scottish Arboricultural Society* contains several papers of considerable interest, such as Dr. McNAUL'S paper on the Anatomical Structure of the Leaf as a Means of Determining the Species of Abies; on the Timber Supply of Australia, by Mr. KRICHAUFF, who bears testimony in passing to the excellence of the German forest schools, and to the labours of Baron VON MUELLER in Australia, Dr. HECTOR in New Zealand, and others. Mr. DUFF contributes an excellent paper on the Arboriculture of the County of Kent, preceded by a brief account of the physical features and geology of the county. The coppice woods of Kent are well worth study by those interested in forestry, and some of them are most favourable specimens of woodcraft.

— Mr. TURNER informs us that he will show a very large collection of NEW PALAEOGONIMS at the Royal Horticultural Society's Exhibition on Tuesday next.

— At the last meeting of the LINNEAN SOCIETY on June 7 several papers were read, including one on the morphology of Sapotaceæ, by Mr. MARCUS HARTOG; on the causes of the multiplication of parts in flowers, by the Rev. GEO. HENLOW; and on the morphology of Primroses, by Dr. MASTERES, who discussed the subject from the point of view of comparative morphology, mode of development, minute

anatomy and teratology, and alluded to the most recent views held by botanists on the subject, illustrating them by his own observations on the development of the flower, and by numerous teratological specimens throwing light on the nature of the free central placenta and ovules.

— We have just seen and compared in the Knapp Hill Nursery the three Firs, including ABIES PARRYANA, respecting which a discussion has been going on in our pages since we took occasion some time since to mention the peculiar beauty of a plant of the latter from Professor SARGENT'S garden, which was then and is now in Mr. WATERER'S possession; and having carefully examined them all, we have no hesitation in affirming that for all garden purposes, the three plants which have been mentioned are perfectly distinct. We speak of their vegetative organs only, not having had the opportunity to examine cones of the recent acquisition, but these, in our view of the matter, are quite enough to separate the three plants. We found that the first of the trio to grow in spring—a fatal defect in our English climate—was Abies Engelmannii, which commenced to grow so early that all its young growth was completely killed by the May frosts, and this happens so constantly year after year in the climate of Knapp Hill that this plant is utterly worthless either as an ornamental or useful tree, never growing beyond the state of a miserable scrub. The next to grow was Abies Menziesii, which we found a few days ago (June 1) with its young growth pretty well advanced, and perfectly healthy, having been developed since the occurrence of the frosts which had cut up A. Engelmannii. Latest of all was Abies Parryana, which had scarcely yet made any development of its young growth, from which fact it may be concluded that it is practically safe against damage from spring frosts, since it remains quiescent till the risk of spoolation from these is past. We have used the name ABIES PARRYANA because the plant appears to us sufficiently distinct to bear a separate designation, its aspect being quite different from that of the other two, irrespective of colour (which varies in degree in different plants), being smaller in its parts and much less coarse-looking than either; while it certainly has not the deflexed foot-stalks so conspicuous in A. Menziesii, though it has the pungent micro, with somewhat less rigidity, perhaps, characteristic of that plant. *T. M.*

— The *Florist* for the present month opens with a fine coloured illustration of a very beautiful *Camellia* called *Madame Cachet*. It is a double white flower, with the petals marked with a central stripe of pink. The flower is of good form and substance. The plate was taken from a plant in the possession of Messrs. VEITCH. A characteristic representation of Doyenné du Comice is given in the same number.

— An excellent strain of EAST LOTHIAN STOCKS came under our notice a few days ago in Battersea Park, where Mr. ROGER has used this flower with considerable effect among the other spring flowering plants still in fine condition in the radiating beds near the west or Albert Bridge entrance. The Stock seeds were obtained from Messrs. THOMAS METHVEN & SON, of Edinburgh, and the young plants, after being wintered under glass, were turned out in March before they had shown a flower, so that selection was impossible. The percentage of single ones is exceedingly small, and the plants are dwarf in habit and very free flowering, and the colours, purple, scarlet, and white, are all that can be desired.

— BEDDING-OUT is now being pushed on with great alacrity in the parks, and, as regards Battersea Park, will soon be completed should the present fine growing weather hold out. The park is very interesting just now, so many of the trees and shrubs being either in flower, or about to do so. The isolated clumps of *Iris germanica* and its allies, are very finely in bloom, and so also are many good useful subjects in the herbaceous borders.

— Professor E. MORREN, of Liège, whose collection of living *Bromeliaceæ* is the richest in existence, grows them suspended in his stove, in one corner of which is placed a piece of carbonate of ammonia. An interesting account of this collection is given in the *Illustration Horticole*, wherein we are told by M. ANDRÉ that, contrary to what is usually

believed, the great majority of these handsome plants belong to the cold temperate region between 2500 and 3500 metres above the sea.

— The third part of *Familiar Wild Flowers* contains small coloured plates of the wild Crab Apple and the Borage, with popular letterpress accompaniment.

— We are glad to see that the medical profession in Melbourne are agitating the question of providing a botanic garden proper where Baron VON MUELLER may properly perform his functions as Government Botanist. It is pleasing to observe that the colonists, or some of them, are beginning to be a little ashamed of the way in which they have treated a man who has with almost unparalleled zeal and energy devoted his life and his resources to their interests. A grave blunder has, we believe, been committed, but there is still time and means of partially repairing it.

— In our last issue, p. 724, we alluded to a singular instance of DISEASE IN PEACHES and NECTARINES, and, as we have since received other specimens, we deem it of importance to lay before our readers a figure showing the effects of the disease (fig. 122). At present we know little or nothing of the history of the disease or of the causes inducing it, but

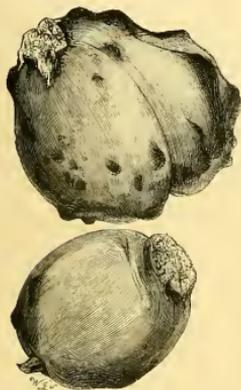


FIG. 122.—DISEASED NECTARINES.

by thus calling attention to it we may be enabled to glean further information on the subject. In the meantime we solicit information and specimens from those who may be able to supply them, and recommend the affected fruit to be at once destroyed.

— A dinner to Mr. F. W. WILSON has been arranged by the Lindley Club, whose guest Mr. WILSON will be, at the Criterion, on Tuesday, July 3. The dinner is intended as a complimentary recognition of Mr. WILSON'S able and courteous management of the exhibitions at the Crystal Palace during the past five-and-twenty years. Tickets, 12s. each, may be obtained of Mr. JOHN MCKENZIE, 1 and 2, Great Winchester Street, E. C.

— The *Revue Horticole* gives a woodcut of a fruit of *LILIU M SPECIOSA*, producing roots at the base of the seed-vessel at the junction with the stalk. From this it may be inferred that the young seed-vessels of other Lilies might be taken off and struck as cuttings. M. CARRIÈRE does not tell us whether in the present case the ovules or seeds were perfectly formed or not.

— *VIOLA COISANDE* has proved a showy and very useful bedding variety in Battersea Park this season. Mr. ROGERS planted a small bed of it near the west entrance, and its peculiarly distinct, light mauve shade of colour has been very pleasing.

GREENHOUSE PLANTS.

THEIR CULTURE AND MANAGEMENT.

PLUMBAGO CAPENSIS.—This is a Cape plant, introduced more than half a century ago. It is one of the most generally useful hardwooded greenhouse subjects, not nearly so much cultivated as it deserves to be from the numerous ways in which it may be grown; for it succeeds equally well in a large pot; as a trained specimen to twine round a pillar; planted out to clothe a wall, or to hang loosely from the roof of a cool conservatory, or confined to the limits of a 6-inch pot, in which way it will flower profusely, forming one of the best possible table or window plants, to which size it may be restricted for years, occupying a very limited space in winter, and amply repaying the little attention it requires by flowering for weeks in succession. The flowers are produced from the extremities of the young shoots, and are borne in large bunches; individually they are like a small *Phlox* in form, but, of the most lovely pale blue colour. There are few plants grown that offer such a pleasing contrast in both colour and form of flower to the generality of other blooming subjects, as does this *Plumbago*. It is a free grower, and not at all difficult to manage, either in a small or large state.

There is no way in which it can be grown that is more useful than in small pots, for general decorative purposes, for, as, if a number are at hand, a portion, if desired, can be brought into flower in a little heat earlier to precede such as are allowed to come on gradually in the greenhouse; by this means a succession may be kept up for three months in summer and autumn. Being a strong-rooted plant it will succeed well in loam, as it, in common with most things that will thrive in this description of soil, has in it a greater disposition to flower than if in peat; but the loam should be good in quality, and contain plenty of vegetable fibre, and should have added to it one-sixth of sand, and the pots should be well drained. The plants ought to be procured in spring, and should be in a free healthy state, struck from cuttings the season previous, and in 4 or 5-inch pots. Let them be potted about the end of March, just as they begin to grow; and now it is necessary to determine to what size they are intended to be grown. If the object is to keep all or a portion for flowering in a small state, these should be moved into 6 or 7-inch pots.

If the intention is to grow them larger they ought to have pots at least 9 or 10 inches in diameter. In other respects the treatment they require is the same, excepting that the smallest sized may need keeping closer stopped in, so as to induce a proportionately more compact habit of growth. Pot them moderately firm, and if the shoots are at all straggling, shorten them back to about 8 or 10 inches in length, tying them out horizontally well down so as to induce them to break back, in which way they will push almost every eye. Place them in a house or pit, where they can be kept at a temperature of about 45° in the night, with proportionate increase in the day, with sun heat, closing the house early enough in the afternoons whilst the sun is up, so as to raise the temperature, syringing them overhead at the same time, and as the season advances and the weather gets hot, use sufficient water under the stages, and about on the paths to keep the atmosphere in a moist condition to promote free growth. All that will be required through the spring and early summer, will be to pinch back any shoots that may show a disposition to out-grow the others, and to tie all to sticks so as to keep them in shape. About August they will commence to bloom, and as soon as the flowers begin to open cease syringing. They may then be moved to the conservatory, or any place where flowering plants are required—where they will receive a moderate amount of light and air to ripen up the growth, no more of which for the season should be encouraged. When the blooming is over give less water and place the plants for the winter in an ordinary greenhouse temperature of from 35° to 40° in the night. They may be either cut back at once, or this can be deferred until nearer spring; the shoots of such plants as are intended to be grown on in the small pots should be cut to within a few eyes of where they were shortened to the spring previous, and again about the end of March, before they begin to grow, turn them out of the pots, shake three-fourths of the soil from them and replace in the same pots with new soil, and in every way treat as in the pre-

ceding summer; so managed they will last for years, flowering freely. They may during the season of active growth have manure-water given them once or twice a week, which will enable them to make stronger shoots and finer heads of flowers. Such as are intended for larger specimens should not be cut nearly so close in, the shoots may be shortened to within about 12 inches of where they were cut back to in the spring previous; if the plants have made satisfactory progress they will bear a 4 or 6-inch shift, removing a portion of the old soil; the new material should now be used in a more lumpy state than in the first potting; the after treatment through the spring and summer in other respects should be the same as the season previous. Attend to training the shoots as they progress; as the plants get strong they will make comparatively lengthened growths, which will require either the use of a wire trellis or a number of moderately strong sticks round which to train the shoots, not tying in the points too closely, or they will have an objectionably formal appearance. After flowering they will again need cutting back, wintering them as before and re-potting in the spring; they may be confined to the same pots, shaking away a portion of the exhausted soil and replacing it with new, or if they are required to be grown into large specimens they can have more root-room given them; so managed they will last for a number of years, and will be much assisted by the use of manure-water during the growing season.

This *Plumbago* is an excellent plant for training to a conservatory pillar, where if allowed to hang somewhat loosely it has a fine appearance; in such a position it may be either kept in a moderately large pot, and the soil partially renewed every spring, or it can be planted out. When it is wanted to cover a back wall or a considerable extent of rafters, the most satisfactory method will be to plant it out in a prepared border. This must have the usual sufficient drainage, and should be composed of 8 or 10 inches of good turfy loam with enough sand to keep it open; in planting see that the roots are not allowed to remain in the curved state which the pot has necessarily kept them in; when any subject of this description is turned out in an open border, and the roots let to stay in such a position they do not usually make satisfactory progress; restrict the quantity of water until the plants have commenced growing freely, after which they will require a good supply both at the roots and overhead by the syringe; attend regularly to stopping and training, especially in the first stages of growth, so as to furnish the space, regularly cutting back every winter to induce the production of young flowering shoots regularly over the whole position the plants are wanted to cover; when the soil becomes exhausted remove a few inches of the surface, each spring replacing it with new, and still further encouraging growth by the use of manure-water.

Insects.—The plant is somewhat liable to the attacks of red-spider, if not sufficiently syringed overhead, but when this is attended to regularly as advised no trouble is likely to be occasioned by it. Aphides will live upon the young shoots, and may be destroyed either by syringing with tobacco-water or fumigating. Scale sometimes affects it, and is most effectually removed by washing with a strong solution of insecticide when cut back in the winter. *T. Boies.*

SUGAR IN JAPAN.

The following mode of cultivating the Sugar-cane in Japan is given in a recent official report. The plants are raised from seed (?), and are said to attain the height of about 10 feet, and never to bear any flower. At the commencement of the cold weather small bundles of Sugar-cane roots are planted in rows, stem downward and root upwards, on a slope of about 45°. The following spring they are taken up, and about 2 inches of cane, both above and below the joint having been cut off, they are planted out in proportions of about 900 lb. weight of cane to an acre of ground. The soil is well looked after in spring, and a quantity of small holes dug here and there. Into these the lees of oil are poured, and they are then filled up with earth, in which the cane slips are planted so soon as they show signs of budding or having taken root.

As soon as planted a little liquid manure is applied. At the end of fifteen days the slips or shoots attain to a height of 7 or 8 inches, when fish manure mixed with the lees of oil is applied. In dry seasons the

ground is also watered. The plants are liable to the attacks of three kinds of insects, which do them much harm, and consequently some precaution has to be taken against their attacks. During the winter the canes that have attained the highest growth are either broken off just above the roots, or are cut with a sickle; they are then stripped of their leaves, and made up into bundles of about 80 lb. weight each. About 10,800 lb. of cane are produced on a quarter of an acre of ground, and this quantity will yield from 6 to 7 piculs of sugar. The sheds in which the cane is crushed are for the most part about 24 feet square, and in each there are three crushers worked by oxen. The teeth of the crushers are kept constantly fed with cane, about four or five being inserted at a time. A workman stands behind on the watch for any cane that may slip through the crusher without being caught in the action of the mill. The canes that have so passed are handed to a third man, who feeds the mill from the opposite side. The mill having a reverse action it thus results that not one cane is lost. The cane juice, after expression, is removed to a separate building in quantities of about 200 lb. weight at a time, and the mill is cleaned after each such removal. The syrup then goes through no less than four refining processes, and is afterwards removed to where it is to be made into sugar. The working of about 2200 lb. of cane is considered a fair day's work. The syrup is, of course, boiled, a small quantity of lime being mixed with it, which is skimmed off when at boiling-point. The syrup, if sufficiently boiled, should be clear—a thick appearance indicating that either too much or too little lime has been used.

The syrup is now placed in a tub, called by the Japanese "sameshiro-oke," in which it is allowed to settle; fresh syrup is then poured into the boilers, and boiling goes on as before. As soon as the syrup is once more at boiling point which has been already boiled is poured in and mixed with it, the white froth being skimmed off and placed in an empty tub. The syrup is now divided between the two boilers and allowed to simmer for about two hours, being constantly skimmed during this time.

In order to ascertain the amount of boiling which the syrup has undergone a Bamboo is inserted, and on withdrawing the drops are allowed to fall into a saucer containing water. If the drops congeal rapidly the fires are at once withdrawn from the boilers, the syrup promptly poured into coolers arranged in sets of four and constantly stirred; so soon as it has sufficiently cooled it is poured into tubs, one man attending to each tub. To make the very best quality of sugar a picul of ordinary sugar is divided into nine parts, and each is wrapped in a hempen cloth; they are placed in receptacles, pressed down with heavy weights, and are thus sweated for one night. On the following morning the sugar thus sweated is placed on a table and kneaded for about two hours, after which it is again wrapped in cloths and the same process gone through for three successive days and nights. On the fourth day it is placed in clean receptacles, and is now termed first quality sugar. To obtain a superfine quality the sweating and kneading is gone through for an extra day.

About 133 lb. of ordinary sugar will thus be made to yield about 50 lb. of first quality sugar; the remaining 80 lb. are, of course, not wasted, but from it are obtained about 40 lb. of a sugar known to the Japanese under a special name, and the residue also finds its way to market. The second quality is known as "ju-mat," and is made by sweating a certain quantity of coarse sugar. Sugar is generally known to the Japanese under the three headings—white, black, and candied, but the two former are again known under a variety of names. A good deal of black sugar is produced in the Loochoos, in Sakurajima, Araki, Hanaoka, and Jaramider. Any marked difference as to good or inferior kinds of black sugar depends on the quality of the cane and the skill of the workman, but the above-mentioned places have always sustained a reputation for producing the best sugars. Sugar-candy is made by boiling down a certain quantity of best quality of sugar, and adding the white of egg. Split pieces of young Bamboo about an inch in length are cut up into the syrup, which they crystallise around them; a good deal of sugar-candy is made in Osaka. Either Japan sugar cannot compete with that produced in China, or the supply is not equal to the demand, for the import of China sugar is always an important item in the import returns of the port of Kanagawa.

SADLERIA CYATHEOIDES.

LONG since known to botanists, though not indeed very familiar to those of this country, the Sadleria of the Sandwich Islands has remained an absolute stranger to our gardens until within the last year or two, when both Mr. Bull and Mr. Williams have imported living plants. It is one of the smaller of the arborescent forms, and is remarkable for its graceful habit, combined with its stout-textured fronds. Mr. Bull's figure, which we annex (fig. 123), gives a good idea of its elegant style of growth, but represents a plant not yet old enough to have formed a stem or trunk.

The Sadleria cyatheoides of Kaulfuss (Blechnum Fontainesianum of Gaudichaud, Woodwardia cyatheoides of Mettenius) forms an erect trunk-like stem of moderate thickness, and some 3 feet in height, the upper end densely packed with linear dark-coloured scales, which also surround the base of the elongated and arching stipes. The fronds are 4 to 6 feet long, with pinnae 8 to 12 inches long, and three-fourths of an inch broad, cut down to the rachis into numerous linear pinnules about half an inch long. The fructification is that of a Blechnum, that is to say, the receptacle is central and elevated, and forms a continuous line close to and on both sides the midrib of the pinnules, and on this the spore-cases are seated, covered each while young by a narrow suborbiculate indusium. The venation, however, is distinct from that of Blechnum, the veins forming a series of costal arches.

It is a fine addition to our cultivated stove Ferns, bring quite distinct in character from any other of the dwarf arborescent species hitherto known in gardens. T. M.



Home Correspondence.

Vanda teres.—We have just now in flower a plant of *Vanda teres*. The plant is about 3 feet high, and has three spikes on it, and on each spike eleven flowers. It is grown in a pot of crocks, and the stem is covered with moss to the height of 18 inches from the pot, and the longest roots down towards it. Since I covered the stem with moss I find another shoot has sprung from the part of the stem thus covered. *James Murre, Finsart Gardens, Gareloch-head, Dumfriesshire, N.B.*

The Winter Campaign.—In 1875 and 1876 I set you a list of the gains and losses of the previous winters. I now send a similar list for the winter of 1876-7, but omitting the losses, which are only of interest to myself, and of which the record is of little value to others, for the death of a single plant in a particular locality is no certain proof of its tenderness, because the death may arise from many other causes; but the survival of a single plant is so far a proof of its hardiness that it is an encouragement to others to try it elsewhere. In the annexed list the plants have been tried by me for the first time, and so no mention is made of those named in the former lists, and they have all been in the open ground without any protection:—

<i>Drecaea australis</i>	<i>Polecarpus chilensis</i>
<i>Abutilon Thompsonii</i>	<i>Heliabotryum Fusiana</i>
<i>Sacca Achras</i>	<i>Mesembryanthemum uncinatum</i>
<i>Trachelospermum jasminoides</i>	<i>Laugeria rosea</i>
<i>Chrysanthemum</i>	<i>Trichelia corallium</i>
<i>Aster argophyllus</i>	<i>Mussaenda</i>
<i>Callistemon linearis</i>	<i>Mussaenda</i>
<i>C. lanceolatus</i>	<i>Fecuna mirabilis</i>
<i>C. viridiflorus</i>	<i>Echeandria ternifolia</i>
<i>C. ovata</i>	<i>Phalagium nepalense</i>
<i>C. ovata</i>	<i>Bomarea Caldasiana</i>
<i>Amica Zeyheri</i>	<i>Fuchsia splendens</i>
<i>Gardenia ovata</i>	<i>Asparagus umbellatus</i>
<i>Carruthania australis</i>	<i>Prunella sikkimensis</i>
<i>Erigeron setosus</i>	<i>Agave brachystachya</i>
<i>Paniculatum</i>	<i>Ruellia</i>
<i>Amica</i>	<i>Crataegus aureum</i>
<i>Deeringia coloriflora variegata</i>	<i>Struthiopteris picta</i>
<i>Leptospermum longimanum</i>	<i>Dicksonia</i>
<i>Hippocrepis</i>	<i>Myrsine</i>
<i>hispidifolium</i>	<i>Athyrium Geranioidum japonicum</i>

Henry N. Ellacombe, Bilton Vicarage, Gloucestershire.

Bedding Lobelias.—Early in the spring a correspondent made inquiry as to the best bedding Lobelia.

In response to that I gave a favourable opinion of Blue Beauty, a kind which has been largely used in the Royal Horticultural Gardens, at the Crystal Palace, and at Heckfield, with great satisfaction. Others, however, had their pets, and whilst one vaunted the merits of Elbor several exalted Emperor William to a seventh heaven of glory. Feeling exceedingly humbled I at once obtained a plant of the Warrior King from one of your correspondents, and have grown them until they are now fairly in bloom. Now that I can test the merits of Blue Beauty with those of the Emperor, I find that ordinary observers would at once class the former as one of the same kind. This, however, would be wrong, as on a close examination I find that the flowers of the latter are just a shade darker than are those of the former, but what is gained in depth of hue is lost in absence of that brightness which characterises Blue Beauty. Then the flowers are of the same size, and with both well borne on the top of the plants, but Blue Beauty does appear to carry a denser top, and consequently more flower. However, this may arise from the fact that my plants of this kind were propagated by division, whilst those of Emperor William were from cuttings. In the hope that others may be of the same kind, I send on the 19th similar plants of other good kinds for comparison. I wish to add that I purpose staging, for the opinion of the Floral Committee, a few established plants of Blue Beauty in 48's—the regular market pot—to show not only the value for bedding purposes, but also its excellent qualities for market cultivation. *Alex. Dean, Belfry, W.*

Abies Menziesii.—The question with me is not whether A. Engelmanni is the same as the plant spoken of by M. André as *Menziesii Paryiana*—that I leave with M. Origies to settle when it suits him. Had he in his first article compared the buds of A. Menziesii Paryiana with those of Engelmanni, I would not have raised the question; but as it was not the old-fashioned normal type of Menziesii that he compared with Engelmanni, and gave to the former the characters of the latter, and knowing that his remarks affected the non-botanical readers of your journal more than they did the botanical readers—botanists generally being independent of imperfect descriptions of well-known Pines—I was induced to make an effort to correct erroneous impressions. *G. Syme.* [All these plants are different enough as growing at Knapp Hill (see p. 758). Eds.]

Helix pomatia (p. 692).—This snail is very abundant in the neighbourhood of Leatherhead, Surrey, almost taking the place of the *Helix aspersa*. It is sparingly found near Gloucester (a Roman station), and, as your correspondent mentions, at Cirencester and Witcombe, but not generally through the county, even where the soil is calcareous. As mentioned by Mr. Gwyn Jeffreys (in *British Conchology*, vol. 1, p. 179), in a manner of by-eliminating over the top. These snails are infatigable in their appetite, and associate together. Each snail then excavates with its large and muscular foot a hole in the ground, just large enough to contain the shell; this it roofs in and lines with earth and dead leaves, making with its slime a kind of plaster, and smoothing over the inner surface of its winter domicile. Having accomplished this it closes the mouth of the shell with a thick calcareous lid, the substance of which, when poured out from the edges of the mantle, resembles liquid plaster of Paris. It then withdraws its body far into the empty space with several layers in succession of a fine membrane or film, in order the more completely to exclude the cold air. In this snug receptacle it remains in a torpid state until the return of spring. . . . "It then loosens and casts aside its winter bands, and resumes its former life." *G. E. O.*

Orchard-houses.—You ask for information as to the effect of the frost in orchard-houses. The May frost destroyed the Apricots with me, but the Peaches which did not open until after the orchard had failed equally. For eighteen years of my first house-experience the crops have failed now for the first time. The Peach blossom never fails in appearance, but scarcely any fruit has set. It fell off when about the size of a Pea. The house is not heated at all; it is only a glass shed, but it has always before yielded abundantly, even when the crops out-of-doors have failed. My fruit is gone. Flams do not average a dozen per tree. There are no Pears. Half the Gooseberries have dropped off, and not more than half of the berries on each bunch of Currants have formed. In nearly fifty years of my garden experience I do not remember so general a failure of crops. Strange to say, the Apples have done well. I am afraid that they were not subjected to no frost at all. Strawberries promise well, but Raspberries look sickly. I am inclined to think that the failure is not due to the frost, but to some more general cause, for the protected trees and bushes are not better furnished with fruit than the unprotected, and those that did not open till

long after the frost are as deficient as those subjected to that wonderful May cold; yet never was bloom more abundant, never was there a better promise. Is this universal weakness of the blossoms of this year due to the wet weather, or to the lowering of vitality by the late frosts? or is there some unknown electrical or other meteorological cause? The subject well deserves investigation. It could scarcely be the wet winter, for orchard-houses trees were not exposed to the deluges of rain; nor can the frost have done it at all, for protected fruits have shared the same fate as the unprotected. Can the meteorologists discover any special features of the season, electrical or otherwise, as having been exhibited since the summer of last year? *Edward W. Cox, Mount Mount, Mill Hill, N.W., June 9.*

Ivy on Garden Walls, &c.—At the present time I do not know of any prettier hardy plant foliage than that of the Golden Ivy, patches of which introduced amongst the green-leaved varieties have a most pleasing effect. Another point in the use of Ivy for house coverings which has recently come under my

Dunkeld and Blair Athole, published without the author's name in 1823, and said to be by the same writer. Dr. MacCulloch personally examined the flora of the district. Have other investigators examined his list? It has been copied and re-copied, not always with acknowledgment. *H. Evershed.*

Darlingtonia californica.—Many dozens of this interesting Pitcher-plant have flourished finely in a cold frame during the past winter, and one of them is now in flower. We believe the plant is quite hardy. *James Backhouse & Son, York.*

The Wreck of the Fruit Crop of 1877.—This is now complete. To the loss of Peaches, Nectarines, Apricots, Pears, Plums, have now been added that of Apples, the last, heaviest, and worst loss of all. It is rather difficult also to account for the latter. The fact has already been noticed that the Apple blossom was much later and also much paler than usual. The former was a hopeful sign; lateness, as a rule, denotes safety, and it was earnestly hoped it might have proved so this season. The paleness was no

spring was characterised by a profusion of bloom and a good set of all fruits but Apples and Peaches. Nectarines, Apricots, Pears set exceptionally well. Plums also flowered most profusely, but set not at all, or fell off immediately afterwards. Apples, again, did not flower so profusely or robustly as usual. The pale colour, however, was probably far more owing to the climate of the May of 1877 than to any immaturity handed down from the autumn of 1876. We have been accustomed to think the closed blossoms of fruit-buds safe: perhaps the experience of this year will induce us to modify this opinion. It is more than probable that the severe frosts during the early part of May crippled the Apple blossoms in bud. Hence probably the pale colour and the failure of the crop. If not, we must look for the cause of failure in the harsh, cold, and dry air that prevailed through May and the early part of June. No rain, no genial atmosphere, sharp, keen, dry winds, and the whole of the Apple crop has withered up and perished. Would overhead syringing have saved it, or the creation by artificial means of a genial atmosphere by surface waterings? Court-pendu Plat and the Red Beeching are

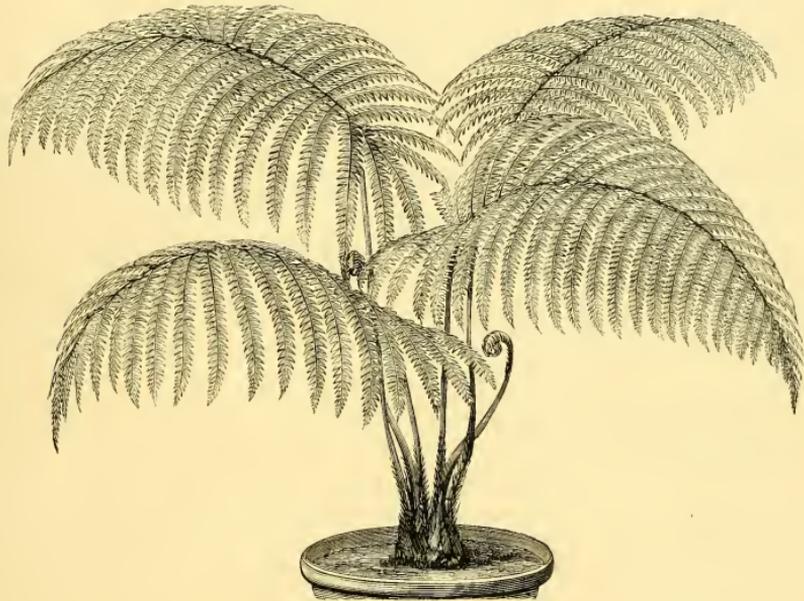


FIG. 123.—SADLERIA CYATHEOIDES.

notice is the use of the large-leaved common sort for covering villas. I recently saw an instance in which this Ivy was so healthful upon a house that it seemed to be out of all proportion for the place: the coat of leaves was so thick that they made the covering look quite heavy, and had the effect of narrowing the windows as well. If some of the finer-leaved kinds had been used for this purpose, instead of the common sort, it would have been much better, and less attention would be required for trimming. At least some of the smaller-leaved varieties, such as chrysoarpa and palmata, grow fast, close to the wall, and are well-adapted for covering villas or for use in such places where a thick coat of the common sort might be too heavy. *R. MacCallum.* [The varieties known in gardens as pedata and himalaica are charming varieties for small residences. EDs.]

Blair Athole Plants.—Your correspondent, Mr. H. Harpur-Crew, is correct, no doubt, in his remark at p. 729 that *Athericum emulicatum* is a Cape plant. My list of the plants of Ben-y-Ghlo and the other mountains of Glen Tilt was taken, with due acknowledgment, from Dr. John MacCulloch's *Tour in the Western Highlands*, 1824, or from an account of

doubt a symbol of weakness, and the paleness mastered the lateness—perhaps that is the best way of putting it. At all events, the most serious matter is that the Apple crop has failed. The failure could hardly be the result of frost during the blooming period, for since about the middle of May we have had no frost of sufficient severity to destroy Apple blossoms. Was the bloom thus destroyed in an embryonic or unopened state? This is unusual. Closed blossoms of Apples, Pears, Peaches, Apricots, &c., are generally held to be frost-proof. The blooms also, though pale, seemed perfect. On examination they showed no flaw, revealed no sign of imperfection, they simply have not set, and are now fallen and withered by handfult. Why? Is it the fault in the bloom or in the climatal conditions to which the bloom has been exposed? There are not a few who contend that it is in the former. The wood, and consequently the bloom-buds, were immature and stripe last autumn, they assert, and consequently there is no fruit this spring or summer-tide. This is a short, simple explanation of a most serious fact, but it seems to have little solid basis to rest upon. The fruits of immaturity are mostly imperfect, a scant bloom or setting of fruit. Now this

now (June 12) in full flower. Surely these will escape. Also Walnuts and Hollies are only now in full flower. These will surely also set and crop, especially as we were favoured from the west with a thunderstorm and a heavy shower about 3 A.M. this morning. But, broadly stated, the fruit crop of the year is utterly wrecked and ruined, and the Apples, which hardly flowered until the beginning of June, have followed Peaches, Nectarines, Apricots, Plums, Pears, to utter destruction. This, in fact, will be one of the worst fruit crops we have had for years. *D. T. Fish.*

Parasitical Plants.—*Lathraea Squamaria.*—This curious parasite was sown some years ago at the base of an old Holly; last year it produced sixty-three stems—some of them becoming to inches high—of its singular looking, naked, purplish stalks, and pale yellowish flowers. The late frost of this spring "cut" many of the stems, so that only about a dozen have developed. *Orobancha Helvola.*—We have been singularly (?) fortunate in "parasitising" this remarkable parasite to grow and flourish, after many vain attempts. Last summer we had twelve to twenty stems of it on Ivy, the latter creeping upon a steep

sunny bank. One new stem is already developed, and, as the species is perennial, we hope it may be permanently established. *James Backhouse & Son.*

The Weather and the Fruit Crops.—As in many other localities, vegetation in this place is fall three weeks later than usual, owing to the cold, dry, easterly wind, which prevailed in April and May. Under other circumstances this might have proved a disadvantage, with the long continued drought which has been quite otherwise favourable to the vegetable to survive the severe ordeal it had to pass through. And now when we look around as to the wide extent of woodland scenery, nothing is to be seen to mar the beauty of the landscape in the shape of lighted leaves. With the absence of grass and other plants in herbage, wild flowers have been seen in great profusion, spreading out far and wide, in striking masses of colour. I remember the late Sir Edwin Landseer once saying to me, that one bold stroke of colour, when properly placed, was more effective than a number of small touches. It may well be said of the earth at this season of the year, that it yields its increase, for we have wild flowers following one another in succession—*Primroses, Anemone nemorosa, Oxalis Acetosella, Viola canina* and *Scilla non-scripta*; the latter forms perfect sheets of blue colour, running in and out underneath the forest trees—

"And Daisies and Buttercups gladden the sight,
Like treasures of silver and gold."

Of bush fruits, the Gooseberry is the only kind that is rather a thin crop. Plums on standards and against the walls are safe, as are the Peas and Cherries. Apricots, too, which have been protected during the frost with thick canvas, are well formed and trees healthy. Apples are in blossom and promise well. Vegetables in the kitchen garden look well though late. The hybrid *Rhododendron* is in flower and the wall flowers are in full, flowering in great perfection, and so is the *R. ponticum*, and also our collection of *Azaleas*. *John Cole, Inverary.*

Paraffin and Seed Protection.—I tried the experiment of soaking Peas in paraffin for four hours, and I feel certain every Pea germinated. I have six rows of them now ready for picking. *Y. Osborne, Duggess, Aylesbury.*

For several years I have not been able to grow early Radishes or raise plants of Broccoli, Cabbage, and all other kinds of greens, owing to the destruction by small birds, such as greenfinches, &c. This season I moistened the seed with paraffin, and have an abundant supply. *H. Gibbons, The Nursery, Folkestone.*

Campanula Allioni, now flowering in the York nurseries, promises to be one of the best of the genus for rockwork. It spreads rapidly from underground stolons, and forms little erect rosettes, 2 inches high, densely clustered. The flowers are very large, almost exactly resembling erect purple Canterbury bells. They cover some of the banks and ledges of their plantations with "almost solid sheets of bloom." *James Backhouse & Son.*

The Caper Spurge, Euphorbia Lathyris.—Will you be so good as to inform me if this plant is rare [no], for several specimens suddenly appeared in our garden this spring, and all save one, which is now in bloom, got weeded away. It is a very graceful plant, but of rather a suspicious character, is it not? [Yes.] At any rate it belongs to a dangerous order, and although one may take, under medical advice, the products of some of the *Euphorbiaceae*, I should not like to venture on *Capers* grown in our garden for this plant. *Helen E. Watney.* [See Lindley's *Vegetable Kingdom* for a brief account of the properties of this plant. Eds.]

Gardening in the North of England.—After all the accounts I read of the scarcity of wall-fruits I am agreeably surprised to find that one of our Peach trees has set a crop; indeed, the gardener talks of thinning. It was covered with a wool net, and has the same protection in the shape of Hally bushes planted on each side of it—certainly a choice spot, for the Peach and Nectarine trees in the walled garden have not a vestige of fruit on them. I imagine the bees have kept very close quarters this cold spring; ours never made their appearance until June 4, when they came out uncommonly strong, and soon attracted swarming. Many years ago they located themselves in the ceiling of the house, and, never having been molested, I suppose they have plenty of food, without venturing abroad in doubtful weather. Although 575 feet sea level, we have very promising prospects in a *Maréchal Niel* Rose, the open ground, and a *Tropæolum speciosum* has not died down during the winter, and is now in full leaf. Being on the limestone rock the garden is very dry, and this may partly account for plants thriving here which do not generally survive so far north. The moist damp

spring has well suited newly planted trees and shrubs. Out of 2000 planted last autumn we have not come across one dead, and some, such as *Myrica*, are getting very encouraging to all lovers of tree culture. *E. O. M., East Leyton Hall, London.*

Reports of Societies.

Royal Botanic, June 13.—With a larger and costlier exhibition than in the last, a fine afternoon, and a very much larger attendance of visitors than usual, the prospect of the Royal Botanic Society looked brighter on Wednesday last than it has done for a long time back. As regards the usual order of specimen plants and such-like subjects as are generally shown at these exhibitions, there was a greater number than usual, the long corridor leading to the conservatory having to be requisitioned for the placing of many subjects that could not be squeezed into the large marquee. Of *Orchids* there was the largest and finest display that has come under our notice here for several years past; they were indeed a grand feature in the exhibition. The miscellaneous groups of new and rare plants contributed by the leading nurserymen also formed a bright and interesting feature; and the two slopes devoted to show and fancy *Pelargoniums* were wonderfully well filled and exceedingly gay. The weakest point in the show was undoubtedly the fruit department, which was—as has been the case during the past few years—very meagrely represented. This is the more to be regretted, as undoubtedly fine displays have been made here, and could be made again were more liberal prizes offered, and a premium of £1000 no rival in a condition to compete with it at this season. The display of cut flowers was, excepting as to cut Roses, exceedingly interesting; and in addition to all these there was the attraction provided by Mr. Anthony Waterer in the form of a magnificent display of plants in the American conservatory, which, by-the-by, has been remodelled, and in its altered form reflects much credit upon those who carried out the alterations. The general effect has been considerably heightened, and the comfort of the visitors much enhanced by means of reduced gradients and improved drainage, the latter being so arranged as to spoil the whole show, the gutter being brought down so low as to cut the view in two.

STOVE AND GREENHOUSE FLOWERING PLANTS were contributed in good numbers, but were scarcely so fresh and interesting as on the last occasion. In the open class for twelve Messrs. T. Jackson & Son came in 1st, with a fine group, consisting of *Erica eximia* superba, about 4 feet over and superbly flowered; large and well bloomed specimens of *Cleodendron* and *Phlox* in good bloom. *Bougainvillea glabra* Aphelix macrantha purpurea, and smaller but nicely done examples of *Statis profusa*, *Erica Cavendishiana*, *Dracophyllum gracile*, *Pimelea mirabilis*, and *Phenacoma prolifera* Barnesii. Mr. D. Donald, gr. to J. G. Barclay, Esq., Knott's Green, Leyton, was 2d, with a fine specimen of *Statis profusa* garden. Mr. James Child, gr. to Mrs. T. Roberts, Garbrand Hall, Ewell, and Mr. G. Wheeler, gr. to Sir Francis Goldsmid, Bart., were bracketed equal 3d. The best six contributed to the amateurs' class came from Mr. James Child, who had a large and magnificently flowered *Erica depressa*, a fine *Azalea Model*, in a very fresh and good condition; a large *Aphelix*, and *Stephanotis floribunda*, &c. The 2d award went to Mr. J. Hinnell, gr. to F. A. Davis, Esq., Angelsea House, Subitton, who had well-flowered *Erica* and fresh specimens of *Erica ventricosa* marginata, *Erica Cavendishiana*, *Statis profusa*, *Dracophyllum talipatira*, *Aphelix macrantha purpurea*, and *Dracophyllum gracile*. Mr. G. Legg, gr. to S. A. Kalli, Esq., Cleveland House, Clapham Park, was 3d. The best nurseryman's half dozen came from Mr. B. Williams, who had a fine lot of good specimens, including *Erica Cavendishiana*, *Statis profusa*, *Isora coccinea* and *I. Prince of Orange*, both well-flowered; *Allamanda grandiflora*, and *Aphelix macrantha purpurea*. The next best were contributed by Messrs. T. Jackson & Son, large and well-flowered examples of almost similar subjects. 3d, Mr. J. Reed, Rosnell Park Nursery, Norwood Road, who had a fine lot of 12-inch pots, intended no doubt to bring out plants of somewhat recent introduction, failed entirely in that respect, the plants staged being ill-specimens of, to us, too familiar subjects. The prizes went to Messrs. T. Jackson & Son, Mr. James Child, and Mr. G. Wheeler, in the order named.

ORCHIDS.—As before remarked, the bank usually devoted to these most attractive subjects was more than usually well filled. The amateurs' class for twelve, in which an uncommonly good specimen fell to Mr. Denning, gr. to Lord Londesborough, who had a very fine *Angolia Clowesii*, *Cattleya lobata* with ten spikes, *Laelia purpurata* with five, a nice *Cattleya Mendelii*, *Odontoglossum cirrhosum*, with three spikes; and O. Alexandria, with five;

Laelia cinabarinna, and a very good piece of *Dendrobium Bensonii*, *Odontoglossum vexillarium*, a grand plant with eleven spikes; *Vanda Denisonii*, with four; and *Cattleya nana*, with four. 2d, Mr. J. C. Spyers, Sir Trevor Lawrence's garden, was a good 2d, with a fine mass of *Odontoglossum Phalenopsis*, *Cattleya Warnerii*, with thirteen beautifully coloured flowers; *Dendrobium formosum giganteum*, *Odontoglossum Veitchii*, *Masdevallia Hartiana* violacea, with about two dozen flowers; and the showy *Calanthe Deminii*, with a dozen good spikes; a very good *Dendrobium Devonianum*, *Laelia purpurata* and *L. majalis*, and *Odontoglossum cirrhosum*, &c. Mr. F. Rutland, gr. to the Duke of Richmond and Gordon, Grosvenor, was a very good 3d, and an extra prize was awarded to Mr. G. Wheeler, A. Philbrick, Esq., Avenue Road, Regent's Park, who had, amongst other good plants, one of *Odontoglossum vexillarium* with five fine spikes. In the corresponding class for nurserymen, Mr. B. S. Williams was 1st and took the 1st prize, showing amongst others a fine mass of *Cypridium barbatum* superbum; *Orchis foliosa*, with fourteen good spikes; *Vanda tricolor superba*, *Dendrobium formosum giganteum*, *Cattleya Mossii*, a fine variety; *Odontoglossum cirrhosum*, &c. The 2d prize went to Messrs. F. Jackson & Son, who had a very good specimen of *Dendrobium moschatum*. The trade class for six also found Mr. Williams to the front, with a group which included *Vanda tricolor formosa*, with two good spikes; *Cypridium barbatum grandiflorum*, *Cattleya Mossii* superba, with beautifully flowered; *Odontoglossum vexillarium*, with thirty-nine grand flowers in five spikes; *Epidendrum vitellinum majus*, &c. 2d in this class came Mr. E. Morse, of Epson, who had a *Saccolabium Blumei majus*, with a grand spike of flowers; and two fine *Aerides*, &c. The amateurs' class for six was also a very good one. Mr. H. S. James Douglas came in 1st, with a capital lot of plants, which consisted of *Dendrobium formosum giganteum*, with four spikes; *Odontoglossum crispum*, with three; a good mass of *Cypridium barbatum grandiflorum*, *Masdevallia Hartiana*, with several very fine blossoms; *Dendrobium nobile*, and *Cattleya Mossii superba*. Mr. W. P. Roberts, gr. to W. Terry, Esq., Peterborough House, Fulham, was a very good 2d, showing *Vanda teres*, with ten grand flowers; *Cattleya Mossii*, with sixteen; *Cypridium barbatum nigrum*, very good; *Cattleya Mendelii*, *Saccolabium plicatum*, and *Masdevallia*, &c. The 3d prize went to Mr. J. Hill, gr. The Poles, Ware, Herts, who had in his group fine examples of *Ceoloyne Lowii*, *Aerides Fieldingii*, and *Cypridium caudatum*, &c. Mr. F. Rutland also contributed a nice group.

FERNS AND FINE-FOLIAGED PLANTS were particularly well shown, and, as usual, were most effective in the position assigned to them. The strongest class was the amateurs' for six fine-foliaged plants, in which the competition was very keen. Between the groups contributed by Mr. Legg, Mr. C. Rann, gr. to J. Warren, Esq., there was not a pin to choose, so they were both, and equal 1st prizes were awarded. Mr. Legg had that remarkably handsome *Stevensonia grandifolia* that has been seen here before, and also the very fine *Cycas revoluta*, as well as grand examples of *Crotos Weismanni* and variegata, a very fine *Genoma pumila*, and *Alcaesia macrolobis variegata*. Mr. Rann had a very fine *Crotos interruptus*, a handsome *Cycas revoluta*, equally good examples of *Zamia Lehmanni*, *Arca sapida*, *Dasylium glauca*, and an exceedingly good specimen of *Cyathea*, and a handsome *Chamaecyparis*, which 2d honours were awarded to. Mr. Legg had a fine lot, with a couple of good *Crotos*, and a nice young *Cocos Weddelliana*, &c.; 3d, Mr. James Child, whose most noteworthy subjects were first-rate plants of *Genoma Vercheffii*, *Crotos Weismanni*, and *Phytolacca*. Mr. F. Hill, gr. to H. Taylor, Esq., Avenue Road, was also a very excellent group. Mr. B. S. Williams and Mr. J. H. Ley had the competition to themselves in the nurserymen's class, and took the prizes in the order named—the first mentioned having a very large *Cycas*, *Cyathea*, a handsome *Chamaecyparis*, *Crotos pictum*, *Dasylium acrotichum*, *Pandanus Veitchii*, and a very brightly coloured *Crotos Weismanni*. Mr. Ley's collection was also a very effective one. Mr. William Bull came in 1st for twelve *Cordylines* and such young, vigorous, and not a cleanly grown specimen. Mr. J. H. Ley, an amateur, Baptistis, Shepherdii, anabilis, Chelsoni, Regina, Rex, Goldiana—a remarkably telling group. Mr. G. Legg was a very good 2d, having very fine examples of the most popular varieties of the ferns, and the 3d prize was won by Mr. J. H. Ley, and included *Latania borbonica*, *Caryum megarum*, *Eterpe edle*, *Genoma Schottiana*, and *Chamaecyparis tomentosa*. The 2d prize went to Mr. G. Legg, and the 3d to Mr. G. Wheeler. The nurserymen's class for half-a-dozen Ferns, in which Mr. B. S. Williams was 1st and Mr. J. H.

Ley 2d, contained nothing remarkable, but the corresponding class for amateurs was a very good one. Mr. C. Kinn, gr. to J. Warren, was 1st, with a large and handsome specimen of *Asphodela sturtii*, *Dicksonia squarrosa*, *Cyathes Dregei*, *C. medullaris*, *C. dealbata*, and *Dicksonia antarctica*. Mr. D. Donald was a good 2d, and Mr. James Child a close 3d. In Mr. Donald's group was a magnificent specimen of *Asphodela sturtii*, about the best of the kind, a specimen of *Adiantum cardiophyllum*, *Dicksonia antarctica*, &c.

ROSES, HEATHS, AND PELARGONIUMS.—Roses in pots were shown only by Messrs. Paul & Son, Cheshunt, who contributed to the classes for nine and six a capital lot of plants; but, of course, as a consequence of the lateness of the season, it was not the finest that the Messrs. Paul & Son have shown this season. The 1st prizes in both instances were most worthily awarded. The Heaths were also not so good as on the last occasion. Amongst amateurs for six, Mr. C. Legg was 1st, with medium-sized and very fresh examples of *E. obtata*, *E. jubata rubra*, *E. ampullacea obtata*, *E. Candolleana*, *E. Fast. ni*; and in the corresponding class for nurserymen Messrs. T. Jackson & Son were 1st with fine specimens, fresh and well-flowered, of *E. tricolor dumosa*, *E. tricolor rubra*, *E. vandelliana*, *E. ferriana*, *Perlagonia major*, *E. depressa*, &c. Show and fancy Pelargoniums were contributed in considerable numbers, and of excellent quality. Mr. James, gr. to W. F. Watson, Esq., was the most successful exhibitor among amateurs, taking the 1st prizes in the open class for nine and the amateurs' class for six, and 2d for six fancies. Amongst his most noticeable examples were thoroughly well flowered plants of such fine varieties as *Mary Hoyle*, *Princess of Denmark*, *Pericles*, *Prince Leopold*, *Statenam*, *Snooklike*, *Belle Bell*, *Rehoboths*, *Pompey*, *King Charles* and *Victory*. In the open class Mr. Turner was a good 2d, and Messrs. Dobson & Son 3d. In the nurserymen's class for six Mr. Turner was 1st and Messrs. Dobson & Son 2d; and Mr. Turner was again 1st amongst nurserymen for six, showing the best in both instances. The best half-dozen fancies shown by an amateur came from Mr. Henry King, gr. to R. Tew, Esq., *Wolsey Grange*, Esher, who had a very fine lot of plants, full of flower and very bright. The varieties shown were *Fanny Gair*, *Tormentor*, *Mr. Alfred Wight*, *Roi des Fantaisies*, and *Vivandaise*. Mr. J. W. King, gr. to Mrs. Hodgson, *The Elms*, Hampstead, was a good 3d. For six Zonal Pelargoniums in flower Mr. J. Catlin, gr. to Mrs. Lermittie, Finchley, came in 1st with a grand lot of plants, about 4 feet over, and perfect in development of flowers and foliage; and Mr. King was 2d with smaller but exceedingly well finished specimens.

CUT FLOWERS.—Roses should have formed the principal feature in this department; but, as a result of the lateness of the season, they were shown only in small numbers, and nothing remarkable as to quality. The best in the class for six came from Mr. James Chad, gr. to Sir F. Bathurst, Clarendon Park, Salisbury, who also secured the 1st prize, with a dozen blooms of the white *Rose La Marque*, and the 1st prize for a basket of *Marchal Niel*, as well as the highest award for a basket of *Roses*, mixed colours. Mr. W. P. Roberts, gr. to W. Terry, Esq., was the only exhibitor of twenty-four trusses of *Pyrethrams*, and the 1st prize was worthily awarded. The class for twenty-four trusses of hardy herbaceous flowers was a most interesting one, very good things being shown that are not admissible in the open class. Mr. James Douglas was 1st, with a charming lot of flowers, including his new hybrid *Aquilegas*, fine spikes of the showy *Scilla peruviana*, *Spiraea palmata*, *Orethia foliosa*, *Statice armenia grandiflora*, *Delityra spectabilis*, *Aquilegia coracua*, &c. Mr. E. Morse, of Epsom, was 2d, and Mr. Robert and Mr. G. Wheeler each 3d, both showing exceedingly well. Mr. Douglas was also well 1st in the corresponding class for stove and greenhouse flowers, showing some fine *Orethids*, such as *Odontopogon hastulatum*, *O. crispum*, *Asclepias tuberosa*, *Asplenium Major*, *Dendrobium nobile*, &c. *Ericas*, *Bougainvilleas*, *Ixoras*, *Aphelaxis*, and *Arthurian Scherzerianum*, &c. The 2d prize went to Mr. James Bolton, who had amongst other fine things some grand specimens of the same *Anthurium*, *Clorodendron fallax*, *Oncidium variegatum*, *Gandaria*, and *Begonia*, &c. Mr. W. Bones was a good 3d, and an extra prize was awarded to Mr. E. Morse for a nice lot. A most interesting class was that for a "group, basket or bouquet of wild flowers, each collection from a definite area of 5 miles radius around any parish church." The 1st prize was collected from the garden of Mr. J. Green, Poles, Ware, was a most commendable one, the number of plants being somewhat extensive, and each amply represented, tastefully set up and very neatly labelled with the common and scientific names. They were collected within the prescribed area around the parish church of Thunbridge, Herts. The 2d prize

went to Mr. J. Chad, and an extra to Mrs. Soder, Weald Hall Cottage, Brentwood.

NEW PLANTS were largely and most admirably represented by choice groups from Messrs. Veitch & Sons, Mr. William Ball, Mr. B. S. Williams, Messrs. Rollison & Sons, Messrs. J. Laing & Co., and others, and the following Antiarum, *Antiarum* were awarded:—To Messrs. Veitch & Sons, for *Rhododendron Maiden's Blush*, *Acalypha Macraefcana*, *Crataegina*, *C. hybridus*, *Gymnocarpon Mäleri*, *Pteris eniformis variegata*, *Anthurium Varocarpianum*, *A. Veitchii*, *Dicksonia Bertiana*, *Alpinia glazianiana*, and *Ardisia inaequalis*; to Mr. William Ball, for *Coleus pictus*, *Araucaria excelsa albopuncta*, *Zamia Roezlii*, *Cycas media*, *Diefenbachia chloensis*, *Cratium Bismarckii*, *Ardisia ornata*, *Cratium splendens*, *Cyathes Dregei*, *Lonicera*, *Balgates*, *Cycas media cristata*, and *Antrodia glaucocaulis* variegata roseum; and to Messrs. J. Laing & Co., for *Begonia Gloire de Nancy*.

FLORISTS' FLOWERS, especially Pelargoniums, were also well represented, and Floral Certificates of Merit were awarded.—To Mr. Turner, for show Pelargoniums *Venus*, with a small purple spot on each petal; *Silvio*, a fine bright scarlet, with almost black blotches; *Henry King* (fancy), very dark rose, shaded with pale lilac; and Mrs. Pope (fancy), white, blotched with magenta. To J. W. King, gr. to Messrs. Clever Manor, Windsor, for show Pelargonium *Toby*, a rich blood-red, with a dark maroon blotch. To the Rev. A. Matthews, Gurney, Leicestershire, for show Pelargonium *Bertie*, a bright rose pink, with very dark upper petals. To Mr. T. S. Ware, Tottenham, for one of the best *Veronica* named *Godwin*, of a bluish purple tinge, and good in form. And to Mr. James Douglas, for his hybrid *Aquilegas*, *hybrida coracua* and *hybrida californica*.

FRUIT.—In this department the display was a fair one for "the Park," as compared with recent exhibitions, but nothing like what we used to see here. Of the two collections of nine dishes the best came from Mr. Miles, gr. to Lord Carrington, Wycombe Abbey, who staged five Queen Fines and Golden Grapes, Foster's Seedling and Black Hamburg Grapes, large and well-coloured *Violette Hätive Penches*, and *Elmge Nectarines*, a handsome fruit of Cox's Golden Gem Melon, Sir Charles Napier Strawberries, *Brown Turkey Figs*, and a splendid dish of Black *Circassian Grapes*, *Black Hamburghs*, gr. to Mr. Miles, gr. to Messrs. Havering Park, Romford, took the 2d prize, a fairly good collection, but wanting in variety. Only two pairs of Queen Pines were staged, and the prizes went to Mr. J. Akehurst, gr. to S. Copestake, Esq., *The Grove*, Kenilworth Town, and Mr. F. Rutland, gr. to the Duke of Bedford, *Greenham* and *Godwin*, in the order named. Those which took the highest award would weigh about 4 lb., and the next a trifle under. The prizes for a single Queen went to Mr. Douglas, gr. to F. Whitburn, Esq., *Loxford Hall*, Horn, Mr. Rutland, and Mr. Akehurst; and in the class for a pair of Queen Pines Mr. Miles took the chief award with a very good *Charlotte Rothschild*. Of baskets of 12 lb. of black Grapes, half-a-dozen were staged, and the best were contributed by Mr. James Douglas, who had a fine and excellently coloured sample of Black *Hamburghs*. The next best also a fine sample, came from Mr. P. S. Kay, of Finchley; and Mr. P. Edwards, gr. to Mrs. Tristram, *Fowley Liphook*, Hants, was a very good 3d. The other three samples were also good and well-coloured.

In the corresponding class for white Grapes there were only four competitors, but all their staged very excellent samples for the season. Mr. G. Gimmet, gr. to J. Wilmot, Esq., *Iseworth*, was 1st, Mr. Douglas 2d, and Mr. W. Robins, gr. to C. D. Lee, Esq., *Hartwell House*, Aylesbury, and Mr. F. Feist, gr. to R. G. Ashton, Esq., *Bishopsgate House*, *Sixden*, Luton, were 3d and 4th. The best of the Muscat of Alexandria. The Loxford grower had the Canon Hall Muscat in fine condition, but scarcely so ripe as his more successful rival. Mr. W. Bones sent the best dish of Black *Hamburghs*, a very nice sample in bunch, berry, and colour, but not large. The next award went to Mr. Sowerby, gr. to the Earl of Macclesfield, *Shirburn Castle*, Oxon, and the 3d to Mr. Bolton, gr. to W. Spottiswoode, Esq., *Combe Bank*, Sevenoaks. The last-named exhibitor came in 1st in the class for 12 bunches of black Grapes, with a good sample of *Black Hamburghs*, and three nice bunches of *Madresfield Court* won the 2d prize for Mr. Wilmot's gardener, who also secured the highest award in the next class, for *Muscat of Alexandria Grapes*, with a very good dish; Mr. P. Edwards was 2d with very nice bunches, and Mr. W. Robins was 3d. In the any other white variety class, Mr. Douglas came in a good 1st, with a capital dish of *Blackland Sweetwater*. Mr. Sowerby was 2d with a nice dish of *Foster's Seedling*; and Mr. C. W. Aldrich, *Lang Lane*, South Lambeth, was 3d, with small bunches of *Blackland Sweetwater*, "grown

within 11 mile of Charing Cross," if there is anything in that. Of Peaches there was only half-a-dozen dishes. Mr. Robert Sowerby took the 1st prize with fine specimens of *Royal George* and *Alexandra Noblesse*; Mr. G. Cornhill, gr. to J. S. Virtue, Esq., *Outlands Park*, the 2d; and Mr. W. Robins, 3d, with the same varieties. Nectarines were represented by eight dishes, all of which may be classed as good. Very fine specimens of *Royal George* were shown by Mr. Halliday, gr. to J. Norris, Esq., *Castle Hill*, Bletchingley, came in 1st; *Violette Hätive* and *Elmge*, from Mr. K. Sowerby, 2d; and *Elmge* and *Pitman's Orange*, from Mr. G. Cornhill, and *Elmge* and *Violette Hätive*, from Mr. Miles, were placed equal 3d. The best of four plants of *Melons* came from Mr. Gilbert, gr. to the Marquis of Exeter, *Burghley Park*, Stamford—*Gibbert's Victory* of Bath, green, and of delicious flavour, and a new scarlet variety named *Excelsior*, a handsome heavily netted fruit of excellent quality; Mr. Miles was a good 2d, with *Reid's Scarlet-flesh* and *Cox's Golden Gem*, the first-named being very fine in flavour; 3d, Mr. George Halliday, with small fruits of *Golden Gem* and *Scarlet Gem*. The heaviest scarlet-fleshed variety was *Duke of Edinburgh*, shown by Mr. G. Moore, gr. to Messrs. Viner, Harley Park, Reading, 5 lb. oz.; 2d, Mr. G. Gilbert, 4 lb. 13 oz.; 3d, Mr. Miles, *The Shah*, 4 lb. 6½ oz. Mr. Miles took the 1st prizes in both the classes of *Cherries* with *Black Circassian*, *Elton*, and *Governor Wood*, all fine samples. In the miscellaneous class a very nice specimen of *Black Hamburghs*, gr. to the Duke of Northumberland, *Syon House*, for a very fine dish of *Vanilla*; Mr. Roberts, gr. to W. Terry, Esq., *Peterborough House*, Fulham, had a 3d prize also for *Vanilla*; and Mr. Douglas a 2d for some fine *Tomatos*.

York Annual Floral Fête: *June 13, 14, and 15*.—The city of York on this occasion fully sustained its high place in the annals of horticultural demonstrations, the exhibition, as a whole, being the finest which has taken place since York became a centre of horticultural influence. Exhibitors came from a larger area than hitherto, and consequently competition in all the classes of the very comprehensive schedule was very keen—in fact, "Greek met Greek," and the tug of war was in many classes furious. Therefore it was that the judges had in many cases a most difficult task to perform. This was notably the case in the class of twelve plants, and in the class of eight fine-foliaged, the contest in this class being between Mr. T. M. Shuttleworth, of Preston; Messrs. E. Cole & Sons, Manchester; and Mr. T. F. G. Williams, of Worcester, the prizes being awarded in the above order. The flowering plants in the Messrs. Cole's group were doubtless the most interesting and valuable group, but the foliage plants in Mr. Shuttleworth's collection were much superior, and the group, as a whole, deservedly obtained the post of honour. Pelargoniums formed a most attractive feature, filling one large table, and most interestingly competing was spirited, and all the exhibits above the average.

Roses also formed a grand feature, Mr. H. May, of Bedale, being 1st in all the classes in which he competed. This applies to both cut flowers and pot plants, and this says much for the northern grower when it is remembered that he had Mr. Charles Turner, of Slough, as an opponent. Mr. Turner was the only exhibitor in the class for large Roses, and put up a fine lot. *Ferax*, both hardy and exotic, were exhibited in large quantities, and the quality, with one or two exceptions, all that could be desired in a well-classified display. *Ainsworth*, of Manchester, being the only exhibitor of note, and the most noteworthy plant in his collection was a grand plant of *Acerides Fiedlingii*, with four fine spikes, two of them being branched. *Fuchsia* were very meritorious for this period of the year, white, pink, and other cut flowers, and plants in excellent condition, and drew around them a large number of admirers, especially the ladies, who severely criticised the awards, and one fair dame was heard to say, that "Men knew nothing about bouquets." Fruits formed a most interesting display. Several collections of six varieties were staged. Sir H. W. Thompson, Bart., York, F. S. Folljame, of Worksop, and the Marquis of Ripon, being successful exhibitors. *Black Grapes* were exhibited in fine condition by T. H. Preston, Esq., of York; and J. F. Fison, Esq., of Epsom. *Black Grapes* were equally well done by R. Varill, Esq., of York; T. H. Preston, Esq.; Mr. Alderman Weatherly, of York; and T. Salt, Esq., of Leeds. A few Pines were exhibited, the best coming from the gardens of the Earl of Rutland.

Messrs. Cole & Sons, of Manchester, had a miscellaneous collection of plants, consisting of the charming *Japanese Maples* and rather a striking group of *Tee Carnations*. This it will be seen that this was no ordinary meeting. The weather was very fine on the opening day, and on the following day, and the result of the financial result be commensurate with the organisation and outlay, this year's York Floral Fête will be

a success. Mr. Wilson, the secretary, did not undertake a stone thrown to ensure the success of the undertaking and the comfort of all concerned.

The Royal National Tulip Exhibition.—The date of this exhibition, originally fixed for May 25, was eventually postponed till June 5, in order that a show of Tulips might attract a larger number of visitors. The season has proved a most backward one in Lancashire, and even at the latter date some of the leading cultivators, such as Mr. Samuel Barlow, of Stakehill, and the Rev. F. D. Horner, of Kirkby Malzeard, could scarcely show a flower. The Derby growers, and a few of these farther north, but who are favourably situated than the Manchester growers, came in with fairly good flowers, and so the show proved much better than at first expected; and, notwithstanding the fact that death has been very busy among the raisers of the Tulip cultivators during the two or three years, robbing them of such men as Richard Heady, Dr. Hardy, J. D. Hextall, W. Willison, Michael Potter, and others, it is yet satisfactory to know that there is no decrease in the supporters of the show. The number of subscribers has been increased to fifty-three in 1877 as compared with forty-eight in 1876.

The "National" was held as usual in the Botanical Gardens of the Manchester Botanical and Horticultural Society, which not only gives accommodation to the exhibitors and growers, but subsidises their fund with a gift of £10.

The blue riband of the National Tulip show is the cup offered for the best stand of twelve dissimilar Tulips, two feathered and two flamed in each of the three classes. This was won by Mr. William Whitaker, of Salford, who is this season the only exhibitor who staged Mrs. Lea and Industry, feathered roses; Sarah Heady and Mrs. Lea, flamed roses; Masterpiece and John Morris, feathered bizzares; Sir J. Paxton and Ajax, flamed bizzares; Bessie and Violet Aimaible, feathered byblomems; Talisman and Bacchus, flamed byblomems. This stand contained five flowers generally; and Industry and Talisman were exceptionally fine. 2d, Mr. David Barber, Stanton-le-Dale, with Heroine, Industry, Clara and Triomphe Royale, roses; Sir J. Paxton, both feathered and flamed; Dr. Hardy, a seedling, bizzare; an Orval, Mary Barber, Duchess of Sutherland, and Violet Sovereign, byblomems; 3d, Mr. Samuel Barlow, Stakehill House, Chadderton, with Lady Grosvenor and Modesty, feathered; Mrs. Lomax and Victoria, flamed roses; 4th, Mr. Henry Hill, with Tim, feathered, and Ajax and Orion, flamed bizzares; Bessie and Martin's 1st, feathered; and Bacchus and Adonis, flamed byblomem. Mr. Barlow's flowers were generally small and undersized, but they manifested a splendid quality that is always characteristic of his growth. 4th, Mr. Desset Cooper, Stockport, 5th, Mr. Samuel Cooper, Timperley. In class 2, for six dissimilar Tulips, one feathered and one flamed in each class, eight prizes were offered and all awarded. Mr. Charles Forman, Chellaston, with Heroine, feathered, and Aglaia, flamed rose; Sir J. Paxton, feathered, and the same variety flamed bizzare; Mrs. Pickereil, feathered, and Duchess of Sutherland, flamed byblomem; 3d, Mr. William Whitaker, with Sarah Heady, feathered, and Mrs. Lea, flamed rose; Masterpiece, feathered, and Sir J. Paxton, flamed bizzare; 4th, Mr. Henry Hill, with William Bentley; 5th, Mr. T. Haynes, with Salvator Rosa; 6th, Mr. H. Hill, with Chancelor; 10th, Mr. S. Barlow, with David Jackson. Mr. Whitaker also had the best feathered byblomem in Heady's Adonis; 5th, Mr. Henry Hill, with Victoria, flamed with Violet Aimaible. Mr. C. Forman 2d, with Mary Forman; Mr. D. Woolley 5th and 6th, with Bessie and Talisman; Mr. J. Hague 7th, with Mrs. Allsop; Mr. T. Mellor 8th, with Angelina; Mr. S. Cooper 9th, with Sarah; and Mr. D. Barber 10th.

As there are in connection with the National Tulip Society certain growers with small collections who subscribe only half a guinea per annum, it is customary to have a class special to these, and from which the larger growers are excluded. There were six of these Tulips, one in each class was taken by Mr. H. Housley, Stockport, with Rose Aglaia, shown both feathered and flamed; Masterpiece, feathered, and Sir J. Paxton, flamed bizzare; Violet Aimaible, feathered, and Chancelor, flamed byblomem; 2d, Mr. Henry Hill, with Heroine, feathered, and Mary Barber, flamed rose; Sir J. Paxton, feathered, and Dr. Hardy, flamed bizzare; Adonis, feathered, and Duchess of Sutherland, flamed byblomem; 3d, Mr. Richard Yates, Leigh, with Mrs. Lea, feathered, and Lady Talford, flamed rose; Masterpiece, feathered, and Dr. Hardy, flamed bizzare; Violet Aimaible, feathered, and Lord Denman, flamed byblomem.

In the class for three feathered Tulips, one of each section was won by Mrs. Lomax, with Victoria, rose; Masterpiece, bizzare; and Adonis, byblomem 2d, Mr. Charles Forman, with Heroine, rose; Sir J.

Paxton, bizzare; and Adonis, byblomem. 3d, Mr. Thomas Haynes, with Sarah Heady, rose; Sir J. Paxton, bizzare; and Mrs. Pickereil, byblomem. 4th, Mr. H. Housley; 5th, Mr. D. Woolley, 6th, Mr. W. Whitaker. In class for three flamed Tulips, one of each, there was also a spirited competition, the best coming from Mr. James Thurston, who had Aglaia, rose; Sir J. Paxton, bizzare; and Talisman, byblomem. 2d, Mr. Samuel Barlow, with Annie Mabel, flamed rose; 3d, Mr. Charles Forman, with Bacchus, byblomem. 3d, Mr. Thomas Haynes, with Triomphe Royale, rose; Sir J. Paxton, bizzare; and Duchess of Sutherland, byblomem. 4th, Mr. William Wardle, Burton-on-Trent, with Triomphe Royale, rose; 5th, Mr. Henry Hill, with Victoria, flamed with Violet Aimaible. 6th, Mr. Thomas Mellor; 6th, Mr. David Barber. Class six was a peculiar one, as it was open to maiden growers only, i.e., those which have not yet won a prize in the National Show. It was for one feathered and one flamed flower in any class, and all the stands in the class were also allowed to compete in class 7, also for the same subjects, but open to all cultivators. In class 6 Mr. Henry Hill was the only exhibitor who received an award, having bizzare Lord Clifford, and byblomem Duchess of Sutherland. The members of the National Tulip Society do all they can to encourage the advent of maiden growers, as all who enter in class 6 receive a number of valuable bulbs. In class 7 Mr. W. Whitaker was 1st, with Masterpiece and Sir J. Paxton, both bizzares; 2d, Mr. Henry Hill, with Kirkby Malzeard, with Mrs. Lomax, rose, and Bacchus, byblomem; 3d, Mr. William Wardle, with Industry and Aglaia, both rose; 4th, Mr. D. Woolley, with Dr. Hardy, bizzare, and Talisman, byblomem; 5th, Mr. David Barber; 6th, Mr. C. Forman.

In the class for single blooms to compete in, as usual, a large number of flowers, and the making of the awards in these classes must severely tax the patience of the judges. The best flamed bizzare was Sir J. Paxton, from Mr. J. Turner; and then followed Mr. Thomas Haynes, with Dr. Hardy. Mr. J. Turner, with Sir J. Paxton; Mr. W. Whitaker, with Orion; Mr. Joshua Hague, with Masterpiece; Mr. C. Forman, with the same; Mr. J. Thurston, with Ajax; Mr. D. Woolley, with Captain White; and Mr. W. Whitaker, 9th and 10th, with Ariosto and Smiles, Prince of Wales. In the class for feathered bizzares Mr. H. Housley was 1st with Royal Sovereign and 4th with Lord Byron; Mr. W. Whitaker 2d with Masterpiece, 3d with Sir J. Paxton, 5th with Field Marshal, 7th with George Hayward, and 8th with Magnam Floss; Mr. J. Turner, 9th with Royal Sovereign; Mr. R. Yates 10th with Sir C. Campbell. In the class for flamed roses Mr. D. Woolley was 1st and 2d with Aglaia, and then followed Mr. T. Mellor with Mabel, Mr. W. Whitaker with Madame de St. Arnaud, and J. Housley with Victoria, flamed rose. Mr. W. Wardle with Industry, Mr. S. Barlow with Lady Sefton and 9th with Rose of England, Mr. S. Cooper 8th with an unnamed variety, and Mr. W. Whitaker 10th with Sarah Heady. In the class for feathered bizzares Mr. S. Barlow was 1st with Royal 5th with Aglaia, and 7th with Mabel; Mr. W. Whitaker 2d with a seedling, 4th with Mrs. Lea, 8th with Industry, and 10th with Mrs. Heady; the Rev. F. D. Horner 3d with Modesty, Mr. C. Forman 6th with Heroine, and Mr. S. Barlow 9th with Little Annie. The best flamed byblomem was Talisman, from Mr. W. Whitaker, and the same was 2d with Duchess of Sutherland and 5th with Heady's Adonis; 3d, Mr. S. Barlow, with Talisman; 4th, Mr. T. Haynes, with Clark's Thalia; 6th, Mr. W. Woolley, with Victoria, flamed rose; 7th, Mr. Henry Hill, with William Bentley; 8th, Mr. T. Haynes, with Salvator Rosa; 9th, Mr. H. Hill, with Chancelor; 10th, Mr. S. Barlow, with David Jackson. Mr. Whitaker also had the best feathered byblomem in Heady's Adonis; 5th, Mr. Henry Hill, with Victoria, flamed with Violet Aimaible. Mr. C. Forman 2d, with Mary Forman; Mr. D. Woolley 5th and 6th, with Bessie and Talisman; Mr. J. Hague 7th, with Mrs. Allsop; Mr. T. Mellor 8th, with Angelina; Mr. S. Cooper 9th, with Sarah; and Mr. D. Barber 10th.

The premier feathered Tulip was Heroine, rose, shown by Mr. David Barber in class 2; and the premier flamed Tulip Sir Joseph Paxton, bizzare, shown by Mr. C. Forman in class 2.

There yet remain the breeder classes, and flowers of extraordinary beauty are found among them. Mr. Samuel Barlow's collection is so varied, and contains so much that is new and fine, that for years past he has ranked as the champion breeder cultivator among Tulip fanciers. On this occasion he was awarded the following prizes: 1st, with Victoria, flamed rose; Barlow and Lady Mary, rose; Lord Provost and Richard Yates, bizzare; Glory of Stakehill and Talisman, byblomem, a very fine lot indeed; 2d, Mr. David Barber, with Dr. Hardy, Adonis, Queen of England, Mrs. Lea, seedling; 3d, Mr. J. Hague, 4th, Mr. W. Whitaker. The three breeders came from Mr. Thomas Haynes, who had

Beauty of Litchurch, Mrs. Bright, and Dr. Hardy; 2d, Mr. S. Barlow, with Alice Grey, Annie Macgregor, and Sir J. Paxton; 3d, Mr. H. Housley, with Sulphur, Mabel, and Duchess of Sutherland; 4th, Mr. W. Whitaker; 5th, Mr. T. Mellor; 6th, Mr. Joshua Hague.

In the class for single blooms of bizzare breeders the best was Sir J. Paxton, from Mr. David Barber; and then followed William Willison, Dr. Hardy, Exceller, and the seedlings. The best flamed rose was Mrs. Barlow, from Mr. S. Barlow; and then followed Annie Macgregor, Lady Grosvenor, Atkins seedling, Mabel, Lady May, and Mrs. Bates. The best byblomem breeder was Beauty of Litchurch, from Mr. Thomas Haynes; the remainder of the other flowers were seedlings.

The premier breeder Tulip was Mrs. Barlow, a very fine rose, from Mr. S. Barlow's collection.

The Northern Counties' Tulip Society: *June 8*.—The fourth annual exhibition of this Society was held at the Abbey Hey Hotel, Gorton, Manchester, on the above day. Formerly it was the custom to hold a number of small Tulip shows in the neighbourhood of Manchester, and some of them are still continued, but a few of the leading growers, dissatisfied with the public-house associations they encouraged, agreed to form the Northern Counties' Society, and much success has attended their efforts. It is not in any sense of the word the rival of the National Tulip Society.

The flowers were staged for judging in the large dancing saloon in rear of the hotel, and after the prizes had all been awarded the flowers were removed to a room at the hotel which is specially arranged for the purpose, inasmuch as it contains a centre plant stage, similar to one that might occupy the centre of a span-roofed greenhouse, and on this the flowers were arranged in rows of benches, while the stands of flowers occupy tables arranged round the sides of the room. The "pans," as they are termed, viz., collections of three or more blooms, are generally shown on ordinary flower-boards, but the single flowers are set up in wooden tubs placed in ginger-bear bottles, and there is always a great number of these. The prize flowers are all kept together. This room of Tulips, which is shady and cool, is kept open for the inspection of any one interested in the Tulip for several days.

The largest class of the Northern Counties show the largest class is six varieties, one of each of the classes. The best six came from Mr. William Whitaker, Salford, who had flamed bizzare Sir J. Paxton, very fine; feathered bizzare Masterpiece, flamed rose Mabel, and rose Industry, delicately beautiful new variety shown in fine condition; flamed byblomem Talisman, and feathered byblomem Bessie, very fine, 2d, Mr. Thomas Mellor, Ashton, with Sir J. Paxton, flamed, and Charles N., feathered bizzare; and Duchess of Sutherland, very fine, flamed, and Agnes, feathered byblomem; Mabel, flamed, and Heaite, feathered rose. 3d, Mr. Samuel Barlow, Chadderton, with Sir J. Paxton, very fine, flamed, and George Hayward, feathered bizzare; Countess of Seton, flamed, and Heroine, feathered rose; John Pencock, flamed, and Bessie, feathered rose. 4th, Mr. John Morris, Leigh. Class 2 was for six varieties also, the competition confined to half-guinea subscribers, and the flowers were generally inferior to those in the preceding class. The best came from Mr. James Hulme, with bizzares Sir J. Paxton, flamed, and Charles X., feathered; Rose Mabel, flamed, and Heroine, feathered; byblomem Chancelor, flamed, and Violet Aimaible, feathered. Mr. James Leach was 2d, Mr. R. Ashton, 3d; and Mr. John Hess, 4th. In class 3, the best came from Mr. W. Whitaker, who was 1st, with bizzare Masterpiece; byblomem Violet Aimaible, very good; and rose seedling, a very good and promising high-coloured flower; 2d, Mr. James Hulme, with Masterpiece, Violet Aimaible, and Mrs. Lea; 3d, Mr. Thomas Mellor, with Sulphur, Norval, and Bessie, feathered rose. 4th, Mr. John Morris, Leigh. Mr. W. Whitaker, who was in strong force on this occasion, was also 1st, with three flamed Tulips, having bizzare Sir J. Paxton, byblomem with Heroine, very fine; and Rose Aglaia; 2d, Mr. John Turner, with Victoria, flamed rose; 3d, Mr. S. Barlow, with Sutherland, and Triomphe Royale; 3d, Mr. S. Barlow, with Sir J. Paxton, Nimbus, a new variety of the late Dr. Hardy's raising, not yet distributed; and a particularly effective flamed byblomem, and Aglaia; 4th, Mr. Thomas Mellor.

In class 5, for Tulips in pairs, one feathered and one flamed, the judgment, which was most conscientiously and laboriously made throughout, appeared to have been made on scarcely intelligible grounds. Mr. John Turner was placed 1st, with flamed bizzare Dr. Hardy, feathered rose; and Mr. Henry Hill, who were both small and wanting in character, and should have been, we think, 3d at most. 2d, Mr. James Hulme, with flamed bizzare Dr. Hardy, and feathered byblomem Violet Aimaible; 3d, Mr. Joshua Hague, with flamed bizzare Dr. Hardy, feathered rose; and George Hayward. Mr. W. Whitaker's pair of flowers

were quite in keeping with the high character he had shown in the other classes, and were deserving of the first prize, the varieties being flowered bizarre Sir J. Paxton, and feathered bizarre Masterpiece.

In the classes for single flowers an immense number were staged. The best flowered bizarre was Sanzio, but what is generally written in Northern Tulip circles as "Saint Jo," shown by Mr. W. Whittaker; and then followed Sir J. Paxton, Lord Warden, Dr. Hardy, Sanzio, Ariosto, Lord Delamere, the first broken flower that has yet been shown, and the best of the feathered bizarre was Masterpiece, from Mr. W. Whittaker, and he was 2d with the same variety, and 3d with Lord Byron; and then followed Surpasse Catalane, one of the oldest Tulips in cultivation; Catalade Yates, Lord Ratcliff, a flower that broke in colour in the first year of its coming into the market, but paler in colour—a very fine show variety; Magnan Bonam, and Sir J. Paxton. With the exception of the 4th prize, which went to Mr. John Knott, all the rest went to Mr. W. Whittaker, who has been so long strong in feathered bizarres. In the class for feathered bybrenms Mr. W. Whittaker was 1st, 2d, 3d, 4th and 5th with Heady's Adonis, Violet Aimable, Agnes, Bessie, and Adonis; and then followed William Bentley, Angelina and Edgar. Mr. W. Whittaker was 1st, 2d, 3d, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st, 32nd, 33rd, 34th, 35th, 36th, 37th, 38th, 39th, 40th, 41st, 42nd, 43rd, 44th, 45th, 46th, 47th, 48th, 49th, 50th, 51st, 52nd, 53rd, 54th, 55th, 56th, 57th, 58th, 59th, 60th, 61st, 62nd, 63rd, 64th, 65th, 66th, 67th, 68th, 69th, 70th, 71st, 72nd, 73rd, 74th, 75th, 76th, 77th, 78th, 79th, 80th, 81st, 82nd, 83rd, 84th, 85th, 86th, 87th, 88th, 89th, 90th, 91st, 92nd, 93rd, 94th, 95th, 96th, 97th, 98th, 99th, 100th, 101st, 102nd, 103rd, 104th, 105th, 106th, 107th, 108th, 109th, 110th, 111th, 112th, 113th, 114th, 115th, 116th, 117th, 118th, 119th, 120th, 121st, 122nd, 123rd, 124th, 125th, 126th, 127th, 128th, 129th, 130th, 131st, 132nd, 133rd, 134th, 135th, 136th, 137th, 138th, 139th, 140th, 141st, 142nd, 143rd, 144th, 145th, 146th, 147th, 148th, 149th, 150th, 151st, 152nd, 153rd, 154th, 155th, 156th, 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729th, 730th, 731st, 732nd, 733rd, 734th, 735th, 736th, 737th, 738th, 739th, 740th, 741st, 742nd, 743rd, 744th, 745th, 746th, 747th, 748th, 749th, 750th, 751st, 752nd, 753rd, 754th, 755th, 756th, 757th, 758th, 759th, 760th, 761st, 762nd, 763rd, 764th, 765th, 766th, 767th, 768th, 769th, 770th, 771st, 772nd, 773rd, 774th, 775th, 776th, 777th, 778th, 779th, 780th, 781st, 782nd, 783rd, 784th, 785th, 786th, 787th, 788th, 789th, 790th, 791st, 792nd, 793rd, 794th, 795th, 796th, 797th, 798th, 799th, 800th, 801st, 802nd, 803rd, 804th, 805th, 806th, 807th, 808th, 809th, 810th, 811st, 812nd, 813th, 814th, 815th, 816th, 817th, 818th, 819th, 820th, 821st, 822nd, 823rd, 824th, 825th, 826th, 827th, 828th, 829th, 830th, 831st, 832nd, 833rd, 834th, 835th, 836th, 837th, 838th, 839th, 840th, 841st, 842nd, 843rd, 844th, 845th, 846th, 847th, 848th, 849th, 850th, 851st, 852nd, 853rd, 854th, 855th, 856th, 857th, 858th, 859th, 860th, 861st, 862nd, 863rd, 864th, 865th, 866th, 867th, 868th, 869th, 870th, 871st, 872nd, 873rd, 874th, 875th, 876th, 877th, 878th, 879th, 880th, 881st, 882nd, 883rd, 884th, 885th, 886th, 887th, 888th, 889th, 890th, 891st, 892nd, 893rd, 894th, 895th, 896th, 897th, 898th, 899th, 900th, 901st, 902nd, 903rd, 904th, 905th, 906th, 907th, 908th, 909th, 910th, 911st, 912nd, 913th, 914th, 915th, 916th, 917th, 918th, 919th, 920th, 921st, 922nd, 923rd, 924th, 925th, 926th, 927th, 928th, 929th, 930th, 931st, 932nd, 933rd, 934th, 935th, 936th, 937th, 938th, 939th, 940th, 941st, 942nd, 943rd, 944th, 945th, 946th, 947th, 948th, 949th, 950th, 951st, 952nd, 953rd, 954th, 955th, 956th, 957th, 958th, 959th, 960th, 961st, 962nd, 963rd, 964th, 965th, 966th, 967th, 968th, 969th, 970th, 971st, 972nd, 973rd, 974th, 975th, 976th, 977th, 978th, 979th, 980th, 981st, 982nd, 983rd, 984th, 985th, 986th, 987th, 988th, 989th, 990th, 991st, 992nd, 993rd, 994th, 995th, 996th, 997th, 998th, 999th, 1000th.

In the breeder classes the flowers were all very fine. Mr. S. Barlow was 1st with bizarre Richard Yates and Sir J. Paxton; bybrenms Talisman and Glory of Stakehill, a splendid flower; rose Annie Macgregor, and Hepworth's Lady May—one of the finest of rose breeders in cultivation. 2d Mr. Thomas Mellor, with Dr. Hardy and Flor, bizarres; William Bentley and Bridesmaid, bybrenms; and Lady Grosvenor and Annie Macgregor, roses. 3d, Mr. Joshua Hague; 4th, Mr. W. Whittaker. With three breeders one in each class, Mr. Barlow was also 1st with bizarre No. 2 seedling; bybrenms Glory of Stakehill, and Annie Macgregor, a beautiful rose breeder for colour. 2d, Mr. Thomas Mellor, with Storer's seedling, Adonis, and Annie Macgregor; 3d, Mr. W. Whittaker. In the half-guinea class, Mr. Barlow was 1st with William Bentley; the others were unnamed. In the class for single bloom of a rose breeder Mr. S. Barlow was 1st with Mrs. Barlow, 2d with Mabel, and 3d with Annie Macgregor; then came Olivia, Nanny Gibson, and Mrs. Bates. In the class for bybrenms breeders the two finest were Alice Gray and Talisman, bred by the Secretary of the Northern Counties Society, Mr. James Wild, of Ashton-under-Lyne, who was a cultivator of Tulips for nearly half a century.

The premier flowered flower was Industry, rose, shown by Mr. W. Whittaker, perfect in every respect; the premier flamed flower, Sanzio, bizarre, shown by the same exhibitor; and the premier breeder, Lady May, rose from Mr. Barlow.

After the prizes were awarded the judges and exhibitors dined together; Mr. Samuel Barlow, President of the Society, in the chair; and the remainder of the afternoon was spent in much instructive gossip about Tulips. The Secretary of the Northern Counties Society, Mr. James Wild, of Ashton-under-Lyne, has been a cultivator of Tulips for nearly half a century.

Law Notes.

JUDGMENT AND COMMITTAL.—At the Westminster County Court, on Tuesday last, the case of *Gardner v. Marks* was heard before Mr. Judge Bayley, in which the defendant, a salesman at Leeds and Covent Garden, was summoned to show cause why he did not pay the plaintiff the sum of £18 for goods sold and delivered, and upon which judgment had been obtained in this Court. The plaintiff, who was represented by a gentleman whose name did not transpire, said that the defendant carried on business in a large way both in Leeds and London, and that if the judge would order a warrant of commitment to issue against the defendant it would make him pay. The defendant said that as the case it

would have the effect of driving him to bankruptcy. After a witness was called to prove the defendant's means, the learned Judge thought that as the amount was a large one the plaintiff would be more likely to get his money by ordering easy instalments, and therefore ordered the defendant to pay the debt and costs, at the rate of £2 a month, subject to a commitment.

Bartlett v. Marks was next called for hearing, in which the plaintiff, Robert Bartlett, a solicitor of Bedford Street, Covent Garden, summoned the defendant, who was the defendant in the former action, to show cause why he had not paid the plaintiff's bill of costs, amounting to £25 s. 6d., upon which the plaintiff had recovered judgment. The plaintiff said that since judgment had been obtained the defendant had large transactions in the market, and came weekly from Leeds expressly to make large purchases. Mr. Bartlett then examined the defendant, who said that he came up from Leeds frequently, and had a private house at Leeds and a stall in the Leeds market. He used to trade six months ago as Philip Marks & Son, of Leeds, but did not do so now. He had bought sixty boxes of Peas last week in the market at 4s. a box, but part were on commission for C. O. Jacobs, of Russell Street, Covent Garden. He had also bought fifteen baskets of Cherries at 7s. 3d. a basket, which were sent to Bradford, but they only realised 1s. each, and Cherries were selling to-day in the market for 7s. a basket for which St. had been given two days previously.

In reply to the learned Judge the defendant said he could not possibly pay even the small account of Mr. Bartlett. The learned Judge then said he was convinced to the contrary, and ordered a warrant to issue at once for the defendant's arrest, and the defendant was removed in the custody of Bates, the officer. Later on in the day the defendant purged the debt and costs, and was released from custody.



STATE OF THE WEATHER AT BLACKHEATH, JUN 16, 1877. FOR THE WEEK ENDING WEDNESDAY, JUN 13, 1877.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.		HYGROMETRY.	DIRECTION AND FORCE OF WIND.	RAINFALL.
	Reduced to Sea Level.	At Height of 35 Feet.	At Height of 35 Feet.	At Height of 35 Feet.			
June 7	30.0	29.9	58.0	58.0	80	W.S.W. 10.	0.00
8	30.0	29.9	58.0	58.0	80	S.W. 0.00	0.00
9	30.0	29.9	58.0	58.0	80	W.S.W. 0.00	0.00
10	30.0	29.9	58.0	58.0	80	W.S.W. 0.00	0.00
11	30.0	29.9	58.0	58.0	80	W.S.W. 0.00	0.00
12	30.0	29.9	58.0	58.0	80	W.S.W. 0.00	0.00
13	30.0	29.9	58.0	58.0	80	W.S.W. 0.00	0.00
Mean	30.0	29.9	58.0	58.0	80	variable	0.00

- June 7.—A fine bright day. Partly cloudy. Cool.
- 8.—A very fine and bright day. Partly cloudy.
- 9.—A brilliantly fine warm day. Clear.
- 10.—A very fine day. Clear and warm.
- 11.—A very fine and bright day. Clear, then cloudy.
- 12.—A warm day. Slight thunderstorm, with heavy rain and vivid lightning till evening then cloudy.
- 13.—Fine and warm, but very cloudy throughout. Thunderstorm, with heavy rain in early morning.
- 13.—A very fine and bright day. Clear and bright after. Cloudless at night. Cool day.

LONDON; Barometer.—During the week ending Saturday last, 9 a.m. in the vicinity of London the reading of the barometer decreased from 29.93 inches at the beginning of the week to 29.70 inches by the evening of the 4th, increased to 30.08 inches by the evening of the 5th, decreased to 29.93 inches by the evening of the 6th, increased to 30.10 inches by the evening of the 7th, decreased to 30.01 inches by the evening of the 8th, increased to 30.14 inches by noon on the 9th, and was 30.12 inches at the end of the week. The mean reading for the week at sea level was 29.99 inches, being 0.37 inch above that of the preceding week, and 0.01 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 82° on the 4th to 66° on the 6th; the mean value for the week was 74°. The lowest temperatures of the air observed by night ranged between 43° on the 7th to 55° on the 9th; the mean for the week was 49°. The mean daily range of temperature in the week was 25°, the greatest range in the day was 33°, on the 3d, and the least 15°, on the 5th.

The mean daily temperatures of the air and the departure from their respective averages were as follows:—3d, 64°, ×7.1; 4th, 65°, ×7.9; 5th, 57.9°, ×0.6; 6th, 55.3°, ×2.2; 7th, 54.2°, ×3.4; 8th, 50.6°, ×8.9; 9th, 65°, ×7.1. The mean temperature of the air for the week was 60°, being 2.7° above the average of six years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 152° on the 3d, 148° on the 9th, and 145° on the 4th; the mean of the seven high values was 136°. The lowest readings of a thermometer in vacuo, with its bulb exposed to the sky, were 39° on the 3d, and 40° on the 6th and 7th; the mean of the seven low readings was 42°.

Wind.—The direction of the wind was S.W., and its strength moderate. The wind during the week was fine, bright, and dry. Lightning frequently seen on Monday evening, the 4th inst.

Rain fell on two days during the week, the amount measured was only 0.09 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 81° at Manchester, 82° at Blackheath, and 82° at Cambridge; at Truro, Plymouth, and Torquay, 67°, 68°, and 68° respectively were the highest temperatures in the week. The mean value from all stations was 76°. The lowest temperatures of the air observed by night were 39° at Wolverhampton and 40° at Nottingham; at Portsmouth 49° was the lowest temperature. The general mean from all stations was 45°. The range of temperature in the week was the greatest at Manchester, 40°, and the least at Portsmouth, 10°. The mean range of temperature from all stations was 31°.

The mean of the seven high day temperatures was the highest at Blackheath and Cambridge, both 74°, and the lowest at Plymouth, both 71°; the mean value from all stations was 68°. The mean of the seven low night temperatures was the lowest at Wolverhampton, 40°, and the highest at Norwich, 53°. The mean of all stations was 50°. The mean daily range of temperature in the week was the greatest at Blackheath, 25°, and the least at Plymouth, 11°; the mean daily range from all stations was 18°.

The mean temperature of the air for the week from all stations was 57°, being 41° higher than the value for the corresponding week in 1876. The highest took place at Norwich, 61°, and the lowest at Wolverhampton, 55°.

The amount of rain measured during the week were small everywhere, they varying from three-tenths of an inch at Plymouth, Sheffield, and Liverpool, to two-hundredths of an inch at Cambridge; at Portsmouth no rain was measured; the average fall for the country was two-hundredths of an inch. The weather during the week was generally fine, bright, and warm. *Solar halos* were seen at Bristol on June 7 and 8, and lightning was seen at Blackheath on the 4th.

SCOTLAND: Temperature.—The highest temperatures of the air varied from 70° at Edinburgh to 60° at Greenock; the mean value from all stations was 65°. The lowest temperatures of the air ranged from 41° at Greenock to 45° at Glasgow and Leith; the mean from all stations was 44°. The mean range of temperature in the week from all stations was 24°.

The mean temperature of the air for the week from all stations was 54°, being 3° higher than the value for the corresponding week in 1876. The highest was 56°, at Edinburgh, and the lowest 51°, at Greenock.

Rain.—The falls of rain measured during the week varied from 2 1/2 inches (nearly) at Greenock, and 2 inches at Paisley, to half an inch at Edinburgh and Leith; the average fall over the country was 1 1/2 inch.

DUBLIN.—The highest temperature of the air was 69°, the lowest was 38°, the range was 31°, the mean was 55°, and the fall of rain was 0.40 inch.

JAMES GLAISHER.

Variorum.

THE CAROB TREE (CERATONIA SILIQUA).—In a very interesting account of "An Easter Holiday in Liguria," by Professor Flickeyer, which has lately been reprinted in the *Pharmaceutical Journal*, occurs an excellent description of the St. John's Bread, or Carob tree (*Ceratonia Siliqua*), and of the locality indicated, from which we make the following abstract. Here and there, Professor Flickeyer says, a dense crown of foliage rising from powerful

knotted stems shines out in the midst of an Olive grove, or alone on the sunny shore the tree spreads out its half-bared roots often over a surprising circuit. This is the *Ceratonia Siliqua*. It is found nowhere else in Upper Italy, or in the central provinces, but probably in the south of the peninsula. However, the Riviera de Ponente, especially the country around Monaco, has trees to show which equal those of the *piana* of Sorrento and Amalfi. This tree is decidedly less hardy than the Olive, but it comes from Central Africa, where the Olive is not known. On the slight coast of the bay of Carthage, in Tunis, grows an Arabic designation, recalling a people to whom Sicily at one time owed a season of prosperity, during which not only Islam, but also trade and valuable economic plants were introduced into Spain and Sicily. The *Geonoma* is a very remarkable and an economic plant, however, to the extent that the pods are given to horses. It appears remarkable that artificial cultivation has not yet succeeded in improving it so as to give it a savoury fruit. Even the *Sida*, John Bredal from South Italy and Cyprus is always a truly leafy dainty. Would not an attempt to obtain a better product from this stately tree be remunerative? The multiplication of such an evergreen tree would also suit the landscape to a high degree, in respect to its rich, full, green foliage, which may be compared to the foliage of the *Albizia*. In fact, it stands in striking contrast to the Olive tree. The long, rigid petiole, not unfrequently a foot in length, is provided with three to five, but most frequently with four pairs of sessile leaflets, which are alternately rounded and pointed, mostly ovate, the length of the entire leaf at its base—*i.e.*, the length of the lowest pair of leaflets—frequently reaches 7 inches; so that, notwithstanding the leaves are only simply pinnate, the impression of a very complex ramification is produced. As it does not, like so many other minute leaves, bear the flowers at the enormous head of foliage assumes a rounded outline, which would appear to be somewhat too regular did not the separate leaves, by their variation in colour and shape, exclude uniformity. The divisions of the leaves are not spread out flat, but incline somewhat towards one another, and on the under side are of a lighter though duller green than on the upper. The two surfaces also differ in their behaviour in other respects. The upper surface can easily become moistened with various liquid dilute alcohol, for instance; so do not the lower side. The upper side is of very firm texture, but each separate leaflet is always in motion, which gives to the foliage a lively appearance. Many other trees of the same division of the *Cesalpiniaceae* possess, in contrast to *Ceratonia*, doubly pinnate leaves. Examining the leaves of the latter tree more critically, exceptions to the ordinary form of leaf are not unfrequently found, especially where one of the lowest leaflets is replaced by one consisting of two or four pairs of leaflets, usually not quite opposite, and with a minute one at the base. The second leaflet of the lowest pair is also transformed. The variations from the ordinary leaf form are, however, never sufficiently numerous to influence the appearance of the tree. It presents, therefore, very great peculiarity quite apart from the flowers and fruit, and also as characterised in other instances. On these accounts the genus *Ceratonia* was rightly set up for the sake of this tree only, and it has not since been enriched by a second species. This explains the remarkable fact that botanists have not found leisure to endow it with several names, and it is everywhere called by the name *Linnaeus* gave it. When Professor Flüchiger's notes were written, the trees exhibited neither blossom nor ripe fruit; only exceptionally were found isolated, bearded, but still clinging to the stalks, which are much thicker than the ripe ones which the Greeks named the tree *Ceratonia* (Horn-fruit tree).

COX'S ORANGE PIPPIN is the finest Apple in the world. This declaration is made in full conviction both of the responsibility of a variety, and its value to us as an introduction to the subject of an Apple culture. Fortunately the variety is neither scarce nor dear. Its merits are well known, and indeed they are so conspicuous that, in common with other good things, it is always speaking for itself, and hence it is everywhere largely popular. It is a variety which is on the way to take the lead in the Apple garden, and prove to all that our declaration in its favour is warranted by the facts. It is one of the best paying Apples in Kent, and it is one of the few that may be trusted for a crop of good quality, and of uniform "bottoms," where spring frosts make the most havoc, and fruit growing is a precarious business. Our observations of this variety, under many different circumstances, have been enlarged in a striking manner within the past few weeks. In our own garden, in the valley of the Lea the Hawthornden is a prodigious cropper, and about twenty better varieties compete with it for popularity, not the least important amongst them being Shepherd's Fame, Lemon Pippin, Eckinville, Cellin's, Old Red Jewel, and the variety called Blenheim Orange. This year Cox's Orange bears them all, for the trees are smothered with fruit, while on all other sorts the crops are comparatively thin

more or less. It was precisely the same in the compartment occupied with Apple stocks in the Royal Horticultural Society's Chiswick garden last year. The little trial trees of Cox's Orange were then well covered with fruit, while other varieties were barren or nearly so. The uninitiated reader may be disposed to wonder what is the quality of the fruit, and to this way? Well, the question is pertinent. The answer may be summed up in few words. Cox's Orange is a better Apple than the Ribston Pippin, being as handsome, as well flavoured, and with more tender flesh. What is the quality of the fruit, and to this every good property, it is the finest Apple in the world. *Gardener's Magazine*.

NEW PARKS.—*Whitley*.—On the 26th ult. a new public park—a gift to the town by a deceased citizen, Mr. Robert Brodie, accountant—was opened with much ceremony. The park is situated at High Carriage Hill, in the southern part of the town, and extends to about 22 acres. Its value is estimated at £16,000, and during the past year or two the Town Council have expended about £2800 in laying it out and ornamenting it. *Gathead*.—Since the grounds of Mr. William Wailes, at Saltwell, were purchased by the Fishhead Corporation and converted into a park for the use of the inhabitants, the grounds had little or no place approaching to a recreation-ground, great improvements have been made by way of further beautifying the estate. For some time past the Park Committee have been pushing on the work of improvement, with rapidly increasing success. The chief features will be the long promenade, which is at present under formation at the north end of the park. On either side of the promenade the ground has been laid out under the direction of Mr. Heath, of London, landscape gardener. *Builder*.

Enquiries.

He that questeth much shall learn much.—BACON.

190. OSIERS.—Can any of your readers inform me, through your columns, whether Osiers would thrive and do well if planted on a light and porous soil, and received the overflow of sewage from a large town? *J. S.*

190. ARRACACHA.—Where can tubers of this plant (*A. esculenta*) be obtained? *W. F. J.*

191. CHARA.—A species of Chara has filled a lake of considerable size, and has retarded the progress of the boats. Various methods of eradication have been tried, but unsuccessfully. What can be done? *L.*



AGAVES TURNING FROM THE EAST: *J. H. P.* We have not noticed this in the Riviera. Did you observe them in the morning, when the sun was in the east?

AZALEA: *A. Morrison*. The large flowers and rich apricot-yellow of the seedling of which you send a truss, are qualities which should render it acceptable as a novelty. The colour, being almost a self, is peculiar. We do not remember to have seen any quite like it.

AZALEAS.—PROPAGATING: *A Subscriber*. Azaleas strike readily from cuttings made of the half-ripened shoots slipped off and inserted singly in 6-oz. pots filled with soil, and having the half-ripened part of the surface all sand, covered with a propagating-glass in a temperature of 70°, kept moderately close, moist, and shaded from the sun. When well rooted gradually inure them to the full air of the house or pit, and move them into a size larger pots. As soon as they have begun to grow pinch off the tops 6 inches above the collar, so as to induce them to make several shoots, but never allow any suckers, which spring up near the collar, to remain, as it is through letting these grow more than from any other cause that Azaleas from struck plants are often short-lived. We should advise you to keep for two years in an intermediate or moderate stove temperature without any rest more than they will naturally get through moving much slower in the winter, giving half-ripened pots every year, and keeping them quite clear from thrips and red-spider. At the expiration of that time, so managed, they will have attained a size equal to what they would grow to in five years under the ordinary method of growing them cool, and resting in the winter—it will not, as many would suppose, injure their constitution in the least. We should recommend similar treatment to be given to grafted plants, which, when a good free-growing kind is selected for a stock, are much to be preferred to such as are on their own roots.

ENTOMOLOGICAL SPECIMENS: *W. G. P.* There is some difference between a stag-beetle and a clothes-moth. Supposing you mean butterflies, we advise you to take some young Cherry Laurel leaves, brush them, place them in the collecting box, and put the insects in. Keep the box closed for a few minutes, and the prussic acid fumes will accomplish your end.

HIPPETRAUM PARDINUM: *A. Heucke*. We have found *Hippetraum pardium* to succeed well under similar treatment to the other species and varieties of *Hippetraum*, and should suppose that your plant has gone wrong through some error in the treatment, such as overwatering or the soil having become dry, having been kept too wet, or the drainage being deficient or loose potting in light open soil, any of which causes the plants to wither and become desiccated. We should advise its being placed in a smaller pot, well drained, in pure loam, with a little sand added, pressing the soil quite firm—being careful not to give it any water until the plant has begun to make roots free.

INSECTS: *J. K. Fychochro rubens. A. M.*

IVIES: *Y. Z. Messrs. Lane & Son, Great Berkhamstead, or Mr. Turner, Slough.*

MANURE: *E. M.* We have no faith in the artificial manure you mention, such as a fertilizer or any insecticide. Kilm-dust, or, in the absence of that, good rotten dung, applied as a top-dressing, is the best manure for fruit trees in pots, and if you want a good effect from the insecticide use the decoction of quassia chips and soft soap so often mentioned in this column.

MAY: *G. Beaumont*. The sucker, no doubt, comes from the roots of the old white variety, on which the red one was originally budded or grafted. It is a very common occurrence.

MIGNONETTE: *J. G. & Co.* Your new variety is no finer than plenty that come into the market, and by no means so large as the specimens of Miles' strain that you send. It is a very good variety, and you may get rid of them; but if not, unless the plant has some special associations attaching to it, you had better burn it, and buy a young clean plant from the nearest nursery, to clear the plant, especially you may have to wait it over several times.

NAMES OF PLANTS: *N. B. Pyrus Aria*, the White Bean, so far as we can tell from the scrap sent.—*G. D. J. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.*

PACKING GRAPES: *Exhibitor*. You must have the stands on which you intend to show the Grapes made and fitted up in the manner described in the article, and can be readily taken out; and the way to preserve the bloom is to fasten the bunches down firmly into their places on the stand before you send them from the house, and to do this neatly and well you can only learn by experience.

PHOENIX TENAX: *J. Omsant*. There is nothing remarkable in the New Zealand Flax producing flowers. It frequently does so under liberal treatment, though perhaps seldom so freely as you state.

POPULAR PHYSIOLOGY: *W. H. D.* See our last Supplement. It is a subject that has been more often treated of in this journal for nearly forty years than in any other known to us. It is no fault of ours if people will not read and make such information when it is put before them.

ROSES: *W. Wilson*. So far as we can judge from the specimen sent they are identical—*Glaires de Dijon*.

VINES GUMMING: *D. C. P.* Your Vines are in such a state of decomposition that it is impossible to form any judgment. The gumming excision is however probably the same which sometimes occurs on the stems of Vines when in flower and prevents impregnation, and they have seen a Vine which had had the same peculiarity and in consequence never bore any fruit. *M. J. B.*

VINE LEAVES: *No. 1*. The chlorophyll is only very partially decomposed, and it is not an autumnal tinge. *No. 2*, not only has the same defect, but the under surface has little spots which arise from abnormal development of the cells. *No. 3* has the same excrescences, and they have seen a Vine which chlorophyll. *No. 4* is without the excrescences, but there is a uniform deficiency of chlorophyll. The whole indicates that the root-action is bad. The several different specimens are all from the same stock, and were planted in the border, or it may be due to a bad condition of the roots. *M. J. B.*

VINES: *W. X.* The berries are "scalded," as a great many others have been this season. How this is brought about we do not know, but it is not the same columns.—*James Hopkins*. There is no visible cause for the decay of the Vine shoots, it may be only weak

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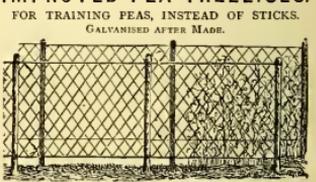
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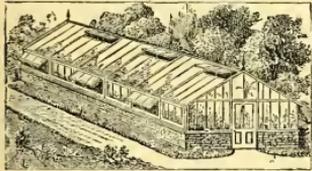
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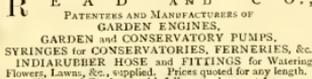
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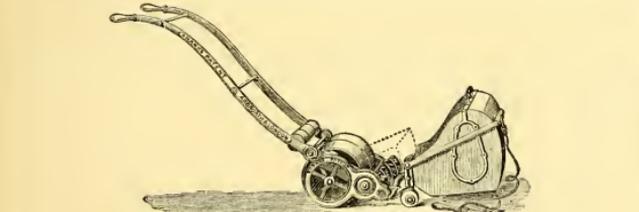
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SHANKS' NEW PATENT LAWN MOWERS,
 Under the Patronage of Her Most Gracious Majesty the Queen, and most of the Nobility of Great Britain.

The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. A. S. & SON would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The *Sole-Plate or Bottom Blade* is made with *Two Edges*, enabling the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced, which prevents the-Grass escaping the Box when the Machine is in use during the prevalence of wind.



PRICES,
 Including Carriage to any Railway Station or Shipping Port in the Kingdom:—

NEW HAND MACHINE.		NEW PONY and DONKEY MACHINE.	
10-inch Machine	£3 10 0	25-inch Machine	£13 10 0
12-inch Machine	4 7 0	28-inch Machine	15 15 0
14-inch Machine	5 15 0	30-inch Machine	17 0 0
16-inch Machine	6 15 0	The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.	
18-inch Machine	8 0 0	Price, for the 28-inch and 30-inch Machines, 30s. extra;	
20-inch Machine	9 0 0	25-inch Machine, 35s. extra. Silent Movement, 12s. 6d. extra.	
22-inch Machine	10 0 0	Boots for Pony, 2s.; Donkey, 20s. per set.	
NEW HORSE MACHINE.		32-inch Machine	
30-inch Machine	£20 10 0	42-inch Machine	38 0 0
36-inch Machine	28 0 0	48-inch Machine	50 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.
 Price, for the 42-inch, 48-inch, and 36-inch Machines, 42s. extra; for the 30-inch, 32s. extra. Silent Movement, 50s. extra.
 Boots for Horse's feet, 9s. per set.

A Staff of experienced Workmen always kept in hand, so that Repairs can be done there as well as at the Manufactory.

SHANKS' PATENT LAWN MOWERS
 Are warranted to give ample satisfaction, and if not approved of can be at once returned.

ALEXANDER SHANKS & SON,
 Dens Ironworks, Arbroath; and 27, Leadenhall Street, London, E.C.
 27, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can choose from a Stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power. Orders executed same day as received.
 Small Lawn Mowers—6-inch, 25s.; 7-inch, 35s.; 8-inch, 50s.

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WANTED, an experienced GARDENER, well up in treatment of Vines and Stone Plants. Unexceptionable references. Apply to C. GILLIE, Branganee Tree House, Newcastle-under-Lyme.

WANTED, a GARDENER; married, small family not objected to. No Glass; Kitchen and Pleasure Grounds. To help Horts in winter. Wages, a guinea per week with a cottage, ready at once, and references, to the PRINCIPAL, High Harrogate College, Harrogate.

WANTED, a GARDENER.—The Vestry of St. Paners require the services of an experienced Gardener to act as Superintendent of the St. Paners Gardens, Paners Road, N. W. 10, per week with small residence. Applications to be made on Forms, to be had at the Vestry Hall, and to be returned with Testimonials as to character and experience, and references, to the Vestry Clerk, at the Vestry Hall on that day at 3 o'clock, on Monday, the 18th inst. Vestry Clerk, Vestry Hall, Paners Road, N. W., June 8, 1877.

Gardener and Steward.

WANTED, about the middle or end of July, for the South of Ireland, a first-class GARDENER, with some knowledge of Farming, to Manage an Establishment, where the proprietor is much from home.—State age, religion, number of family, native country, and expectations as to salary, and forward copies of testimonials, to Messrs. MCKENZIE AND SONS, Camden Quay, Cork.

WANTED, as principal OUT-DOOR FOREMAN, for a Large Establishment, where from fifty to sixty Men are employed, a thorough practical, energetic, and trustworthy Man; so that he has his own experience, and the General Management of Woods and Gardens.—Mr. SMITH, Menmore Gardens, Leighton Buzzard, Bucks.

J. W. WIMSETT is in WANT of a GENERAL FOREMAN for the Nursery Department. Must thoroughly understand his business, and able to give the highest references.—Nurserymen, Winchester.—Good, Chelsea, S. W.

WANTED, an experienced SOFT-WOODED PROPAGATOR, who is also a good Botanist and Cultivator, who is thoroughly up to growing Plants for Market, and One or two smart young Men as IMPROVERS.—Write, stating full particulars, to JOHN COWAN, The Vineyard, Garden, near Liverpool.

WANTED, as IMPROVER, a steady, industrious Man, from his services to a Nursery, who has some experience with Glass, and takes a thorough interest in his work. Wages, to begin with, 12s per week and board.—W. GILLIE, The Street, near Rivington, County Lincashire.

WANTED, a Young Man, in the Nursery, who understands Soft-wooded Plants, and can make himself useful in the Nursery.—J. MERRYWEATHER, Nurseryman, &c., Lansdown Hill, Gusham Junction, S. W.

Landscape Gardening.

WILLIAM HARRON and SON have a vacancy for an ARTICLED PUPIL; he will also have an opportunity of acquiring a thorough knowledge of the Nursery Business.—Elvaston Nurseries, Borrowash, Derby.

WANTED, a good GENERAL HAND, to assist in the Houses. Must be well recommended.—EDWIN HULLER, Nurseryman, Gusham Junction.

WANTED, TWO MEN, under a Foreman, to do the Planting of the Greatman's Gardens. Apply, stating age and where last employed, to R. DERON, The Nurseries, Ely, Cambs.

WANTED, a respectable, active MAN, who thoroughly understands the Management of Figs, Fencing and also Market Gardening. Wages 4s per week, with good house and garden.—Apply, with full particulars, to the SECRETARY, Aylesbury Dairy Company (Limited), St. Peterburgh Place, Wycombe, London, W.

WANTED, a sober, industrious MAN, who is well up in the Glass of the Greatman's Gardens.—Mr. SMITH, Menmore Gardens, Leighton Buzzard, Bucks.

WANTED, a Young Man, to Serve in a Seed and Florist's Shop, and to Assist at the Desk. A Plain Handwriting and good references indispensable.—A. MALLEE & Co., Nurseryman, Gusham Junction.

WANT PLACES.

B. S. WILLIAMS, having at the present time several very excellent GARDENERS upon his establishment, who are of the highest practical experience and trust are required. B. S. W. would at the same time like to intimate that when a Gardener is applied for, the following is the situation showing the position that would prevent unnecessary correspondence and delay.—Victoria and Paradise Nurseries, Upper Holloway, London, N.

Head Gardeners.

JOHN LANG AND CO. can at present recommend several energetic and practical Men, of tested ability and first-rate character. Ladies and Gentlemen in WANT of GARDENERS and BAILIFFS, or who require first-rate Establishments, or who require single-hand Situations, can be suited, and have full particulars by applying at Stansfield Park and Rutland Park Nurseries, Forest Hill, London, S.

E. G. HENDERSON

AND SON have many excellent GARDENERS with approved testimonials for ability now waiting in their Nurseries for re-employment.

E. G. H. & S. will be pleased to answer any enquiries from Noblemen and Gentlemen requiring such.—Pine-apple Nursery, Maids Vale, London, W.

GARDENER (HEAD), age 26.—GEORGE BOND can recommend his Foreman to any Lady or Gentleman in WANT of the services of a trustworthy Man.—The Gardens, Walcot, Lyberty North, Shropshire.

GARDENER (HEAD).—Married, no family; thoroughly practical in all branches of the profession. First-class references.—L. K., Mr. Wood, Nurseryman, Newmarket, Suffolk, Essex.

GARDENER (HEAD).—Through practical knowledge of the profession in all its branches. Wife good housekeeper. Good characters.—A. B., Post-office, Widdlesham, near English, Surrey.

GARDENER (HEAD).—Married, no family; thoroughly practical in the management of the profession. Character from present employer.—C. G., Oak Den, Holmwood, Dorset.

GARDENER (HEAD), where two or more are kept.—Age 29, married when suited; understands the profession.—Excellent character.—G. STREET, Worpole Lodge, Epsom, Surrey.

GARDENER (HEAD).—Single; thoroughly practical in all branches of the profession, including Orchids and Pines, Stock if required. Ten years' good character.—G. WATERMAN, The Gardens, Cris, Hants; Peveler, Chelmsford.

GARDENER (HEAD).—Age 40; twenty-six years' experience in best Gardens and Nurseries in England; has taken over 500 Pines for Fruit, Flowers, and Vegetables at Royal Exotic and the Royal Exotic Nurseries, the Gardens, Rendcomb, Cirencester.

GARDENER (HEAD).—Age 39, married; thoroughly experienced in all branches of Gardening. Fifteen years' excellent character from last, and twelve months' from present employers.—A. Z., Fairbairn Royal, Slough, Bucks.

To Noblemen and Gentlemen.

GARDENER (HEAD).—Age 40, married; Scotch; thoroughly practical in Early and Late Forcing of Fruits, and in Vegetables. Several awards of twenty years in Noblemen's and Gentlemen's situations. Wages, £10 per annum. Good recommendations.—R., Royal Horticultural Gardens, S. W.

F. NEWMAN begs to offer his services to any Noblemen or Gentleman requiring a first-class Gardener or Orchard Grower; will be discharged about the middle of July as present employer, and is in his country establishment. Has taken Silver Medal at the Royal Horticultural Society, Prizes at Royal Exotic and the Royal Exotic Nurseries, and has character from previous and present employer, who will be pleased to furnish particulars as to honesty, sobriety, ability, &c.—Cholmeley Park, Highgate, N.

GARDENER (HEAD, WORKING).—H. NOTT, of the late Mrs. Wood's, Eashing Park, Godalming, wishes to treat with any Lady or Gentleman requiring a thorough practical Gardener. First-rate character.—Address as above.

GARDENER (HEAD, WORKING).—Age 40, first-class, no encumbrance; understands Vines, Stone and Greenhouse Plants, and Flower and Kitchen Gardening. Wife could Manage Dairy. Eleven years' good character.—W., 4, Alma Cottages, Langton Lane, Stratford, S.

GARDENER (HEAD, WORKING).—Age 47; over thirty years' good practical experience in all branches of Gardening; good Pine, Peach, and Grape Grower; could undertake Alterations, or Laying-out New Grounds by the job or contract, and is in his own house. First-class testimonials.—F., E., 15, Napier Road, Brouley, Kent.

GARDENER (HEAD, WORKING), where Fruits, Flowers, and Vegetables are required in a high state of perfection, and the routine of Garden Work generally executed thoroughly.—Age 29, single; testate. First-class certificates from Noblemen and Gentlemen in England, Wales, and Ireland.—WILLIAM GRAY, F. & A., Dickson & Sons, Upton Nurseries, Chester; or Ashford Gardens, Cong, Ireland.

GARDENER (SINGLE-HANDED, or where two are kept).—Age 29, single at present. First-class character.—T. E., 61, Bennetthorpe, Doncaster.

GARDENER (SINGLE-HANDED), or otherwise wise.—Age 24, single; experienced; understands the complete Management of both Flower and Kitchen Gardens, and is in his own house. Good references.—Compton preferred.—W. H., 365, King's Road Post-office, Chelsea, S. W.

GARDENER (SINGLE-HANDED), where a boy or help is given.—Age 24, single; understands Vines, Conservatory, Stone and Greenhouse, Flower and Kitchen Gardens, and is in his own house. Good references.—Park Lodge, Maidstone, Kent.

GARDENER (SECOND), in a Gentleman's Garden.—Good character.—G. S., Ovington, Alresford, Hants.

GARDENER (SECOND), in a Noblemen's or Gentleman's Establishment.—Age 35; eight years' experience in first-class Nurseries. Good references.—Brent late employer.—W. H., 43, Thornhill Place, Maidstone, Kent.

GARDENER (SECOND), in the Houses, where three or four are kept. Six years' good character.—C. DUNHAM, The Gardens, West Park, near Anghrib, Bedfordshire.

GARDENER (SECOND, or good THIRD), in the Houses in a Noblemen's or Gentleman's Garden; a Lodge preferred.—Age 28. Six years' experience. Good character and references.—State wages, &c.; to A. RUSSELL, 1, Abchurch Lane, Strand, London, W.

GARDENER (UNDER).—Age 20; one and a half year's good character.—W. P., Post-office, Deschford, Herefordshire.

GARDENER (UNDER), in the Houses.—Age 21. Three years' good character.—Address, stating wages, JAMES GATES, East Lockinge, Wantage, Berks.

FOREMAN, in a Noblemen's or Gentleman's Garden.—Age 28, single; eleven years' experience. Good character.—W. P., Post-office, Otror, Longville, Peterborough.

FOREMAN.—E. WILSON, Gardener to the East of Lindsey, will have much pleasure in recommending his Foreman to any Noblemen or Gentleman's Garden in want of a thorough practical, energetic man as above.—E. WILSON, Uffington Gardens, Stamford, Lincolnshire.

FOREMAN, in the Houses, in a Private Establishment.—Has had the most extensive practice possible in the Cultivation of Fruit and Plants in every department, in good Private Establishments. Three years in last situation—two years as Foreman. Excellent character from last situation, and satisfactory references for leaving present, if required.—A. D., Methley Post-office, near Leeds.

To Nurserymen.

FOREMAN, in a good General Nursery.—Married; experienced; good Salsman; understands the business in all its branches.—W. M., Messrs. Ball & Co., Nurserymen, &c., Bedford Road Nursery, Northampton.

To Nurserymen.

PROPAGATOR (SOFT-WOODED).—Well up in Fernogonists, and all classes of soft-wooded Plants.—Letters, stating particulars, to H. H. Royal Exotic Nursery, Chelsea, S. W.

PROPAGATOR (GOOD), and GROWER of Plants, Cucumbers, &c.—Well up in all other branches of Nursery Work and Gardening. Near London.—G., Post-office, Feltham, Middlesex.

PROPAGATOR and GROWER (SOFT-WOODED).—Has had many years' experience. Private, for Market, and the Public Parks of London.—State wages, &c.—F. C., 1, Canterbury Grove, Lansdown Hill, Lower Newwood, S.

IMPROVER, in the Houses, in a Noblemen's or Gentleman's Establishment.—Age 20; has been in the Gardens. Five years' highest character.—HEAD GARDENER, Middleton Hall, Tamworth.

TO NURSERYMEN.—Wanted, by a young Man, age 29, a situation under Ghas in a good Establishment; fourteen years' experience. Good character.—GRABIE CASHEFORD, Wellington Road Nursery, St. John's Wood, London, N. W.

TO NURSERYMEN.—A young Man, age 29, requires a situation under Glass in a good Establishment; five years' experience.—F. V., 6, Zeeval Place, Old London Road, Hastings.

MANAGER, or BOOK-KEEPER, in a Nursery and Seed Business.—Age 32. First-class references.—FLORAL, 2, Burrell Street, Ipswich.

CLERK, CORRESPONDENT, or TRAVELLER.—Many years' experience of the Wholesale Seed Trade, also Flowers and Grasses.—S. V., 9, Vincent Terrace, Islington, London, N.

TRAVELLER, CLERK, or SHOPMAN.—The Advertiser (age 33) seeks a permanent engagement in either of the above capacities; fifteen years' experience in first-class London and foreign references.—W. A. B., C. Mr. Colville, 20, Dymore Place, Swansea, South Wales.

SHOPMAN (ASSISTANT).—Three years' experience. Good references.—W. H. D., Post-office, Hereford.

FARM BAILIFF.—Age 38, married; twenty years' experience; thoroughly practical; well up in Rearing and Fatting Stock; Working Light and Heavy Stocks, Fencing, &c.—First-class references as to alidity, &c.—F. JEFFERY, Henfield, Sussex.

ELLIS'S RUTHIN WATERS. PURE AERATED WATERS.

ELLIS'S RUTHIN WATERS.—Crystal Springs, Soda, Potass, Seltzer, Lemonade, Lithia, and Gout, Lithia and Potass. Corks branded "R. ELLIS and SON, RUTHIN," and every Label bears their Trade Mark. Sold everywhere, and Wholesale, by R. ELLIS and SON, Ruthin, North Wales. London Agents: THE BEST AND SONS, Henrietta Street, Cavendish Square.

DINNEFORD'S FLUID MAGNESIA. The best remedy for ACIDITY of the STOMACH, HEARTBURN, HEADACHE, GOUGH, INDIGESTION; and the safest aperient for delicate Constitutions, Ladies, Children, and Infants.

DINNEFORD AND CO. 175, New Bond Street, London, and all Chemists.

HOLLOWAY'S OINTMENT and PILLS.—Sure Relief.—The weak and enervated suffer severely from nervous affections when storms or electric disturbances agitate the atmosphere. Neuralgia, gouty pang, and flying pains, very distressing to a delicate system, may be readily removed by rubbing this Ointment upon the affected part after it has been fomented with warm water. It is also occasionally in the doses prescribed by the instructions, keep the digestion in order, excite a free flow of healthy bile, and regulate the bowels, so that the rich matter resulting from thoroughly assimilated food—wanting which the delicate find it difficult to maintain existence. Holloway's Ointment and Pills are infallible remedies.

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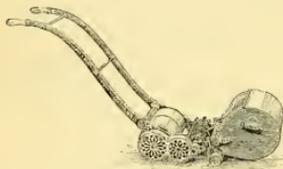
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Unsurpassed Boilers and Heating Apparatus erected and fitted in all parts of the Kingdom.

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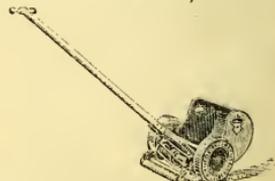
FOLLOWS & BATE'S NEW PATENT LAWN MOWERS, &c.



New Patent "Roller" Lawn Mower.



New Patent Lawn-Edge Cutter.



Royal Prize Medal Patent "Anglo" American Lawn Mower.

Upwards of 37,000 of these celebrated Machines have been sold during the past few years.

Patented by Her Most Gracious Majesty the Queen; His Royal Highness the Prince of Wales; His Imperial Majesty the Emperor of Germany; His Imperial Majesty the Emperor of Austria; The Imperial Russian Government (for the Agricultural Museum at St. Petersburg); and members of the Nobility and Gentry of Great Britain.

Awarded Medal for Merit, Vienna, 1873 (the only Medal given for Lawn Mowers), **Large Silver Medal** (the First Prize) at the Meeting of the Royal Horticultural Society, Birmingham, 1877, and in addition, every First Prize wherever these Machines have been brought into competition in actual trial with other makes.

FOLLOWS and BATE here abstain from enumerating in detail the various good points "claimed" for other Machines, and content themselves with saying that their Lawn Mowers possess them all, and more also; they therefore solicit the favour of an application for one of their CATALOGUES, with Testimonials, BEFORE PURCHASING.

To be had from all respectable Ironmongers and Saddlers in the United Kingdom, or from the Patentees and Manufacturers, FOLLOWS & BATE, Manchester.

F. & B. are the sole makers of the well-known Patent "CLIMAX" LAWN MOWER, with Back Delivery, from 25s. each; NEW PATENT LAWN-EDGE CUTTER, which entirely supercedes

Machines of any make Repaired or allowed for in Exchange.

T. H. P. DENNIS & COMPANY.

Motto, "Art with Economy" as applied to Conservatories.

HORTICULTURAL BUILDINGS OF ALL DESCRIPTIONS & HOT-WATER HEATING APPARATUS

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Show Rooms: MANSION HOUSE BUILDINGS, LONDON, E.C.,

where full-sized Specimens of Greenhouses, &c., and Hot-water Apparatus at work can be inspected.

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PAXTON'S CALENDAR.

New Ready, a New and thoroughly Revised Edition of the

COTTAGER'S CALENDAR OF GARDEN OPERATIONS.

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Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. READERS, AGNEW & CO., Lombard Street, Finsbury, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County, on SATURDAY, June 16, 1877.
Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 182.—VOL. VII. { NEW SERIES }

SATURDAY, JUNE 23, 1877.

{ Registered at the General Post Office as a Newspaper. } Price 5d. { POST FREE, 5 1/2d. }

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Royal Botanic Society of London.
JAMES CARTER and CO., announce their GREAT EXHIBITION OF ORNAMENTAL-POLYAGED and FLOWERING ANNUALS and OTHER PLANTS Grown in Pots from Seed, to open WEDNESDAY, June 26, in the Centre of the Royal Botanic Gardens, Regent's Park, W., and continue daily.
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CATALOGUES.—His Excellency Pierre Wolkenstein will feel greatly obliged if Nurserymen and Seedsmen will kindly send him their Catalogues. They should be forwarded (if possible) to
S. E. PIERRE WOLKENSTEIN, Secrétaire de la Société Impériale d'Horticulture de Russie, St. Pétersbourg.

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With the Number for JULY 7 will be presented a Special Twelve-page ROSE SUPPLEMENT, and a beautifully COLOURED PLATE of a GROUP of ROSES.—(See back page.)

CRYSTAL PALACE.
THE GREAT ROSE SHOW, THIS DAY. Play, "Pink Dominoes," by Company of Criterion Theatre. Band of Scots. Fife of German Gymnastic Society. Admission, 3s. or by Season Ticket.

ALEXANDRA PALACE.
THE GREAT ROSE SHOW will be held on SATURDAY, June 30. LAST DAY of ENTRY, June 29. Schedules and all particulars may be obtained on application to **JOHN A. MCKENZIE**, 2 and 4, Great Winchester Street Buildings, London, E.C.

THE ROYAL PAVILION, BRIGHTON.
THE GRAND SUMMER EXHIBITION of the Brighton and Sussex Horticultural Society will be held at the above splendid Palace and Grounds, on WEDNESDAY and THURSDAY, June 27 and 28. Prizes are offered on the usual liberal scale as for former years, for Plants, Ferns, Cut Flowers and Fruits. The "Ashbury" Cup is offered for the best 12 varieties of Show and Greenhouse Plants. Schedules and Prizes can be had on application to the SECRETARY, 95, St. James's Street; or, E. SPARY, Superintendent, Queen's Gardens, Park Street, Brighton.
EDWD. CARPENTER, Secy.

PROME ROSE SHOW, THURSDAY, June 28. ALL ENTRIES must be on or before FRIDAY, June 26, to **A. R. BAILY**, Hon. Secy.

THE GREAT ROSE SHOW of the NATIONAL ROSE SOCIETY. St. James's Hall, Piccadilly, W., WEDNESDAY, July 4. Upwards of TWO HUNDRED and EIGHTY POUNDS given in Prizes, including Three Silver Cups. The most liberal Rose Schedule ever issued. Entries close June 28. Schedules and Prizes can be had on application to the HONORARY SECRETARIES, or to **M. NEWMAN**, Manager to the Show, Horticultural Club, 3, Adelphi Terrace, Strand, W.C.

NATIONAL CARNATION and NICOTIE SOCIETY, and CUT ROSE SHOW, will be held at the Royal Aquarium, Westminster, on WEDNESDAY and THURSDAY, July 18 and 19. Schedules and all particulars may be obtained on application to **E. S. BODWELL**, 11, St. Andrew's Terrace, Larkhall Rise, Clapham, S.W.; or **M. E. BENNETT**, Rabley Nurseries, Barnet, Herts.; or **M. W. W. ROBERTSON**, Royal Aquarium, Westminster, S.W.

NOTTINGHAM CENTRAL HORTICULTURAL SOCIETY'S GRAND SUMMER FLOWER SHOW, in the Nottingham Arboretum, THURSDAY, FRIDAY, and SATURDAY, July 19, 20, and 21. Schedules and Prizes for the above Exhibition may be had on application to **M. A. HOE**, 4, Corporation Road, Nottingham.



ROYAL HORTICULTURAL SOCIETY,

SOUTH KENSINGTON, S.W.

GREAT SUMMER SHOW, JUNE 19, 1877.

LIST OF MEDALS AWARDED.

AMATEURS.

CLASS 2.—Group of 12 STOVE and GREENHOUSE PLANTS in Flower.
 Mr. G. Wheeler, Gr. to Sir F. H. Goldsmid, Bart, M.P. St. John's Lodge, Regents' Park. Large Silver Bankian.

CLASS 3.—Group of 12 FINE-FOLIAGED PLANTS.
 T. M. Shuttleworth, Esq. (Mr. H. Thornber, Gr.), Howick House, Preston. Large Gold Bankian.

CLASS 4.—Group of 12 SPECIMEN FERNS.
 Mr. J. Stone, Gr. to C. Walton, Esq., Manor House, East Acton. Small Silver Bankian.

CLASS 5.—Group of 12 ORCHIDS.
 Mr. H. Heims, Gr. to F. A. Phillbeck, Esq., Q.C., Avenue Road, Regent's Park, N.W. Small Gift Flora.
 Mr. W. Perry, Gr. to J. W. Miles, Esq., Shirehampton, Bristol. Silver Flora.

CLASS 10.—ROSES, Cut Blooms, in Boves.
 J. Hollingworth, Esq., Turkey Court, Maidstone. Small Silver Bankian.
 Mr. J. W. Chand, Gr. to Sir F. Balthard, Bart., Clarendon Park, Salisbury. Large Bronze Bankian.

CLASS 14.—Group of PELARGONIUMS of any or all Classes.
 Mr. J. James, Gr. to W. F. Watson, Esq., Redliefs, Isleworth. Silver-Gilt Flora.
 Mr. W. Lacey, Gr. to C. S. Martiner, Esq., Wigmore Park, near Hoking, Large Silver Bankian.
 Mr. J. George, Gr. to Sir Nicholson, Putney Heath. Large Bronze Bankian.

CLASS 16.—Group of Hardy HERBACEOUS PLANTS in Flower.
 Mr. W. P. Roberts, Gr. to Mr. Terry, Esq., Peterborough House, Fulham, S.W. Large Bronze Bankian.

CLASS 17.—Group of BEDDING PLANTS, in or out of Flower, to be shown in 12-inch Pans.
 Mr. W. P. Roberts, Small Silver Bankian.

CLASS 18.—Group of LILIUMS in Pots, or Cut Spikes.
 G. F. Wilson, Esq., F.R.S., Heatherbank, Weybridge Heath. Large Bronze Bankian.

CLASS 19.—Group of IRIS, including NIPHUM.
 Mr. W. P. Roberts, Small Bronze Bankian.

CLASS 21.—Collection of FRUITS.
 Mr. G. T. Miles, Gr. to Lord Carington, Wycombe Abbey, High Wycombe. Silver-Gilt Flora.
 Mr. W. Cox, Gr. to Earl Beauchamp, Madresfield Court, Great Malvern. Large Silver Bankian.
 Mr. W. Coleman, Gr. to Earl Somers, Easton Castle, Ledbury. Large Silver Bankian.
 Mr. J. H. Goodacre, Gr. to Earl of Harrington, Elvaston Castle, Derby. Small Silver Bankian.

CLASS 22.—Single Dishes of GRAPES, PINE-APPLES, STRAWBERRIES, PEACHES, and NECTARINES, or Collections of any of these Fruits.
 Mr. J. Hornwood, Gr. to J. L. Lovibond, Esq., Stars Hill, Farnborough. Small Silver Bankian.
 Mr. W. Bates, Gr. to W. H. Pouchard, Esq., Pound Lodge, Twickenham. Large Bronze Bankian.
 Mr. P. Edwards, Gr. to Mrs. Tristram, Fowley, Liphook. Large Bronze Bankian.
 Mr. Akers, The Grove, Kentish Town. Small Silver Bankian.

CLASS 23.—Collection of VEGETABLES.
 Mr. G. T. Miles, Gr. to Lord Carington, Wycombe Abbey, High Wycombe. Large Silver Flora.
 Mr. W. C. Pagnoni, Gr. to G. H. W. Digby, Esq., Sherborne Castle, Dorset. Large Silver Bankian.
 Mr. W. Iggleden, Gr. to R. B. W. Baker, Esq., Orsett Hall, Essex. Large Bronze Bankian.

NURSERYMEN and TRADE.
CLASS 25.—Group of MISCELLANEOUS PLANTS, in or out of Flower.
 Messrs. W. Rolleston & Sons, The Nurseries, Tooting. Silver Flora.
 Mr. J. Wills, Royal Exotic Nursery, South Kensington, S.W. Small Gold Bankian.
 Mr. B. S. Williams, The Nurseries, Upper Holloway, N. Small Gold Bankian.
 Messrs. W. Cutbush & Son, The Nurseries, Highgate, N. Silver Flora.
 Messrs. Osborn & Sons, The Nurseries, Fulham, S.W. Silver-Gilt Flora.
 Messrs. J. Veitch & Sons, Royal Exotic Nursery, Chelsea, S.W. Large Gold Bankian, and Extra Gold Medal for Nepenthes sanguinea.
 Messrs. John Laing & Co., Stansford Park Nursery, Forest Hill, S.W. Large Gold Bankian.
 Messrs. T. Jackson & Son, Nurseries, Kingston-on-Thames. Small Gold Bankian.
 Mr. W. Hill, King's Road, Chelsea, S.W. Large Gold Bankian.

CLASS 27.—Group of FINE-FOLIAGED PLANTS.
 Mr. J. Wills, Royal Exotic Nursery, South Kensington, S.W. Silver-Gilt Flora.
 Messrs. James Carter & Co., 237 and 238, High Holborn, W.C. Silver Flora.

CLASS 28.—Group of PALMS and CVCADS.
 Mr. J. Wills, Royal Exotic Nursery, South Kensington, S.W. Silver-Gilt Flora.
 Messrs. Hooper & Co., Covent Garden, W.C., Group of Palms. Small Silver Bankian.

CLASS 29.—Group of FERNS.
 Messrs. J. Veitch & Sons, The Nurseries, Dorking. Large Silver Bankian.

CLASS 34.—ROSES, Cut Blooms, in Boves.
 Mr. C. Turner, Royal Nurseries, Slough. Large Silver Bankian.

CLASS 35.—Group of ERICAS.
 Messrs. T. Jackson & Son, Nurseries, Kingston-on-Thames. Silver-Gilt Flora.

CLASS 35.—Group of PELARGONIUMS of any or all classes.
 Mr. C. Turner. Silver Gilt Flora.

CLASS 40.—Group of Hardy HERBACEOUS PLANTS in Flower, in Pots.
 Mr. R. Dean. Large Bronze Bankian.

CLASS 41.—Group of BEDDING PLANTS in or out of Flower, to be shown in 12-inch Pans.
 Mr. R. Dean. Large Bronze Bankian.

CLASS 42.—Group of LILIUMS in Pots, or Cut Spikes.
 Messrs. Barr & Sugden, 102, King Street, Covent Garden, W.C. Small Silver Bankian.

CLASS 45.—Group of IRIS, including Niphum.
 Mr. R. Parker, Exotic Nursery, Tooting. Silver Flora.
 Messrs. Barr & Sugden. Large Silver Bankian.

CLASS 45.—Group of DECORATIVE PLANTS, in or out of Flower, as grown for Covent Garden Market, to occupy space not exceeding 200 square feet.
 Mr. J. Reeve, Nurseryman, &c., Acton. Small Gold Bankian.
 Mr. H. Herth, Kew Nursery, Richmond. Small Gold Bankian.

CLASS 47.—GRAPES, PINE-APPLES, STRAWBERRIES, PEACHES, or NECTARINES, Single Dishes or Collections of any of these Fruits.
 Mr. R. Farra, Florist, Chadwell Heath, Essex. Silver-Gilt Flora.

CLASS 48.—Collection of VEGETABLES.
 Mr. A. J. Harwood, Market Gardener, St. Peter's Street, Colchester. Small Silver Bankian.

CLASS 49.—MISCELLANEOUS.
 Mr. J. Wills, Royal Exotic Nursery, South Kensington, S.W. Group of New Hybrid DROCASMS. Small Gold Bankian.
 Messrs. Hooper & Co., Covent Garden, W.C. Silver Flora.
 Messrs. H. Lane & Son, The Nurseries, Great Berkhampstead, Group of Specimen Ivies. Double-Gilt Flora.

CLASS 49.—MISCELLANEOUS.
 Messrs. Barr & Sugden, Group of Silver Pyrethrums. Large Bronze Bankian.
 Mr. H. Hooper, Bath, Cut Blooms of Pyrethrums, Pansies, and Ranunculi. Large Bronze Bankian.

CLASS 49.—MISCELLANEOUS.
 Mr. H. Cargell, Swanley, Kent, Cut Blooms of Pelargoniums. Small Bronze Bankian.
 Mr. C. Turner, Collection of Specimen Ivies and Box of Cut Proteas. Silver Flora and Small Silver Bankian.

BOUQUETS and FLOWERS, &c.
 Miss S. Moyses, 22, Stockbridge Terrace, Belgavia, one Bride's Bouquet. Small Silver Bankian.

TABLE DECORATIONS, &c.
 Messrs. W. Wood, Parmlay & Co., Dinner-table Decorations. Small Silver Bankian.
 Messrs. Founce & Sons, Table Decorations. Large Silver Bankian.

PRIZES OFFERED BY MR. WILLIAM BULL.

CLASS A.—12 NEW PLANTS, introduced and sent out for the first time since the commencement of 1874. The plants entered for this competition to be only those announced in Mr. Bull's Catalogue, and sent out by him. (Amateurs.)
 1st, T. M. Shuttleworth, Esq. (Mr. H. Thornber, Gr.), Howick House, Preston.
 2d, Mr. J. W. Chand, Gr. to Sir F. Balthard, Bart., Clarendon Park, Salisbury.

CLASS B.—12 NEW PLANTS, introduced and sent out for the first time since the commencement of 1874. The plants entered for this competition to be only those announced in Mr. Bull's Catalogue, and sent out by him. (Nurserymen.)
 1st, Mr. B. S. Williams, The Nurseries, Upper Holloway, N.
 2d, Messrs. W. Hill, King's Road, Chelsea, S.W.

CLASS D.—12 NEW PLANTS, introduced and sent out for the first time since the commencement of 1874. The plants entered for this competition to be only those announced in Mr. Bull's Catalogue, and sent out by him. (Nurserymen, not having previously won any of Mr. William Bull's Silver Cup.)
 1st, Mr. J. Wills, Royal Exotic Nursery, South Kensington.

PRIZES OFFERED BY THE PELARGONIUM SOCIETY.

CLASS 1.—6 Large-flowered SHOW PELARGONIUMS.
 1st, Mr. C. Turner, Esq.
 2d, Mr. J. Weir, Gr. to Mrs. Hodgson, The Elms, Hampstead, London, N., Esq.

CLASS 2.—4 Large-flowered SHOW PELARGONIUMS.
 1st, E. B. Forster, Esq., Clewer Manor, Windsor, Esq.
 2d, Mr. C. Turner, Esq.

CLASS 3.—6 Smaller-flowered FANCY PELARGONIUMS.
 1st, Mr. C. Turner, Esq.
 2d, Mr. C. Turner, Esq.

CLASS 4.—18 Large-flowered SHOW-TYPE PELARGONIUMS.
 1st, Mr. C. Turner, Esq.
 2d, Messrs. J. & J. Hayes, Florists, Lower Edmonton, Esq.

CLASS 6.—9 ZONAL PELARGONIUMS. (Florists' Class.)
 1st, Mr. J. Catlin, Gr. to Mrs. Lermite, Sm., Finchley, N., Esq.
 2d, Mr. W. Beadme, The Nursery, Brentford, Esq.
 3d, Mr. C. Turner, Esq.

CLASS 7.—4 ZONAL PELARGONIUMS. (Florists' Class.)
 1st, Mr. C. Turner, Esq.
 2d, Mr. J. Catlin, Esq.
 3d, Mr. J. George, Gr. to Miss Nicholson, Putney Heath, S.W.

CLASS 8.—9 ZONAL PELARGONIUMS. (Decorative Class.)
 1st, Mr. J. Catlin, Esq.
 2d, Mr. W. Birt, Gr. to J. H. Lermite, Esq., Knightshead, Finchley, N., Esq.
 3d, Mr. J. Catlin, Esq.

CLASS 9.—12 ZONAL PELARGONIUMS, irrespective of Class.
 1st, Mr. J. Catlin, Esq.
 2d, Mr. C. Turner, Esq.
 3d, Mr. W. Meadmore.

CLASS 10.—12 ZONAL PELARGONIUMS, irrespective of Class.
 1st, Mr. W. Birse, Esq.

CLASS 11.—19 VARIEGATED-LEAVED ZONAL PELARGONIUMS.
 1st, Mr. W. Meadmore, Esq.

CLASS 12.—6 VARIEGATED-LEAVED ZONAL PELARGONIUMS.
 1st, Mr. W. Meadmore, Esq.

CLASS 13.—9 BRONZE BICOLOR ZONAL PELARGONIUMS.
 1st, Mr. W. Meadmore, Esq.

CLASS 14.—4 DOUBLE-FLOWERED ZONAL PELARGONIUMS.
 1st, Mr. J. Catlin, Esq.
 2d, Messrs. E. G. Henderson & Son, Pine Apple Nursery, Madia Vale, Esq.
 3d, Mr. C. Turner.

CLASS 15.—4 HYBRID IVY-LEAVED PELARGONIUMS.
 1st, Mr. J. George, Esq.

CLASS 18.—1 ZONAL PELARGONIUM.
 1st, Mr. C. Turner, Esq.
 Equal 1st, Mr. H. Cantell, Esq.

CLASS 20.—1 DOUBLE-FLOWERED ZONAL PELARGONIUM.
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 1st, Messrs. E. G. Henderson & Son.

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 2d, Mr. W. Meadmore.

CLASS 22.—1 DOUBLE-FLOWERED IVY-LEAVED PELARGONIUM.
 1st, Messrs. E. G. Henderson & Son, Esq.

CLASS 23.—24 ZONAL PELARGONIUMS, Cut Blooms.
 1st, Mr. C. Turner, Esq.
 2d, Mr. H. Cannell, Esq.
 3d, Mr. J. R. Pearson, Chiswell Nurseries, Nottingham.

CLASS 24.—12 ZONAL PELARGONIUMS, Cut Blooms.
 1st, J. McIntosh, Esq., Duncraig, Weybridge, Esq.

QUANTITY and QUALITY.

- NEW ROSES, IN POTS.
- TEA and NOISSETTE ROSES, IN POTS.
- CLEMATISES, IN POTS, of best New and Old Sorts.
- ORCHARD-HOUSE TREES, IN POTS.
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Also, by far the largest and most carefully grown Outdoor NURSERY STOCK in this part of England.

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EWING & COMPANY,
THE ROYAL NORFOLK NURSERIES, EATON,
NEAR NORWICH.



Pine-Apple Nursery, Malda Vale, London, W.
F. G. HENDERSON AND SON are now sending out the following plants—several of which are being offered for the first time. See the May Bedding and Soft-wooded Greenhouse Plant Catalogue for descriptions, which will be forwarded on application:—
"PELARGONIUM Queen of Stripes, large flowered section, with Curzon-like striped flowers."
" Ivy-leaved Nemesis, the finest colour in the group."
" Dame Blanche, very delicate colour."
"BOUVARDIA ROEHLI, new species."
"LOBELIA Pine-Apple Gem and Princess of Wales."
"MIKANIA SCANDENS VARIEGATA, a useful plant."
"LUPHEA MINUTA IGNEA, brilliant."
"DACTYLIS ELEGANTISSIMA AUREA, fine."
"MIMULUS, a collection of new colours, and double-flowered."
"VERENAS and PETUNIAS, new colours and varieties."
"SALVIA SPLENDENS BRUNTI, the finest."
"ARBITUN DARWINI TESSELLATA, useful."
"SEED—the best quality that can be grown—of Calceolaria, Cuscuta, Primula, single and double; Cyclamen, Fanny, &c. See Advertisement May 5, or our SEED CATALOGUE, for prices, &c.

**THE NEW SEEDLING ROSE,
"QUEEN OF BEDDERS"
(NOBLE).**

See Coloured Plate (after Mrs. Duffield), "Gardener's Chronicle," May 5, 1877.

Perhaps the finest of all the English Seedling Roses of recent introduction. It is *per excellence* a really Bedding Rose in every sense of the word—requires no pegging down, support, or training of any kind, and it is continuous early and late bloomer.

First-class Certificate Royal Horticultural Society, August 3, 1876.

Its inferiority may be imagined when it is stated that a plant 18 inches high had eighty-four buds and expanded flowers upon it on September 6, 1876.

A constant supply of buds was obtained from early June to November of that year—over five months.

Good Plants are now being sent out in strict rotation at

10s. 6d. each
Coloured Plates 12. each.

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**TEA SCENTED ROSES.
SPECIAL CULTURE.**

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

- PLANTS, in 5-inch pots, suitable for planting out, 15s. to 18s. per dozen.
 - " extra size, in 6-inch pots, for Greenhouse, set with buds, 24s. per dozen.
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 - " Half Specimens, 5s. to 7s. 6d. each.
- NEW FRENCH ROSES of 1877, 30s. per dozen.
HYBRID PERPETUAL ROSES, established in 9 and 12-inch pots, now showing for bloom, 5s. to 45s. per dozen.

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Bedding Plants, Bedding Plants.

JOHN PERKINS AND SON beg to offer the following, in strong healthy plants, in single pots—
"CALCEOLARIA, Golden Gem, 12s. per 100."
"HELIOTROPES, 12s. per 100."
"IRENE LINDEMI, 12s. per 100."
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"LOBELIA SPECIOSA, from Cuttings, 10s. per 100."
"LOBELIA, The Bride, the finest White Lobelia in cultivation, 4s. per dozen, 25s. per 100; price per 100 on application."
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BEG TO ANNOUNCE THAT THEIR

**PLANT CATALOGUE FOR 1877
IS NOW READY.**

It contains a DESCRIPTIVE LIST of the LEADING NOVELTIES of the SEASON and a SELECT GENERAL LIST of STOVE and GREENHOUSE PLANTS, PALMS, FERNS, MISCELLANEOUS PLANTS suitable for Bedding and other purposes, and Sundries.

Post-free on application.

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TREE FERNS.

THE LARGEST AND BEST STOCK IN EUROPE.



WILLIAM BULL, F.L.S.,

Respectfully invites the Nobility and Gentry to an inspection of the above; also of his MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS, Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

NEW ENGLISH-RAISED SEEDLING ROSES.

**MESSRS. BELL & SON,
THE NORWICH NURSERIES,**

Are now executing orders for their TWO NEW ROSES, raised at their Nurseries, and described and announced below. They have been thoroughly tested here before being sent out, and can be recommended with confidence as really distinct novelties.

CLIMBING ROSE "CATHERINE BELL."

Very large flowers of a deep rose colour, the backs of the petals a delicate silvery pink, of exquisite shape and very fragrant. It is very free-flowering, and of vigorous climbing habit, making shoots 5 feet to 8 feet long in a season. Figured in *The Gardener*, March 18, 1876.

"Your Rose Catherine Bell is both *belle et grande*."—Rev. Canon Reynolds 1106.

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

COLOURED PLATES ONE SHILLING EACH.

HYBRID TEA ROSE "MRS. OPIE."

Bright salmon-rose, tea-scented flowers, with shell-like petals, a most distinct and novel shade of colour among Tea Roses. It will form a charming companion to Madame Falout, and will be as extensively cultivated as that variety when well known. In flower from May to November. Figured in the *Floral Magazine*.

Good Flowering Plants, in Pots 7s. 6d. each.

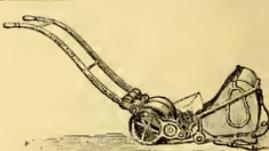
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HORTICULTURAL TOOLS & GARDEN FURNITURE.

DEANE & CO.,
46, King William Street, E.C.



- LAWN MOWERS, from 25-
- GARDEN ENGINES 45
- GARDEN BARROWS 40 6
- GARDEN ROLLERS 24
- SPADES, FORKS, SCYTHES, &c.
- SYRINGES and PUMPS.
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- FLOWER STANDS and VASES.
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Shanks, Green, Archimedeian, &c.

Deane's New Illustrated Horticultural CATALOGUE for 1877, gratis and post-free.

Established A.D. 1700.

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EDGINGTON'S GARDEN NETTING is the cheapest and most durable, at 1d. per square yard, or in quantities of 500, 1000, or 2000 yards, carriage free. EDGINGTON'S MARQUEES and GARDEN TENTS are the best. EDGINGTON'S MARQUEES for Hire are the most handsome and capacious. EDGINGTON'S RICK CLOTHS for 71 years have maintained their celebrity as the best. HAYTHORN'S and WALKER'S NETTINGS. A quantity of good Second-hand Government TENTS from Abyssinia for Sale, Cheap. Sample of material free on application. By particular—FREDK. EDGINGTON AND CO., 52 (only) Old Kent Road, London, S.E.

BELGIAN GLASS for GREENHOUSES, &c., Can be obtained in all sizes and qualities, of **BETHAM & SON**, 9, LOWER THAMES STREET, LONDON, E.C. R. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., in 16-oz. and 21-oz. **JOHN BOWMAN**, GREENHOUSES—every description, (From £10 to £1000) GLASSHOUSES—perfect ventilation, HORTICULTURAL BUILDERS and TIMBER MERCHANTS. West End Steam Joinery, Newcastle.

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

By Her Majesty's  Letters Patent

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

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

"The 'Boiler of the Future.' I have no doubt about this."—Wm. THROTSON, *Tunwell Vineyards.*

From the "Gardener," March, 1877.

WRIGHT'S PATENT ENDLESS FLAME-IMPACT BOILER.

"This boiler is attracting a good deal of attention in the horticultural world at the present time; and as I have just had one of their largest-sized ones fitted up here, and have now got it well tested, perhaps a few lines from me upon its capabilities may not be without some advantage to some of your numerous readers. I have had some experience as to the annoyance and extra labour caused by badly-constructed boilers, and any improvement effected in these to save labour and find demand the attention of all interested parties. "To give you a more detailed idea of the work this boiler has to do, I may begin by stating that our hothouses consist of a range having a total length of 100 feet, a ridge-and-furrowed greenhouse being in the centre, two lean-to Vineries on each side, with Caneless-house and general plant-house at each end; 10 opposite side of wall we have a Fern-house, partly lean-to and partly open, 70 feet in length, varying in height to 20 feet. Attached to end of boiler-house is our laundry, with a drying chamber fitted up with about 2500 feet of 4-inch piping. The whole of the above houses are heated with hot water, and have a total of about 2000 feet of 4-inch piping. We had formerly two oval fire boilers, one being a feet 6 inches long, the other 4 feet long. With these two boilers kept fired we always found great difficulty in keeping up the temperature during frosty weather, and had frequently to lose a night's sleep attending to the fires. On the last day of last year the larger boiler came to grief—the water from it dropped out the fire; and in taking down some of the brickwork it was found to have cracked beyond repair. To be thus left to the middle of winter with only the one boiler was no joke. I had to look out for another without delay. I have given a good deal of attention to the construction of boiler boilers, and I must say I never seen one that came up to my idea of what a boiler should be until I saw the one which is now in use at the house of Wright & Co.'s Boiler, which appeared in the *Gardener*. "After talking the matter over with my employer, W. S. Nichol, we arranged to purchase the boiler, and I had the boiler I had formed such an opinion of. I at once put the order into the hands of Messrs. Melick & Philip, horseboiler makers and hot-water engineers, Tottenham Street, and they fitted it up and attached the piping in the most complete manner. I also got some additional light valves attached so that if anything should at any time go wrong it can be attended to without disturbing the piping. "And now as to the capabilities of the boiler for the work. As formerly stated, I had considerable difficulty in keeping up the heat with the two oval fire boilers kept hard at work. I now find that with the remaining oval fire boiler idle, and I found the draught very strong I got a three-foot valve fitter fitted into the bend of the stove pipe, and am able to regulate the fire to a steady, and by banking up the fire at 10 P.M., and turning the damper fully half round, I can leave it to its work with the greatest confidence till the usual time of commencing labour the following morning; and instead of, as formerly, having to sit up firing the half of the night at times, and sometimes whole ones, we can retire to rest at a reasonable hour, confident of sleep being undisturbed by unpaired draughts or plants and fruits going to ruin. In concluding my remarks I may say that I have had no hesitation in saying that for rapidity of circulation, small consumption of fuel, portability, and cleanliness, it has no rival, and I do not doubt this boiler will save us money, and where coils are high in price it will effect a considerable saving, and as there is good fire space in it it will be found a capital boiler for the use of a small place. I can say that I will take a forenoon and see a few more of them, and predict that we have a very high opinion of them in future, both as to other buildings, and shall have been hearing remarks to make about the principles of it next month.—Ed. Gardener."

"I think yours the next best thing 'Heat Trap' yet invented."—DAVID THROTSON, *Dreuxland Vineyards.*

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

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

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



Branded on every Casting.

Macfarlane's Castings,

Architectural, Artistic, and Sanitary,

Conservatories; Winter Gardens; Arbours; Pavilions; Garden Screens; Garden Entrances; Bandstands; Verandahs; Covered Ways; Bathhouses; Railings; Balconies; &c. Plain and Ornamental Castings of every description for Parks, Gardens, Pleasure Grounds, Esplanades, &c.

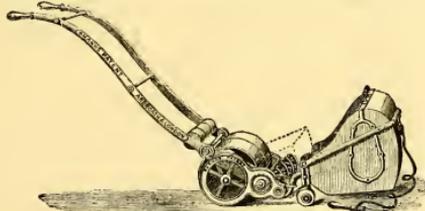
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WALTER MACFARLANE & CO., GLASGOW.

SHANKS' NEW PATENT LAWN MOWERS, Under the Patronage of Her Most Gracious Majesty the Queen, and most of the Nobility of Great Britain.

The merits of these Machines are now so well known, and their superiority so universally established, that a detailed description is no longer necessary. A. S. & SON would here simply refer to a few of the prominent advantages peculiar to their Machine. The Revolving Cutter is made to be self-sharpening. The *Sole-Plate or Bottom Blade* is made with *Two Edges*, enabling the cutting parts to last twice as long as in other Machines. A Wind-guard is also introduced, which prevents the Grass catching the Box when the Machine is in use during the prevalence of wind.



PRICES,

Including Carriage to any Railway Station or Shipping Port in the Kingdom:—

NEW HAND MACHINE.		NEW PONY and DONKEY MACHINE.	
10-inch Machine	£3 10 0	25-inch Machine	£13 10 0
12-inch Machine	4 15 0	28-inch Machine	15 0 0
14-inch Machine	5 15 0	30-inch Machine	17 0 0
16-inch Machine	6 15 0		
18-inch Machine	8 0 0		
20-inch Machine	9 0 0		
22-inch Machine	9 10 0		

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

Price, for the 28-inch and 30-inch Machines, 50s. extra; 25-inch Machine, 25s. extra. Silent Movement, 12s. 6d. extra. Boots for Pony, 24s.; for Donkey, 20s. per set.

NEW HORSE MACHINE.

30-inch Machine	£10 10 0	42-inch Machine	£28 0 0
36-inch Machine	14 0 0	48-inch Machine	32 0 0

The Patent Delivering Apparatus enables the Grass-box to be emptied without stopping the Machine.

Price, for the 42-inch, 48-inch, and 30-inch Machines, 60s. extra; for the 30-inch, 50s. extra. Silent Movement, 20s. extra. Boots for Horse's feet, 25s. per set.

A Staff of experienced Workmen always kept in London, so that Repairs can be done there as well as at the Manufactory.

SHANKS' PATENT LAWN MOWERS

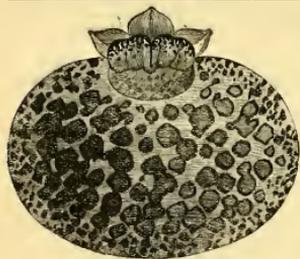
Are warranted to give ample satisfaction, and it not approved of can be at once returned.

ALEXANDER SHANKS & SON,

Dens Ironworks, Arbroath; and 2, Leadenhall Street, London, E.C.

27, LEADENHALL STREET is the only place in London where intending Purchasers of Lawn Mowers can choose from a Stock of from 150 to 2000 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power. Orders executed same day as received.

Small Lawn Mowers—6-inch, 25s.; 7-inch, 35s.; 8-inch, 60s.



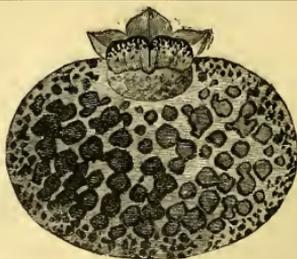
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IMPROVED STRAIN

OF

CALCEOLARIA

"PERFECTION."



After many years' careful selection we have succeeded in producing a strain of *Calceolaria* which, for beauty and form of flower, richness of colour and habit of plant, is acknowledged to be one of the finest in cultivation. Our houses have been visited during the blooming season by some of the most eminent authorities of the day, all of whom agree in pronouncing our Improved Strain to be of unusual excellence.

From "THE GARDEN," June 2, 1877.

"The *Calceolaria* at Messrs. Sutton & Sons' Nurseries, Reading, are just now beautifully in bloom, and should be seen by all who take an interest in this class of plant. The strain is one of the finest, being the result of years of careful selection. Many of the individual flowers measure $\frac{3}{4}$ inches across, and are perfect in shape and colour."

From "THE GARDENERS' CHRONICLE," June 2, 1877.

"A remarkable collection of *Calceolaria* is now in bloom at Messrs. Sutton & Sons' Nursery, Reading. The house, which is of good size, is even crowded with specimen plants, but it serves to show off their great beauty and attractiveness en masse. Each plant is densely laden with large flowers, and the colours are very varied, from creamy white handsomely spotted on the body to rich dark maroon."

From Mr. B. BARRHAM, Gr. to the Right Hon. the Earl of Sefton.

"It affords me great pleasure to be able to inform you that your *Calceolaria* seed has given extreme satisfaction. I have just seen in flower one of the finest lots of hybrid *Calceolaria* I have ever seen my lot to look upon. They are excellent in variety, form, and size of flower. Many have seen them and are highly gratified."

From "THE GARDENERS' MAGAZINE," June 2, 1877.

"The strain of *Calceolaria* distributed by Messrs. Sutton has flower-buds of immense size and perfect in colour. The flowers, which are borne in large clusters, are of immense size and of the finest possible shape, and embrace every colour. The yellow ground flowers are as a matter of course the most strongly represented, and with their splendid crimson markings are wonderfully effective, and of those with a straw-coloured ground and spotted and marked with purple, there are sufficient to make a most pleasing variety. The rose and purple self-flowers, some of which are quite new in colour, are also numerous, and present a striking contrast to those spotted with crimson, purple, and rose respectively. Sutton's strain of *Calceolaria* may certainly be said to combine all the good qualities yet found in these attractive flowers."

From A. E. RUSSELL, Esq., Dalnabreck.

"My *Calceolaria* plants from seed purchased of you are particularly fine, of very compact habit, and beautiful in colour."

From Mr. W. GEARLE, Gr. to R. M. JACQUES, Esq., Easby Abbey.

"I have some very fine *Calceolaria* from seed supplied by you; they are the admiration of all who see them."

Price, 2s. 6d. per Packet, post-free.

JAMES' INTERNATIONAL PRIZE CALCEOLARIA, 2s. 6d. per Packet, post-free.

THE QUEEN'S SEEDSMEN,
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THE QUEEN'S SEEDSMEN,
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"It has been carefully revised by an experienced gardener, and the lists of vegetables, fruit, and flowers are corrected by the substitution of the most approved modern kinds, in place of those which were mentioned in the first edition, and many of which have ceased to be worthy of all so deservedly appreciated, that any special commendation of it now is unnecessary."—*Midland Counties Herald*.

"This is a handy volume, consisting of seventy pages of letterpress and illustration, containing much and varied information likely to prove useful to all cottagers, &c., who possess a garden. To all such, who require a cheap and reliable book of reference, we heartily recommend it."—*Lloyd's*.

"We are quite glad to see this useful little book once more, and it is like a whiff of perfume from the hutchin in bloom to read on the wrapper 'two hundred and twenty-first thousand.'"—*Gardener's Magazine*.

"The information conveyed in this little book is well adapted or all persons having small plots of ground. The necessary operations for each month are clearly laid down, and are of a thoroughly practical nature. The sorts of both fruit and vegetables are well selected, many of them being excellent in quality. To our readers who are interested in the cultivation of their flower and kitchen gardens, we can safely recommend this as being a most concise and useful work."—*Bell's Messenger*.

Price 3d., Post Free 3½d.

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FOLLOWS & BATE'S NEW PATENT LAWN MOWERS, &c.



New Patent "Roller" Lawn Mower.



New Patent Lawn-Edge Cutter.



Royal Prize Medal Patent "Anglo" American Lawn Mower.

Upwards of 37,000 of these celebrated Machines have been sold during the past few years.

Patronized by Her Most Gracious Majesty the Queen; His Royal Highness the Prince of Wales; His Imperial Majesty the Emperor of Germany; His Imperial Majesty the Emperor of Austria; The Imperial Russian Government for the Agricultural Museum at St. Petersburg; and members of the Nobility and Gentry of Great Britain.

Awarded Medal for Merit, Vienna, 1873 (the only Medal given for Lawn Mowers); Large Silver Medal (the First Prize) at the Meeting of the Royal Horticultural Society, Birmingham, 1872; and in addition, every First Prize wherever these Machines have been brought into competition in actual trial with other makes.

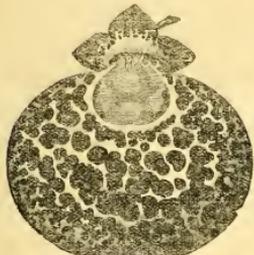
FOLLOWS & BATE here abstain from enumerating in detail the various good prizes "claimed" for other Machines, as they content themselves with saying that their Lawn Mowers possess all the qualities of the best, and are the most reliable and durable.

To be had from all respectable Ironmongers and Seedsmen in the United Kingdom, or from the Patentees, FOLLOWS & BATE, Manchester.

F. & B. are the sole makers of the well-known Patent "CLIMAX" LAWN MOWER, with Back Delivery from 22s. each; NEW PATENT LAWN-EDGE CUTTER, which entirely supersedes

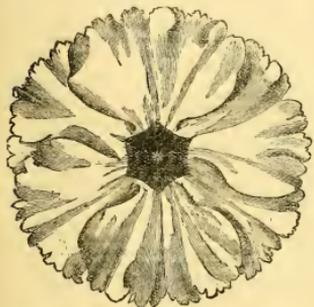
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FLOWER SEEDS FOR 1877.



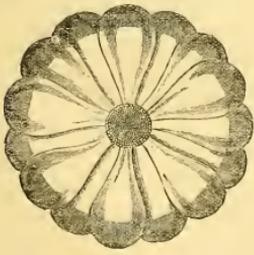
Per packet—s. d.
CALCEOLARIA, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and 1 6

From Capt. COSENS, *Albanytown, May 13, 1877.*
"The Calceolarias, from the seed Capt. Cosen had from Mr. Williams last year, have been greatly admired—they leave nothing more to be desired."



PRIMULA, Williams' Superb Strain, Red, White, or Mixed 5s., 3s. 6d., 2s. 6d., and 1 6
PRIMULA SINENSIS FIMBRIATA 'COCINEA'
(new), colour brilliant scarlet, with bright sulphur eye, exquisitely fringed and of great substance 5 0
From Mr. F. DENNING, *Gardener to J. Feuton, Esq., Vardley, February 25, 1877.*

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



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

From Mr. J. WEST, *Gardener, Chisdon Park, May 21, 1877.*
"Sir,—Your strain of Cinerarias, which have now been in bloom some time, have been and are now the admiration of all that have seen them, and are considered by gardeners to be the best ever seen in this neighbourhood. Habit very dwarf and compact, quite equal to the drawing in your catalogue."

CYLAMEN PERSICUM GIGANTUM (new) 2s. 6d. and 5 0
Do, do, do, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and 1 6

VICTORIA and PARADISE NURSERIES, Upper Holloway, London, N.

SEEDS OF PRIZE FLOWERS.

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



Mr. William Bull's
PRIZE STRAINS OF
PRIMULA SINENSIS.

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

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

From Mr. T. GODFREY, *Gardener to Lady Jolliffe, Southampton House, St. Lawrence.*

"From the Primula seed I had from you I have such a variety of colour I never saw before—white, violet, pink, a beautiful rose, lilac, and a brick-red; without exception I never saw their equal."

From Mr. WYNN, *Gardener to J. R. Lowe, Esq., Wetherby, Stamford.*

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

From Mr. R. EVANS, *The Hall Gardens, Busby.*

"Your Primulas were all that one could wish for—fine flowers and robust growers; some of the plants were nearly six feet high."

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

From Mr. E. ABBOTT, *Nurseryman, Ardleigh, Essex.*

"Your Primulas I am blooming now are a splendid strain. I hope you will send me some again."

From Mr. E. COOLING, *Esq., Derby.*

"Your Primulas were first-rate here this season."

PRIMULA S. F. FILICIFOLIA ALBA,
PRIMULA S. F. FILICIFOLIA RUBRA,
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SATURDAY, JUNE 23, 1877.

THE BULRUSH AND THE REED.

(Concluded from p. 749.)

THE word "Flags," employed in the Authorised Version rendering of the account of the exposure of the infant Moses, represents the Hebrew *sufah*, a term evidently of extensive meaning. Here it probably stands as a collective name for waterside reedy vegetation. It holds a similar sense in Isaiah xli. 6, where *sufah* is coupled with *kaneh*, the Hebrew word for Reeds in general. From reedy plants *sufah* seems to have passed on to aquatic vegetation in general, both freshwater and marine, for when Jonah describes his adventures in the sea, he says "*sufah* was wrapped around my head." Probably in this latter application it anticipated the use of *φύκη* and *algæ* by the ancient Greeks and Romans, denoting all marine plants thrown by the tide upon the shore, or that became entangled in fishermen's implements. How beautifully it comes to the front in Theocritus:—"And halcyons shall smooth the waves, and the south-east, and the south-west wind, and the south-east, which stirs the remotest sea-weeds . . . halcyons most beloved of birds, whose life is on the ripples, by the sea-green Nereids" (vii. 57-60). Ovid uses *algæ* for the tangle that surrounds the ships of *Æneas* while moored at Carthage (*Ep. Did. Æneas*, 172). The ancient and sevenfold storied water which today we call the Red Sea, with the Hebrews was *Yarn Sufah*, palpably because of its fecundity in arborescent "corals," the beautiful submarine quasi-vegetative growths which form one of its features, and which led old Pliny to speak of the Red Sea as a "vast forest." "*Burium mare et totus orientis oceanus refertus est sylvis*" (xiii. 25). *Yarn Sufah* is the name employed in the Hebrew in Ps. cvii. and Ps. cxxxvi., also in Numbers xiv. 25, and Joshua ii. 10. The original sense of *sufah*, or reedy plants in general, is no doubt well conveyed by "Flags," the most conspicuous of their class being the beautiful semi-aquatic Iris Pseud-acorus, or yellow Water Flag, the name pointing in the first instance to the great pendulous banner-like petals. It is curious that Shakespeare, in his only use of the word Flag for a water plant, should leave us in doubt whether he intends a Reed or something that floats, like a Potamogeton.

"This common body, Like to a varagobon Flag upon the stream, Goes to, and back, lacing up the varying tide, To rot itself with motion."

Antony and Cleopatra, l. 4.

In the Authorised Version of the Old Testament "Flag" stands for yet another original word, namely, *achiv*, in Job viii. 11, where it is coupled with *gômè*. The exact sense of *achiv* appears to be marsh-grass, of a kind suitable for pasture, since it is employed in the recital of Pharaoh's famous dream, when "seven well-favoured kine came up out of the river and fed in *achiv*," in the Authorised Version rendered "a meadow" (Gen. xli.).

Bulrush comes before us also as a duplicate Authorised Version rendering, standing in Isaiah lviii. 5 as the representative of the Hebrew *agmon*. This, again, was probably a collective term, though applying in particular to reedy plants of the *Scirpus lacustris* kind. In Job xii. 2

One thing is remarkable concerning it, viz., that when the fresh flowers are placed in spirits of wine they contract and shrink up in a very marked manner, which I have never observed in other *Stapelia*. The woodcut (fig. 124) represents but a small portion of the plant. *N. E. Brown.*

GONGORA GROSSA, n. sp.*

This is a curious novelty, since it is the first direct ally of the first species introduced to Europe, *Gongora stropurpurea*, Hook., Exot. B. (tab. 178, 1827), from Demetera. Notwithstanding our very numerous introductions we have waited just fifty years, forgetting the ally; and now we have it, modern amateurs will not feel very proud of it. Like that old species, it has upright basilar horns to the lip, higher than the length of its nail; like it, it has a curious deeply five-cleft lip, making one think of some quadruped lying on its back, with four outstretched legs. It is exceedingly well distinguished from its elder associate by having its anterior horns with bristles outside, a tooth inside, and a small teretiscale acuminate body between the horns. The mass of the lip is stouter. The sepals are much broader. It appears to have a whitish or yellowish ground colour, with very numerous blackish purple spots. The lip is so covered with them that it looks nearly totally blackish purple. It comes from Ecuador, and made part, I think, of that much bespoken collection, sent by a photographer, who, no doubt, professed the theory of that centro-American

myself (*Dendrobium Hanburyanum*, nearly at the same time), we regarded it as a great deal, a good bit, to separate it from *Dendrobium nobile*, Lindl., and *corulescens*, Lindl. (plants believed distinct at that time), in acknowledgment of its very slender stem, the trumpet-shaped lip, &c.

Now there come both from Assam and from Burmah beautiful *Dendrobies* with flowers scarcely distinct from those of the now old (1856) *Dendrobium litiflorum*, and with totally distinct stems. I obtained one, a beautiful thing, just imported from Burmah, collected by Mr. Duxall. The flowers are quite like those which Dr. Lindley sketched from his type, much larger than those of the actually grown *D. litiflorum*, with exceedingly warm colours, and the inferior halves of the lateral sepals much lighter than the superior ones, perhaps an accidental variation. Wanting a fuller elucidation, I addressed myself to Mr. Harry Veitch for fresh materials of the genuine thin-stemmed Assamese *Dendrobium litiflorum*, who immediately favoured me with a rich supply of fresh flowers and stems. But those flowers! Oh, there is no reasonable difference to be found between them up to that queer purplish line that stands each side of the stigmatic cavity. All details are the same, so that I cannot help keeping the novelty as a variety of *D. litiflorum*, for I cannot think that such an absolute identity of flowers may exist in different species. I have to thank Mr. Stuart Low for the beautiful thing in the best state. *H. G. Rehb. f.*

varieties may be grouped together to show the contrast their singular forms and distinct colours afford. In favourable situations *C.* spectable grows about 2 feet high, and flowers in the open air towards the end of June. The lip or labellum is much larger than the common Lady's Slipper, and of a delicate rose, while the petals and sepals are white, thus affording a soft blending of tints as pleasing as they are chaste and beautiful. *C. japonicum* is another lovely species, which unfortunately at present is very scarce, but as Japan appears so rich in floral treasures, it is to be hoped that this will be found in quantity, as there appears so little to the species of *Lilium auratum* and other plants supplied from that quarter of the globe, since a demand set in for them. The flowers of this variety are very large, having green sepals and petals dotted with reddish spots, with the labellum white, richly stained with crimson.

The above-named are the two best and most showy, but there are several others quite distinct, the most desirable of which are *C. pubescens*, *C. Calceolus*, and *C. montanum*, the two former having rather small inflated lips of a soft rich calceolaria-like colour, with sepals and petals of a brownish purple, thus forming a striking contrast. To grow them well requires a cool, moist, shady retreat must be chosen, but not where the soil is apt to become sour from excess, though being imperfectly drained. The spot where we have them, and where they succeed admirably, is just over a drain pit in to draw away the water from a loose rich bog, formed principally of vegetable debris, and with this a good proportion of fresh fibry peat was added at the time of planting, and mixed together to the depth of a foot or so, which evidently suits them, as they are in the greatest state of luxuriance.

I noticed that those imported appeared to be growing principally in a kind of half-decomposed moss and woody looking fibre, and no doubt where sphagnum can be conveniently got it might be added to the peat with considerable advantage to the plants; as also any common moss chopped up, the absorbent properties of which would keep them in a uniform state as to moisture. Although they are shade-loving subjects, the situations chosen should be sufficiently far removed from shrubs or trees to be out of reach of their roots, as otherwise they would enter the rich bed, and rob them to a very serious extent. Sheltered on the north side of a rockery, and planted on a low level, where their roots can be kept cool and moist, with a good depth of peat to ramble in, they would be just at home, and form one of the most attractive objects that could be had for such a position.

Unfortunately they are slow of increase, as they only admit of propagation by division, and unless the places where they are planted are particularly suited to their growth they do not send up fresh crowns very readily, but when they do so they may be divided and replanted. If they can only be obtained in quantity, an active demand is sure to spring up for them, as they are valuable for pot culture and forcing, although to have them at their best they must be seen growing in large clumps in the open, in situations as already described above.

For growing in pots, it is best to obtain fresh imported plants, on account of their superior size and strength over such as have been under cultivation and cramped for root-room, as must of necessity be the case where space is an object, and they are kept for sale in as portable a form as possible.

The soil most suitable is good tough fibry peat, and from this as much of the earthy part should be knocked out as can fairly be done, which will then leave just the kind of vegetable matter the plants delight in. If to this is added about one-sixth its bulk of sphagnum, and a little silver sand to add weight and keep it together, they may with care in watering be made to succeed admirably and flower regularly every season. To do this, however, they must have every attention paid them while making their growth that the leafage may be as ample and clean as it is possible to keep it, for, like all perennials, they form their bloom-buds the year previous to flowering, and unless they are well managed then they have not sufficient strength to carry out that part of their work. The sized pots they look best in are deep 6 or 7-inch, in each of which three separate crowns should be placed triangularly near the sides and the soil pressed in amongst the roots in such a manner as to leave no cavities whereby the air would be unduly admitted amongst them and thus cause a too rapid drying of the same.

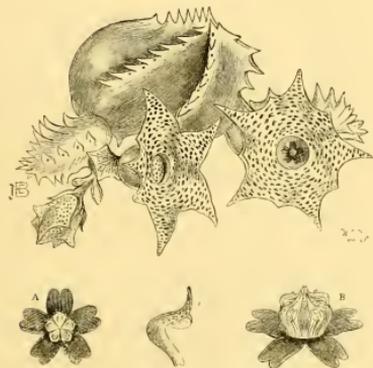


FIG. 124.—HUERNIA BREVIROSTRIS.

A, Front, and B, side-view of corona; C, Rostrum. (A and C magnified.)

editor who said that one should send over to Europe shiploads of Orchids as cargoes of coffee, sugar, potatoes, cattle. No matter what they were, Europeans were too fond of such bulks. It is well known that a collection, sent by one who may have watched some other collectors at a distance, did not even pay the cost of transit. A few friends of botanical caricatures took plants, and among them was Sir C. W. Strickland, whom I have to thank for this highly interesting unexpected species. *H. G. Rehb. f.*

DENDROBIUM LITIFLORUM, Lindl., ROBUSTUS, n. var.†

Once we were very sore vexed that the *Dendrobiums* —gratiosissimum, Boxallii, crassinode—all had the same kind of flowers, though with some very good differences in the stems. Those differences, as far as we could ascertain, were easily understood, though indeed, one might guess *Dendrobium Boxallii* to be a male between *Dendrobium gratiosissimum* and *D. crassinode*. Happily, indeed, *Dendrobium Findleyanum* has more and more proved a widely distinct species from those just-named. Now we stand once more in a dilemma. When we named this well-known *Dendrobium litiflorum*, Dr. Lindley and

CYPRIPEDIUMS.

The very mention of the name of an Orchid at this time of year almost puts one in a state of perspiration, as most of our ideas and recollections at once connect them with tropical heat and steaming hot-houses. It will therefore be a relief to those who associate them with such discomforts to know that some at least of that most interesting and lovely class of plants are sufficiently hardy to be grown and enjoyed in any sheltered spot outdoors. Beautiful as are a few of the stove kinds, there are none to surpass *C.* spectabile for the rich delicacy of its colouring or the charming effect its flowers produce, either in a cut state or when seen on the plants growing in masses, in cool moist shady retreats as we have them here. Some of these have been established for years, but the greatest part of them have been recently introduced from North America through the New Bulb Company of Colchester, who supplied them to us in fine strong clumps, each containing several fat plump crowns, and all in capital condition, being as fresh as when dug up from their native woods, with every root intact and healthy.

If they can be obtained in quantity, and delivered in such a good state of preservation, quite a new feature will be imparted in the decoration of our cool houses, and moist shady situations in rockeries or other choice nooks and corners where the several

* *Gongora grossa*, H. G. Rehb. l. — *Omnino affinis G. stropurpurea*, Hook. Sepala lateralis late triangulari, hypochilii coracibus longioribus validis teretibus obtusis, mesochilii coracibus aristatis, intus superne unidentatis, interfecto callo subulato acuminate, epichilio auriculis triangulari acuminate. — Ecuador.
† *Dendrobium litiflorum*, Lindl. var. *robustus*, Rehb. f. — *Caullibus calanum gryphium crassis; floribus Dendrobii litiflori optime optatis.*—Burmah.

Any ordinary frame standing in a cool shady place on a damp bottom will do to grow them in, or they may be treated with the Cinerarias, Primulas, or shrubby Calceolarias, which during the summer months require a similar position and much the same attention as to shade and a moist atmosphere, and by arranging the Cypripediums in a corner by themselves they can be syringed or watered overhead as often as may be found desirable, which while growth is active or the leaves fresh and green, cannot well be too frequent. Although a hardy rock which was established in favour of sheltered positions outdoors, it is desirable to afford them some protection in pots during the winter on account of the greater exposure the roots undergo in such a small body of soil, and the constant changes they are subjected to as regards temperature, moisture, &c., when so circumstanced. By plunging them in cocoa-nut fibre or half decomposed dry leaves, with about 1 inch of either or some moss scattered over their crowns, they will be perfectly safe in a cold frame during the winter, and may be taken from thence as required for forcing or to flower naturally in the greenhouse. 7.5.

NOTE ON THE FRUITING OF HOLLY.*

In my report for the month of May I alluded to the Holly as producing this year an amount of flower-buds rarely seen in this garden, and it seems to be general all over Scotland, probably owing to the trees not being exhausted last year, on account of the general failure of the fruit crop. At this time (June 14) numerous blooms are now open, and many of the plants white, some with fertile and others with non-fertile flowers, the latter in every instance being the most conspicuous. The stamens flowered not a week ago, leading to the belief that all will be covered with fruit at Christmas, a good crop may however be looked for. Fertile and non-fertile trees being now easily recognizable (although it is not generally known), a few observations regarding them may not be unacceptable. Perhaps the most conspicuous of the fruit-bearing kinds now noticeable in a flowering condition are, about one third of the common green variety, nearly every plant of the kind known as Hodgins' Holly, the leather-leaved Holly, the green veeping and Moonshine Hollies, also all the large plants of the common variegated or Silver Holly, as well as the old Golden Variegated or many others. After a close inspection of all the Hollies in this garden, which now amount to many hundreds exclusive of hedges, we find that all those which we do know as annually producing fruit at Christmas are likely to be covered with fruit this year again (unless prevented by certain circumstances which were much debated last winter). On close inspection we find, as might be expected, that those Hollies now covered with bloom, but on which no berries had ever been observed, possess stamiferous flowers only, while on all the known berry-bearing plants the ovaries generally far advanced before the buds are sufficiently open for impregnation, and when they do open, although all the anthers are formed, all appear abortive. The stamens in such flowers are all more or less curled backward, while with the pollen-bearing plants the stamens are all more or less upright, and densely covered with pollen. In such flowers the rudimentary female organ consists of a small barren flattened ovary, with four little projecting points on the apex; in all these cases the corolla always falls off entire, having the four upright stamens adhering to it, while with the fruit-bearing plants the petals do not fall entire, but break into separate segments by the gradual swelling of the young ovary. As I have not been able to find a single instance amongst all the original variegated silver and golden-leaved Hollies, bearing perfect stamiferous flowers, it is, therefore, evident that all these large variegated plants have been originally propagated from one stock, either by grafts, layers, or cuttings. The same observation also applies to the Hodgins' and the other pistilliferous kinds. Of recent years variegated and other seminal varieties have been raised in various of the country, but none of the variegated forms have the robust nature of the original kinds. It is, therefore, probable that both stamiferous and pistilliferous varieties may be found amongst them, as instanced by the black-twigged silver-striped Holly all being males. The blooms of the different named varieties vary much; perhaps those with the most prominent flowers, both for size and purity, are

those produced on the Hx Shepherdi, I. nobilis, and I. atroveris—all are stamiferous plants, with large green leaves; in the green Hedgehog Holly, and the variegated variety known as the Golden Queen, with numerous flowers, and smaller leaves.

In no instance have I been able to find a plant bearing flowers having both sexes complete on the same root. Owing, however, to the quantity of seedlings now raised, I do not see why this should not sometimes occur. In some cases a few solitary berries have been observed, but as such plants were not marked at the time, it is not easy now to tell them. They will, however, be attended to in future.

Mr. Johnston, of the Lawson Company, has been kind enough to give me the following list of Hollies now in a flowering condition, and cultivated in the Golden Acres Nursery, arranged under their respective heads, which I annex.—

List of Male-Flowered Hollies.

Ilex	alcoicorns	Ilex	ferocissima
„	nobilis	„	pectinata major
„	Shepherdi	„	Silver Queen
„	argentea	„	robusta
„	ciliata major	„	ferox aurea
„	crispis	„	lanifolia
„	ovata	„	Water's Holly
„	myrsinitis major	„	picta
„	serotifolia	„	Golden Queen

List of Female-Flowered or Fruit-bearing Hollies.

Ilex	grandifolia	Ilex	pendula purpurea
„	heterophylla	„	picta
„	mespilis	„	argenteo-marginata
„	Hodginsii	„	Lawsontiana
„	laucana	„	Water's Holly
„	pendula	„	media picta aurea
„	rotundifolia	„	holerica
„	Wittmanniana		

List of Hollies Producing Male and Female Flowers on Different Plants or Nearly Allied Varieties.

Common green Holly	holerica nigrescens
marginata	aurantiaca (Moonlight)

[The flowering of the Holly seems to be profuse in many places. We never saw the silver-variegated Holly so much laden with buds as they were a week or two since in Kensington Gardens, Eds.]

TAR PAVEMENTS.*

To many of the members the construction of tar pavements is a familiar work, but to others, perhaps, they have not as yet tested their suitability for suburban paths. In some counties, such as Lancashire and Yorkshire, tar pavement is not a matter that would receive much attention; but in the eastern counties, and other districts not favoured in the same way, and where stone pavements cost seven times as much as tar pavement, the latter is of some importance to towns requiring a clean and economical footway. In Ipswich the mileage of footways in proportion to the population is very large, the population being 46,000, the distance of streets and roads being about 75 miles. Of this about 22 miles are town streets; and double this distance would represent about the length of paths. Formerly all the suburban paths, as well as the majority of those in third-rate streets, were made with gravel. These, however, were always in a defective state. To prevent mud accumulating in winter shingle was put on the surface. This shingle in summer-time was disintegrated, and laid on the surface as though it had been strewn with Peas or Beans. To avoid this loamy gravel was put on. Then, again, in winter this worked up into mud, and again had to be covered with shingle, and so on alternately winter and summer.

The defects gave rise to continuous complaints, and, having had experience of tar pavement in other towns, I was induced to recommend it as a substitute for gravel. My suggestion was approved of by the authority, and specimens of the pavement were laid, the first being done by contract at 12. 3d. per superficial yard, and maintained in repair for five years. This was thought to be too much, and the sanitary authority decided to make their own. I have prepared the material in different ways, sometimes using simply pure coal tar, at others refined tar, and occasionally small portions of pitch, lime, and Portland cement in the preparation of it. But in practice (although I use mainly refined tar) coal tar is all that is required, and will make as good a path as with refined tar, or any other admixture. I have two ways of making tar pavements in this town. One is with shingle—this is, fine gravel; and the other with slag, which is clinkers and refuse cinder-dirt from factory furnaces.

The process of making with shingle is simple, and is as follows:—A fire is made on the ground and heated over with shingle; when the first covering is laid through, more is added from time to time, until there are about 10 or 15 tons. For convenience in sifting over the stuff after it has been heated through, it is desirable that the fire should be of an oblong shape, presenting a form something like the moulds under which Potatos or Mangels are stored in a field. After the whole has been sufficiently heated to take out the natural moisture, it is sifted, the fine being placed in a separate heap, and the coarse after. When about one burrowload of each has been sifted, boiling tar is thrown upon each of them while in a hot state; the whole is then turned over with shovels, and thoroughly mixed. The coarse forms the bottom layer of the path, and the fine the top surface. After a path has been made about ten days it is dressed over the surface with boiling tar and sharp sand or ashes left from the heap of stones after burning. The sand combines with the tar, and fills up the small interstices and produces a smooth surface.

In making these pavements from slag it is not necessary either to heat the material or boil the tar. The material, coarse and fine, is turned over, so that all the large clinkers are broken into small pieces, after which the whole is sifted over to separate the large from the small, and is then mixed with coal tar (unless the weather is very cold, when it is warmed to make it mix more readily). The material made in this way is laid down in the same manner as described for shingle, but is not dressed on the surface with boiling tar and sand, being better without, but is covered with a copious sprinkling of white Derbyshire spar, which is well rolled into the top layer to relieve the dull, sombre appearance, and give it a pleasant effect. In laying the paths, care should be taken to roll the ground well, and bring it to a uniform surface before the bottom layer is put on, to avoid uneven or soft places, which, if not protected against, would result in the path, after being down for a time, having a series of undulations on the surface. In laying, each layer should be well rolled with a roller of about 7 cwt. The bottom layer should be 1½ inch thick, and the top one 1 inch. It is advisable to keep the prepared stuff a few weeks before it is laid down; and although the work can be done at almost any season, spring and autumn are the most suitable, when it is dry, and not too hot. Shingle tar-pavements require dressing over with boiling tar, and covering with sharp sand, from time to time, to preserve the surface, which, if not dealt with in this way, would become rough, by reason of the soft material wearing from between the joints of the stones. The material does not always turn out equally well. Sometimes a path will not consolidate, and at another time the surface will break up without any, as far as can be seen, apparent reason.

The shingle tar pavements cost 9d. per superficial yard, laid complete, and that made from slag 11d. Preference is given here to those made of slag, which are more costly in the first instance and less durable than those made with shingle, which can easily be understood when the nature of the material is considered. In the first instance we used shingle entirely, but from favourable reports of the Sheffield paths, and from a personal examination, and from the excellent mode of an improvement on gravel paths, and so on, I believe the Sheffield paths are better than those in this town, and I have no doubt it arises from the fact that the material is of a more durable character than can be procured in Ipswich. The cost of these pavements varies according to local circumstances, being as low, in the case of Sheffield, as 7d. per yard, and as high in London as 2s. 3d. From information obtained some time since, I found that the general price of this kind of pavements was about 1s. per yard, exclusive of the cost of preparing the foundation. The price I have given for Ipswich paths includes the foundation. Tar pavements are generally adopted as an improvement on gravel paths, and are not supposed to be regarded as a material to be taken in comparison with asphalt, although I think they bear favourable comparison to many of the more costly pavements, and are, in my opinion, much to be preferred to the common asphalt prepared from pitch, to say nothing of the difference of cost, and which expands and contracts with variations of temperature.

I have tried other materials for making cheap pavements for footways, such as bricks, earthenware tiles, and Portland cement concrete; but the cost, which is about 4. 6d. per superficial yard, precludes their use

* Paper read by Mr. E. Burkhart, C.E., Town Surveyor of Ipswich, at a recent meeting, held in this town, of the home county section of the Assocn. of Municipal Works and Sanitary Engineers and Surveyors.

* Read at the June meeting of the Botanical Society of Edinburgh, by Mr. M. Nab.

for suburban paths; and their durability is not sufficient to allow them to be put in the place of York flagging for main streets. A path made from shingle, and repaired in the way I have described, would last with the ordinary traffic of a provincial town ten years. Paths laid under my directions as long since as this are still in fair condition. It is, however, difficult to say what the life of pavement would be without very careful observations extending over a considerable period, as the duration of any paved footway is simply determinable by the amount of traffic. Having regard to the economy of first construction, reduction of dust and scavenging, and the cleanliness of the path after rain, it appears to the writer that there is no better material for suburban footways than tar pavement. It may be objected that the dull appearance, and the difficulty of repairing them so as to bring the repaired part even with the old, and the disturbance of the paths caused by laying on gas and water is against their adoption. The first objection can be avoided by using a good covering of Dr-yshire spar, and the second applies more or less to any pavement, with the exception of York flagging. When I commenced to lay these paths ten years ago they were rather scarce, and had only been laid to a limited extent in a few towns; but during the last five years they have been very largely extended, and will in future occupy a permanent position among other paving materials for constructing footways in towns; this shows the suitability of the material for such footways as I have referred to in this paper.

There are now about 15 miles of these paths in Ipswich, taking the place of paths which would, if they had not been superseded with this material, have still been muddy in the winter, and so rough on the surface in summer as to make them always more or less unpleasant to walk upon, to say nothing of the indirect discomfort to the inhabitants by reason of additional dirt in winter and dust in summer. The cost of paving this length of footways with other materials would have been so considerable as to have prevented the possibility of doing it, and I look upon it as a great boon to the inhabitants of any town to get such good pavements for suburban paths at such a small cost.

OPEN AIR VEGETATION FOR MAY.*

THE weather in May, particularly the early part of it, has been rather cold and backward. During the first eight days 36° of frost were registered. The lowest markings were on the 23, 30, 4th, 5th, 7th, and 8th, indicating respectively 21°, 32°, 26°, 26°, 28°, and 24°; while the six highest morning temperatures were on the 17th, 19th, 20th, 21st, 25th, and 30th, indicating 44°, 42°, 41°, 44°, and 45°, all being below the maximum temperature noted during May, 1876. The wind, with a few trifling exceptions, generally prevailed from the east, but changed to the west on the 24th, and since that time progress has been observed in vegetation. This progress, however, was slow, owing to the dry state of the atmosphere, till rain fell copiously on the 28th, which did much good. As long as the wind was in the east the foliage had a great struggle to get out, and it was remarkable to observe the peculiar yellow tinge of the young leaves of many deciduous trees, contrasting singularly with the dark green of the neighbouring evergreens. Judging from the state of the trees and herbaceous plants on May 31, this season may be regarded as one of the latest we have had for many years; indeed I do not recollect ever seeing one so backward, still averaging about three weeks late. Up to the 15th of the month the only species of deciduous trees that could be said to have nearly completed their foliage were the Acer Pseudo-Platanus and the common Hawthorn, many others advancing, but far from complete. For comparison with future years I shall give a list of some of the ordinary trees, and the state they were in on May 31; these, however, vary in different situations and exposures. Besides the Plane and Thorn, just alluded to, the Lime trees were only partially in leaf, and those chiefly on the south and west sides. On a few Beeches the leaves were partially expanded, but many were backward. Birch trees covered with catkins, but none of the leaves fully developed. Leaves were also seen on the Norway Maple, Horse Chestnut,

Purple Beech, but much later than usual; while the Elm, Walnut, Chestnut, Sorbus, Lombardy and other Poplars, Willows, Oak, Ash, and Sugar Maples were all very backward, some only breaking their buds, while no foliage was observed on the Robinias, Celtis, Ostrea, deciduous Magnolias, Tulip-trees, Platanus, Taxodium distichum, &c.

On May 31, with the exception of the Plane and Thorn, just alluded to as being in leaf, and those where no foliage was visible, most of the intermediate ones, from the small state of the young shoots and buds, had a peculiar network appearance, light being seen through every twig and leaf—a sight rarely seen in this part of the country at such an advanced period of the year.

Besides forest trees, it may be remarked that many dwarf, shrubby, and herbaceous plants have been also very late in flowering, and where this is the case it will be observed that their duration in a perfect flowering condition is often shorter than when flowers come forth at their own natural period. This is particularly noticeable with such plants as Menziesia acroclera, M. empetriflora, Bryanthus erectus, Andromeda tetragona, &c., as well as many herbaceous plants which usually bloom between the middle and end of April or early in May, and which present a much greater appearance than they do when late of flowering.

With reference to the ordinary garden herbaceous plants, kinds which we usually trust so much to for class illustrations, very few of those sorts generally used during May could be had in flower. A long list of such plants might be given, a few, however, will suffice for future comparison, viz., Dorycnium Pardalianthes, Aquilegia phœneum, Aquilegia vulgaris, Potentilla Rupestris, Heraclenum hegatum, Scabiosa montana, Astrantia major, Papaver orientale, also Lupines, Thalictrus, Peonias, Aconitum, Delphiniums, &c.

By May 31 we generally have flowers on the Horse Chestnuts, Pavia flava, Laburnums, Lilac, common and red Hawthorns, Bird Cherries, also on some varieties of Sorbus. This year we have only had the double Cherry, Gean, perfumed Cherry, Crab Apple, and Norway Maple in bloom.

It will be remembered that the Holly bushes last year were nearly destitute of berries, and various causes were assigned for it. This year blossom-buds are to be seen on almost every tree in the greatest abundance, but few on May 31 were expanded. In my garden notes for May, 1875, I find it stated that Hollies of every description were covered with blossom, so that the surface of the ground beneath them was white with the fallen flowers, and a good crop of berries resulted. During May last year flowers were also produced in abundance. The severe frost (26°) which occurred during that month, and was general all over the country, and at a time when the Holly blossom was in perfection, must have injured the pollen to such an extent that little or no fruit was produced. Although the frost during May of this year was more severe than last, the Holly buds were not sufficiently advanced to be injured, and it will be well on in June before they can be fully developed, when it will afford a good opportunity to botanists to examine the flowers in different stages and in different situations, as well as the different varieties, and thus satisfy themselves as to the hermaphrodite or non-hermaphrodite state of these plants.

On the rock garden 212 species and varieties of plants were more or less in bloom on May 31. It will be needless to record a list of all. The following selection may be useful to those individuals wishing to cultivate a set of plants for flowering at this part:

- Andromeda fastigiata
- " tetragona
- Anemone alpina
- " palmata
- " pugnanis
- Arctostaphylos alpina
- " californica
- Aspidistra Hendersoni and others
- Azalea procumbens
- Bryanthus erectus
- Cypripedium
- Cypripedium
- Daphne laureola
- Dodecatheon intergrifolium
- Dracula tridentata
- Erythronium americanum
- " coccineum
- Erica liliiflora alba
- " multiflora
- Erythronium americanum
- Geum
- Helonias bullata
- " alba
- Hieracium alpinum
- Hieracium cristatum
- Ledum buxifolium
- Ledum thymifolium
- Lilapspermum prostratum
- Menziesia acroclera
- " Drummondii
- " scopulina
- " empetriflora
- " polygama
- " Chamæmorus
- " Phlox setacea violacea
- " Primula alba papilionata
- " " cortusoides-amœrea
- " " integrifolia
- " involucrata
- " luteola
- " polyantha
- " polyantha
- " Parnassia
- " Parnassia
- " uniflora
- Rhododendrum Chamæcistus
- Saxifraga
- " reticulata
- Saxifraga petiata, and many others
- Trillium uniflorum
- Trillium uniflorum
- Viola pedata

PEACH SETTING.

We have this subject again revived, with all its doubts and uncertainties. It seems to be a favourite dish with gardeners, and Mr. W. Miller has studied the "flavouring up" in a way that few can find fault with: he has no objection to clear water, chilled water, tobacco water, or any other power or agency, whatever it may be, whereby a good crop of fruit may be obtained. It is quite right that every cultivator should be allowed to judge for himself the remedy or remedies that he considers necessary in order to secure the best result, but I think it is hardly fair to those who are not by practice possessed of sufficient knowledge and discrimination to enable them to take a decided course of action, to lay down so wide a basis of argumentative vagueness. It is just twelve months since an exhaustive discussion on the subject of Peach setting was closed in the columns of the *Gardener's Chronicle*, and, as far as I can remember, every opportunity was given to discuss the merits of the various systems advanced by several correspondents.

The main object of the discussion referred to resolved itself into a review of the practice as carried out by some of the most successful and experienced cultivators of the day for over twenty years, and finally the test of the subject under debate seemed to rest on the evidence for or against the use of the syringe, as the most successful means of insuring fertilisation. I have always maintained that the process of fertilisation never took place when the flowers were in a state of saturation, and, after another year's experience, I have still no reason to alter my opinion. The different arguments advanced, both for and against the syringing system, will be fresh in the minds of those who took any interest in the matter, so that it will not be necessary to go over the same ground again. Mr. Simpson, of Wortley, who has been a stern advocate of the syringe, wrote a very able and cogent article on its behalf, in which he included every point that was worth being urged in its favour. It has been asked why should not wet pollen-fertilise? Why, indeed! We have the matter in our own hands, and can test it by a constant application of moisture, let it be through a rose as fine as you like, and see how fertilisation progresses. This process may seem a rather unnatural test, but then we must bear in mind the rapidity of fructification under the benign influence of the syringe. Now this theory—for it turns out to be theory only—has fallen to the ground, and it is of no use to revive it. The editorial verdict at the end of last year's discussion was against it. I quote the words in *extenso*, as taken from the *Gardener's Chronicle* of April 22, 1876, p. 537:—"We ought to add that, although the water would cause the pollen grain to burst, and liberate its contents, as above stated, yet the emission of the pollen tube, and its passage down the style to the ovule, or rudimentary seed, would be much more certainly insured by the moisture from the stigma itself. We apprehend, from this point of view, that the benefit of the syringing would be mainly mechanical, just as shaking the branches would be." From the above it would appear, as Mr. Miller also observes, that the great thing to be aimed at is to keep the trees in a healthy fruitful condition, rather than to depend on any artificial theories, which are harmless enough in themselves, but which are calculated to throw the inexperienced into interminable difficulties, when so many stumbling blocks are strewn in their path.

Mr. Miller refers to the assistance a hive of bees rendered him in setting the fruit in his early Peach house, and it reminds one of the lines—

"How doth the little busy bee Improve each shining hour;"

but Mr. Miller does not tell us whether the remarkable docility of the bees was attributable to any preparatory training or not. I tried bees at one time, but found they were more busily engaged in a hand-to-hand combat with the top ventilators, than in assisting to fertilise the flowers; they, too, are harmless, and if they do not hurt themselves they will not harm the Peaches.

I now venture to offer an opinion on the early Peach crop, and I hope others will do the same, so that we may learn whether the crops in other counties have been as plentiful as they are here in Lancashire. I never had a more tedious task than that of thinning the fruits in our early house. I believe every flower set, and that too at a time when we were bewailing the want of sun, or even light. How are we to

* Read at the June meeting of the Botanical Society of Edinburgh, by Mr. M'Nab.

account for this? Every one who has an early Peach house has a full crop, whilst the late houses are almost empty. What about the syringe, the bees, the bunch of feathers, and all other appliances enumerated by Mr. Miller? Have they all failed to produce their good effects when the weather-cock points to the east and north-east? *W. Hinds, Otterpool.*

— I have been amused at the late articles in the *Gardener's Chronicle* on the setting of the above fruits, as for a rule the trees with me set their fruit too thickly, without any syringing of the bloom or artificial impregnation of any kind, the only exception being with the first forced trees, for when in bloom in December or January they are assisted in dull weather in setting their fruit by distributing the pollen on the stigma with a feather, or with the syringer and thumb. Most of the Peach and Nectarine trees here are grown under glass, and being very healthy, from the soil sifting, they never fail in producing good crops. On a glass-covered wall nearly 800 feet in length, and planted with Peach and Nectarine trees in the border, the trees have lately been thinned of their fruit for the second time, and what were taken off would have filled a bushel. In the sharp frosts in the first week in May artificial heat was applied to this structure so as to raise the internal temperature 8° higher than the air on the outside, and this was sufficient to save the crop. In unheated orchards it is reported, in several localities, that both the Peach and Nectarine have been injured when in bloom, but that has been a most abnormal season both in the winter and spring, and such another may not occur again for some years. *William Tillyer.*

Foreign Correspondence.

BANGALORE.—The Drought.—Returning to India from furlough I arrived at Madras on Jan. 14, when the chief topic of conversation was the ravages that famine was making in the southern peninsula, the Kanoold, Cuddapah and Bellary districts of which were stated to be the most afflicted in this respect. Sir R. Temple, as special delegate, was making a tour of inspection through Madras, Bombay, and Mysore, with the object of giving the advantage of his experience, and aiding by his counsel the endeavours that were being made to contend with the serious condition of affairs. The state of Bangalore was described to be even worse than that of Madras, and the country between the two places was spoken of as a desert, a howling wilderness, and by other terms, according to the idiosyncrasy of the speaker. I had intended to travel to Bangalore by the night train, to which sleeping-carriages are attached, but the above rumours, which might possibly be exaggerated, determined me to go up by the day train of the following day to test the value of them personally, so far as this could be done by careful observation from a passing train. During the 200 miles not a drop of water was in any of the large tanks they are called locally, but are in reality irrigation reservoirs, or lakes, in the immediate neighbourhood of the Ghats in the middle of the jungle, and near and around which cattle, sheep, and goats and numerous birds had congregated. Notwithstanding the absence of water and cultivation, and although the deciduous trees looked more withy than ever I remember to have seen them, the cattle were browsing on scanty herbage, sheep were busily nibbling something that was not visible from the train, and both appeared fairly active and in better condition than the accounts would have led one to expect. The people of the wayside villages seemed to be in fair case, and to be employed in their ordinary agricultural operations. Where any water or moisture remained near the surface busy hands were to be seen cultivating little patches of some stolen crop, or baling out water to some irrigated land from a recently-made well. Some of the grasses, too, seemed to stand the drought admirably, and where the grass cutters, in their labour of collecting grass for the horses and other animals, had here and there grubbed up portions of it, the patches that were left seemed to be endued with fresh vitality and vigour from this rude stirring of the soil, and, with the aid of the night dew, enabled to make fresh growth. The deciduous trees appeared to have taken a longer rest than usual. Notably among them were some of the Ficus and Acacia tribes, and a casual observer

might from this added mournfulness to the scene take a somewhat desponding view, and say, as some unreasonably did say, that unless heavy and continued rain fell immediately there would be neither trees nor herbage remaining. But a closer observer would not fail to see the glistering beauty of the fresh leaves of the Palms and of other indigenous trees or shrubs. On that hot and dry morning such a sight was most refreshing. The foliage looked as if it had sent its roots down to a lower stratum, where moisture was to be found, and was revelling in the sun and heated air. In the valleys running up into the Ghats, down which little affluents of the Palur River still retained sufficient moisture or water, this was very noticeable; and lower down, in the sandy bed of the parent stream itself, spring channels of running water were excavated by which patches of Sugar-cane and other crops were well cultivated, that greatly heightened the effect. The gravity of the situation seemed to arouse the best energies of the agriculturists, and wherever it was possible the presence of moisture or water was taken full advantage of to cultivate grain or vegetables for themselves or green food for their cattle. Old irrigation wells were cleared out and deepened, new ones were sunk, and other arrangements made to store and distribute water. By their rule-of-thumb calculation they expected rain in April, earlier than usual, and in the meantime they collected and spread manure on their fields more diligently than usual, and made every preparation against the time when their keen study of Nature's varied mood, and the prediction of their astrologers (based on the same observations) assured them that rain would not fall them, even though the Government astronomer at Madras had predicted the failure of rain would be characteristic of this season also. At Bangalore there was a total absence of water in the tanks. The Alsoor Lake, which had not been, it was said, dry for fifty years, was entirely so this year; and at the end of March it was in contemplation to send the mounted portion of the troops out into camp where water was more easily procurable, 10 miles off; but on the morning of April 1 a steady downpour of two hours' duration brought a two or three months' supply into it, and to the others in the neighbourhood on which the 150,000 inhabitants of the station depended.

THE FAMINE.

Previous to that the difficulty in getting water was extreme for the poorer classes, and the pressure of famine was severe in all the central and still less in the western—a state of affairs that required all the ability and prevision of Mr. Saunders, the Chief Commissioner, and the officers of his administration, to grapple with. The country was burned up, only here and there was a blade of green grass to be seen, or a patch of some green cattle food grown in favourable sites and under favourable conditions. Cholera and small-pox were very prevalent, and carried off thousands who were, from want of proper food, unable to contend against them. Sickness among the cattle, too, was very great, and the mortality unusually severe. Still, with all this to contend against, the agriculturists persisted in their endeavours to raise crops in due time, and to do so with diligence in collecting and spreading manure, and in ploughing and cross-ploughing their fields, putting themselves and their families, with sagacious foresight, on lessened rations until better days should come. During this time relief-works under the professional department were put in hand, to give employment to all who were physically able to work, and to prevent them falling into a less capable condition. For such works of an easier kind were provided everywhere that foresight could suggest, under civil officers of districts, to whom a wide discretion coupled with due responsibility was given. Both these classes were paid in money, and labour exacted from them. For those who were physically unable to work, gratuitous relief was provided at camps and kitchens, under careful superintendence, where cooked food was daily meted out to them; but among these even light work in and about the administration of such institutions was, according to capacity, insisted on; while to provide for such cases as those who were suffering, but who would not for various reasons come to these institutions, a house-to-house visitation in town and country, embracing in its organisation every acre in the province, was instituted, with the object of affording special relief in money or grain according to reported circumstances, and in this way a system of relief was organised

for all classes needing it. Even before the providential downpour on April 1 the trees and shrubs put forth their young leaves vigorously, and the bare branches of the deciduous trees, one after the other, day by day "bung their leafy banners out," in a way that, considering the surroundings, was truly astonishing, and as a rebuke to those who persisted in taking an unkindly desponding view of the situation. The fall of rain above referred to put the people visibly in heart, gave a great impetus to all agricultural operations, and by the middle of the month the new foliage was in all its new beauty of freshness and delicately diversified colouring, aided by the brilliancy of some of the flowering ones, chief among which were the Poinciana regia, Cassia Fistula, Lagerstrœmia regia, interspersed with the more delicately tinted "half-mourning" of the Pongamia glabra and the fragrant Melia Azarach, the whole heightened by the magnificence of the Bangianilias spectabilis, the Antigonon leptopus, Thunbergia lanifolia, Petrea volubilis, Poinciana cocinea, and other showy climbers for which Bangalore is celebrated.

POINCIANA REGIA.

The Poinciana regia trees were most striking in their fulness of sportive and diversified colouring. They were in all colours, from deep crimson—which in the unclouded sky looked disagreeably as a great ball of fire—through every shade of orange down to almost the pale broken yellow. They seemed to revel in the drought and to mark their appreciation of it by freely running to sport, as exhibited in the book of specimens sent for the consideration of the President and members of the Scientific Committee of the Royal Horticultural Society. The pollen was most abundant, and scattered about profusely. Standing under a tree gathering specimens a person becomes covered with the deep orange dust, and in this way it would be easy perhaps to accomplish a desideratum, viz., to establish the most gorgeous varieties thoroughly, and promote the sportive marking, at the same time to induce a more dwarf and less straggling habit of growth. To this end, instructions were left with the superintendent to select and establish the finest specimens of the P. regia, and to cross them also with the P. pulcherrima (of two kinds, one orange and one a well-tended yellow), to induce the shrubby growth and long duration of flowering that is conspicuous in the latter; to fertilise with the latter some of the best kinds of the P. regia, and to cross them also with the P. pulcherrima; and to carefully save the seed; the same trials to be made with P. Gillesii, of which there is one plant of shrubby growth in the Lilj Elph. If the experiments are successful in the first year's experience, there does not seem to be much doubt in the matter—it might be possible to produce small shrubs grown as small standards or as Azaleas are exhibited, with a most gorgeous indescendence, that would wonderfully brighten up any floral exhibition in the country. Some selected seeds from the finest flowering trees were collected in April, and the packets carefully marked. They will be sent in a day or two to the secretary. What I wish to bring forward for consideration is—whether such growth could be induced as proposed in the Poinciana regia, and to place on record the result of the effect of the late great drought in Mysore on the deciduous trees and vegetation generally as briefly contained in this memorandum, and the one by the superintendent of the Lilj Elph accompanying it. *J. J. Beck, Esq., Secretary.* (We shall publish Mr. Cameron's letter in our next. Eds.)

PLANT PORTRAITS.

HABRANTHUS HESPERIUS, *Flor-de-Serre*, t. 2277. — A Chilian bulb with narrow strap-shaped glaucous leaves, and stalked umbels of bell-shaped reddish flowers, having recurved perianth segments. It is nearly hardy. HELICHRYSUM GRAVEOLENS, *Gartenflora*, t. 859. — A woolly herbaceous plant with linear sessile leaves and clusters of small yellow flower-heads. Native of Greece. H. PLICATUM is somewhat similar, but with less woolly, narrower leaves, tapering into a long stalk and large flower-heads. This also is a native of the mountains of Greece. HOMALOMENA (CURMERIA) PICTURATA, Regel, *Gartenflora*, t. 891. — A stove foliage plant of the Aroid family, with sheathing, stalked, cordate-ovate leaves, having a broad central silver variegation. It is the *Curmeria picturata* of Linden and André, *Illustration Horticult.*, 1873, p. 45, t. 121. HYBRID NARCISSES, *Floral Magazine*, t. 250. — The plate devoted to four of the most distinct hybrids raised by Mr. Leeds, of Manchester. The forms are

of considerable scientific interest, but they do not surpass the parent forms in beauty.

HYBRID TEA ROSE MRS. OFIE, *Floral Magazine*, t. 251, is a carmine-tinted tea-scented variety, appraised of much merit. It was raised by Messrs. Bell & Son, of Norwich.

HYMENOCALIS ADNATA, Herb., *Flore des Serres*, 2275-76.—A species with rather broad leaves, umbels of white flowers, with narrow perianth segments, and a deep waxy corona. It is a native of South America, and was introduced as long ago as 1758.

HYPTILOTRUM LATIFOLIUM, *Botanical Magazine*, t. 682.—A handsome sedge-like or Cyperus-like plant, with broad lanceolate leaves, and flower-heads in rather dense terminal clusters of a rich brown colour. It is a native of Ceylon and other parts of tropical Asia, and would be desirable plant to introduce into a tropical conservatory.

IRIS TECTORUM, *Flore des Serres*, t. 2282.—A splendid blue iris, figured in our columns in 1876.

INCOLIRION PALLASII, *Flore des Serres*, t. 2270.—A bulbous plant with linear leaves, erect stem, and bell-shaped six-parted flowers, of a metallic blue colour. The plant is a native of Turkestan and the Caucasus, and hardy enough to bear the climate of St. Petersburg. It is likely to be a great addition to our gardens.

LELIA PUMILA DAYANA, *Floral Magazine*, t. 249.—A dwarf winter-blooming species, figured from a specimen exhibited by Sir Trevor Lawrence at South Kensington. Its coloration is deeper than that of the ordinary *L. pumila*.

LILIUM CONCOLOR var. LUTEUM, *Gartenflora*, Dec. 1876, t. 885.—A yellow-flowered form of *L. concolor*, characterised by the presence of densely tufted bulbs, linear lanceolate leaves, segments of the perianth oblong obtuse, emarginate, yellow, purple spotted.

LILIUM NEELGHERRICUM, *Florida Serres*, t. 2266-7, Hort. Veitch.—This is considered by M. Duchartre to be different from *L. neelgherrense*. It is one of the Indian Lilies, with trumpet-shaped white flowers.

LINARIA LINGROISEA, *Gartenflora*, t. 898, is an annual species of Toad-flax, native of Portugal, with linear leaves and flowers about an inch in length, of a purplish colour, with a yellow palate.

LUMA CHEKIN, *Gartenflora*, t. 890, is a Myrtle-like shrub, native of Chili, suitable for cool greenhouse, and would probably prove hardy in the South of England.

ONCIDIUM CHEROPHORUM, *Botanical Magazine*, t. 6278.—A charming, very sweet-scented species, commented on in our columns by Professor Reichenbach, in 1871, p. 168. It is a native of the volcano of Chiriqui, where it grows at an elevation of 8000 feet, flowering in December, with the thermometer a few degrees above freezing-point. It flowered at Kew in 1872 from plants reared by Messrs. Veitch. The pseudobulbs are about an inch in length, compressed, with sharp margins; leaves 3-6 inches long, linear-lanceolate; flower-stalk slender, drooping, bearing an elongated, densely crowded cluster of bright yellow flowers, each about half an inch in diameter.

PECTIS ANGUSTIFOLIA, Torrey, *Botanical Magazine*, t. 6286.—A branching annual Composite, with linear, coarsely ciliate leaves, and heads of yellow flowers like a *Senecio*. In its native country its compact habit, and dense inflorescence renders it very noteworthy. It was introduced from Colorado by Mr. Thompson, of Ipswich.

BRITISH GARDENERS.

JOHN WILLIAM LAURENCE.

MR. LAURENCE, the subject of our present portrait and memoir, has been pretty widely known as a successful Orchid cultivator, having had charge of the fine collection made by Bishop Sumner, at Farnham Castle. He was born in the year 1823, at St. John's, near Ryde, in the Isle of Wight, where his father was gardener to the late Sir Richard and Sir John Simon for forty-four years. His father was a native of Aberdeenshire, and served his apprenticeship with

the late Mr. Thompson, of Chiswick, at Haddo House. He was a thorough practical gardener and an accomplished botanist, so that the gardening education of the younger Laurence began very early. In 1842 he commenced work under his father at St. John's as kitchen-boy, &c., and he remarks thereupon: "The time thus spent is invaluable to the young gardener. Every one intending to follow the profession should so begin, and not, as is too often the case, where he ought to end, in the houses."

From St. John's he went, in 1844, to the Royal Botanic Gardens, Kew—a course followed to advantage by many young men who have attained eminence in the profession. Kew was at that time, under the able management of Sir William J. Hooker, just emerging from his chrysalis state. Here, amongst his fellow workmen, were the late Dr. Seemann; McLvcr, of Ootacamund; Hill, of Brisbane; Meehan, of Philadelphia; and Whitaker, of Crewe. "Here," observes Mr. Laurence, "let me add a tribute of respect to the ex-curator, Mr. J. Smith, to whom the young men of Kew owe many of their present privileges."

His next move was, in 1846, to the Royal Gardens, at Frogmore, where they were then coming into notice from the grand collections of fruit shown at Chiswick

section of Felargoniums also originated at Farnham Castle, in Mr. Howard's."

After the death of the Bishop, in 1874, Mr. Laurence remained for a short time in the service of the present prelate; and in 1875 was engaged to W. F. Webb, Esq., of Newstead Abbey, the home of Lord Byron. Mr. Webb has been constantly improving the plants he came into his hands, and all relies of the great poet are most largely preserved.

"In reading through the autobiographical notices of gardeners in past numbers of the *Gardeners' Chronicle*," writes Mr. Laurence, "I have been struck with the general testimony to the good feeling of employers. I must add to these my own instance, for I have received nothing but kindness and encouragement from both past and present employers; and I am old-fashioned enough to think, in these days of strikes and lock-outs, that this mutual confidence between masters and their dependents, is the only good point about the old feudal system which was worth preserving."

Florists' Flowers.

BEDDING DAHLIAS.—The bedding and bouquet Dahlias do not receive the attention they deserve, though there are evidences that a growing regard for them is springing up among gardeners. They are in the very front rank of the summer-flowering plants, continuing in flower till a nipping frost robs them of their autumnal beauty. In large establishments, where striking floral effects and bold masses of colour are required, the bedding Dahlias can be made of excellent service.

Formerly we had two distinct groups of Dahlias—the bedding and the bouquet or Pompon. The former were generally of dwarf growth and great freedom of bloom. The Dahlia is naturally a free flowerer, but in the case of plants grown for a supply of blooms for exhibition purposes but very few can be seen on a plant at times in consequence of the process of disabding, which in the case of most varieties has to be somewhat severely performed. Dahlias, when used as border flowers, are found to be loaded with flowers. The florist stays his hand, the plants are thus permitted to carry their full harvest of flowers. Good bedding Dahlias, therefore, are invariably remarkably free blooming.

The bouquet or Pompon Dahlia was, it is believed, of Continental origin, though the varieties have been increased by English raisers. The flowers were small, well-formed, striking in appearance, and the plants of tall growth. Their tall growth made them unsuitable for bedding, unless it was to form a centre to large beds. They were recommended for growing where a great number of cut flowers were required in summer and autumn. Originally there was a material difference in the characters of the two, but by reason of crossing or some such process a dwarf growing type of the bouquet Dahlia has been obtained with small, compact and interesting flowers, suitable for cutting from or for furnishing beds. At the Dahlia exhibition at the Crystal Palace, in September last, Mr. C. Turner exhibited a batch of these, among them John Sandy, buff, tipped with orange-red; Dove, blush, tipped with rosy lilac, very pretty indeed; Triumph, bright scarlet with yellow base, very effective; Lilacina, pale lilac on a sulphur ground; Little Arthur, pale yellow, tipped with red; Dr. Schwebes, scarlet; Yesta, white; and Louis Rodani, deep shaded lilac. A selection of good bouquet varieties of various growth will be found in the following:—Coronet, blush white, tinted lilac; Emotion, bright crimson, tipped with white; German Favourite, heavily edged with crimson-lake on a pale ground; Little Beauty, crimson-red, sometimes tipped with white; Little Rodri, lilac, very pretty; Little Fairy, blush pink, spotted and striped with rose; North Light, bright scarlet; Prince of Lilliputians, maroon; and White Aster, white, very free and good. The blooms of the bouquet Dahlia are very useful for mixing in with other flowers in large vases, &c., and very freely produced there is no lack of them, and the seedling appears to feed thickly productive character of the plants.

A selection of good, useful, fine blooming bedding Dahlias will be found in Rising Sun, the best scarlet,



by Mr. T. Ingram. Mr. Ingram was ably seconded by foremen who were themselves first-rate men, three of whom still hold the same position, namely Mr. Murray, forcing; Mr. Powell, hardy fruit; and Mr. Marr, kitchen garden—each willing and anxious to impart his experience to any young man who wished to improve himself. There being so much to learn at Windsor, Laurence was induced to remain more than six years, at the end of which time, in 1852, he was engaged as gardener to that grand old patriarch, and the last of the prince bishops, Dr. Sumner, Bishop of Winchester, at Farnham Castle, Surrey, who was then forming a collection of Orchids, which to the day of his death was to him a source of intense enjoyment. "As he never exhibited in collections," Mr. Laurence observes, "my aim was to produce a constant succession of bloom at all seasons of the year—a result which probably no other class of plant will yield, but which may be attained by a proper selection of Orchids, growing them as luxuriantly as possible in their growing season, and giving judicious rest when the growth is fully matured. The *Gardeners' Chronicle* of past years, and a pile of certificates of the Royal Horticultural Society (all honour to its past and hope as to its future), attest to my success. Amongst others I was fortunate in first flowering the grand *Saccolabium giganteum*. The gold and bronze

very dwarf, compact, and wonderfully free; Fireball, very bright red, and decidedly good; Crimson Gem, very free, and by no means redundant of foliage; Floribunda, pale crimson, bright in colour, and a profuse bloomer; Tom Thumb, maroon, very dwarf, scarcely exceeding 1 foot in height, and very useful as an edging for taller growing forms; Sambo, almost black, and an excellent contrast to a yellow; Gladstair, crimson, free and of good habit; Leah, rich deep yellow, a most excellent bedding variety; White Bedder, an excellent white, of compact growth, very free, and lasting a long time in bloom without showing the yellow centre common to most of the bedding; and Alba Floribunda nana, an excellent white, and also Floribunda nana, an excellent bedding variety, but the flower soon gets thin.

The foregoing selection is that of a gardener who makes a point of growing a number of bedding varieties annually, and makes a most effective display. The following are also good, and were, indeed, the chief varieties in the Slough collection last summer—Aurora, yellow, tipped with lake, very free, fine, and showy; Crimson Gem, rich crimson, very fine; Little Wonder, scarlet, remarkably effective; Royal Purple, free, and very good; Snowdrop, pure white, free, and effective; and Zalina, purple.

One of the prettiest displays of bedding Dahlias to be met with can be seen by visiting Mr. Geo. Rawlings' nursery at Romford. Mr. Rawlings annually plants out a quantity, and as soon as the plants are large enough to require securing, the earth is carefully removed from one side of the stem, so as to lay it as nearly on its side as possible without breaking it, and two small sticks are placed crossways to keep it secure. When the side branches are large enough to be in danger from wind, a sharp pinch is given to each, sufficient to cause it to lie down in the soil without actually breaking the stem; and the prostrate shoots soon grow upwards, and bloom most effectively and freely. The pinching process is gone through two or three times, in order to have a well furnished bed.

It may be added that in order to save the trouble of staking, tying, &c., Mr. Rawlings treats his show and fancy Dahlias in the same way; and he has displays of Dahlias that cannot be met with in nurseries where the flowers are grown for show purposes.

Bedding Dahlias must be well cultivated to be effective. The ground should be enriched with plenty of manure at the proper time for preparing it, and the plants should be grown on in pots as large in size as possible before turning them out. The great thing is to get a good start, and the sooner the plants get established and start into growth the sooner will they cover the ground and show a head of bloom. Late summer and autumn is uncertain, as an early frost will sometimes lay low the promise of a rich harvest of Dahlia blossoms. Therefore is urged the necessity for getting the plants out as early as it is safe to expose them, and into active growth as quickly as circumstances will admit; syringing and sprinkling overhead and watering at the roots in dry weather, so that no serious check comes nigh the plants. R. D.

The Villa Garden.

SWEET-SCENTED FLOWERS.—Fragrant plants, whether the perfume be exhaled up through the fine pores of the scented petals, as in the case of the Rose, or through the leaves, as in the case of *Aloysia citrifolia*, or the lemon-scented *Verbena*, as it is termed, have always been a favourite with the lovers of gardening. Perfume in flowers—that is, the perfume that attracts, not repels—is equal to so many added charms.

MUSK.—The Musk is a fine old sweet-scented plant, and it will require another century of novelties to displace it altogether out of cultivation; it is so sweet and agreeable, so powerful in its delightful perfume, so modest and winsome, and so easily grown, that no wonder it is so popular. In the crowded alleys of London the Musk, if cared for, will do well, and it is always a leading feature at the *City flower show*. Some of the plants are admirably good; and the difficulty lies in having them in flower at the right time—that is, when the *City flower show* is held.

The Musk is a rare *Villa gardener's plant*, if only he will grow it as it deserves to be grown. It is no use to plant it out in a dry hard piece of ground, and leave it there uncared for; or to pot it in a wretchedly poor soil and neglect it. If plants possess

emotions then it is dire cruelty to the Musk to submit it to such ungenerous, undeserved treatment; it merits a better fate, and no plant better repays attention. It grows freely, flowers prodigiously, and breathes forth a fragrance so beautiful as to add a hundredfold to its usefulness.

Some of the best plants of Musk we have ever seen were raised from cuttings taken in the spring from old plants of the previous year, as soon as they began to make growth. The best cuttings crop up close to the sides of the pots, and if the soil be loosened and opened, and the cuttings taken off as low down as possible, and put into a pot of light sandy soil, they will strike and soon make root. No bottom-heat is required to assist them to strike root, but a little solar heat is of great assistance after they have made plants.

If four of the best-rooted cuttings be put into a 24-sized pot a capital specimen of Musk can be had. But rich soil is of the first importance, for the Musk likes a good soil. Plants have their likings—there is no mistake about it, and he that studies these things will be certain to attain to a pretty good understanding with his plants. Another point is to pot the Musk rather low in the pots, say from $\frac{1}{2}$ to 3 inches below the level of the rim. But why? Well, as Jacques puts it in Shakespeare's *As You Like It*, "It is the sun that brings the root," and when the Musk has pretty well filled with roots the soil in which the plants are growing, some more rich soil be added, sufficient to fill up the pot to within an inch or so of the rim, the plants will gain added strength, and grow and flower with renewed vigour. In some country districts it is customary to meet with fine examples of Musk grown by the cottagers, and it is by adopting this practice that such excellent specimens are obtained.

We are growing Harrison's new hybrid Musk, and a fine thing it is, and we commend it to the attention of *Villa gardeners* as a most desirable plant for them to cultivate. The habit of growth and general character of the Musk is retained, but with the addition of large and finely-formed deep yellow flowers handsomely spotted. We are not quite sure from comparison that it is so highly fragrant as the Musk, but even if that be true, it is yet an admirable companion to it.

While the Musk is growing, and also when producing its flowers, it is well to keep the pots standing in a pan or saucer of water. The Musk is a moisture-loving plant, and cannot be too liberally supplied in this respect. The plants, too, should be kept in the shade while the sun is burning hot, as when the summer heat is fierce the blossoms soon get dried up.

There is a strong growing variety of the Musk which is grown in some quarters under the name of the *Giant Musk*, and the designation is an appropriate one, as it has a peculiarly robust growth, with larger and stouter twigs. We have both growing side by side, and can bear testimony to the difference existing between them. Not that the more marked robust habit of growth in the one case places it above the other; that fact that the two varieties exist is simply recorded by way of giving completeness to the foregoing remarks.

There are certain cool shady spots in the garden in which Musk may be appropriately grown. It is sometimes planted in the open border, and at last but not a very brilliant result. But in a cool place, where the sunlight falls occasionally during the day, and where it is generally cool and shady, a pleasant Musk garden might be made by preparing a bed worthy of it, giving it a soil in which it would thrive and bring forth its flowers plentifully. Such a bed should be planted at least twice, as in the case of *Aloysia*. The first year it would require little else than being kept moist and nice. The second and third years a good late dressing would be absolutely necessary, and a little manure water occasionally. Under such circumstances Musk will flourish, and bring forth second leaf and perfumed flower in abundance all through the glorious summer season.

Garden Operations.

PLANT HOUSES.

GREENHOUSE-HARD-WOODED PLANTS.—Those who have had much practice in the cultivation of hard-wooded greenhouse plants will no doubt have noticed the much greater strength and general vigour possessed by plants, when they arrive at the state of full-sized growth, that come from the earliest stages of being grown on quickly, as compared with others that have been subjected to a slower process by more restriction at the root during the first years of their existence. When this class of plants was first taken in hand, with a view to better exemplifying the condition in

which it was possible to produce them by close attention and due regard to their requirements, than the way in which they had been seen when cramped in small pots, with little or no attention to stopping their shoots, and tying the roots, so as to make the plant and air in a manner calculated to grow each individual species to something like its natural form, it was at once seen that the first essential to success was sufficient root-space, and so more growers resorted to extreme measures in this direction by placing the plants at first in pots of 6 inches in diameter, and a dozen or 15 inches in diameter. When they young stock so treated was in a healthy vigorous condition, and particular care for a time afterwards was taken, so as not to over-water until the roots had freely entered the large pots, and were well established, the plants were then so treated in a given time was often marvellous. But there is a very great drawback to this, which is known as the one-shift system: it is that the comparatively small number of roots that young plants, such as those under cultivation, possess grow to the sides of the pot, without, as they ought to, ramifying in all directions through the soil and fully occupying it; and it was frequently found in after years, although the outside of the ball immediately next the surface of the pot was covered by a thick mass of feeding roots, that the roots towards the centre were entirely wanting, nothing but the few strong roots that had originally grown through it. This gave rise to the experiment of potting young stock of this description twice in the season—early in spring and again towards the end of June—so as to give the plants a second chance, and it has been found much the best method of growing them; but it is only when their requirements on from the time of the first potting have been well attended to, that this second shift is necessary, or even advisable, and if the plants will require to have been kept in a good light house, or pit, stood on a bottom of some moisture-holding material, kept slightly damp, with plenty of light, sufficient, but not too much air, and full use made of sun-heat by diligent early shutting up in the afternoons. With young plants like the root and top growth made under such conditions will be double that resulting from less attentive treatment, and such stock will now be in a state to warrant their being moved again into pots from 2 to 4 inches larger, according to the progress made by the plants, and as to the individual plants. Use the soil in a similar condition to that advised for the early shift, immediately shading the root so as to obviate the necessity, for a short time, of giving more air than can be avoided, especially at the side lights. The shading should be effected by either mats, such as those used for the purpose, or by which only shields the plants from the sun's rays, but tends considerably to keep down the heat to a much greater extent than follows when the glass is simply obscured by whitening paste, or anything of a similar nature put across the glass. Another objection to the disadvantage of keeping out the light when no shading is required. Continue to stop and tie down all growths that are taking an undue lead, but on no account resort to the uniform, indiscriminate practice of nipping out the points of the shoots, such as is carried out by the nursery trade, is adopted by some, and which precludes the possibility of the current season's shoots ever attaining their wonted size and strength, and likewise induces an overcrowded condition of growth. Specimen and half-specimen plants that have now done flowering should have the seed-pots immediately picked off; or those that require it have the shoots sufficiently cut back. With many things, such as *Boronia serrulata*, *Polygala*, *Chorizanthe*, *Dracophyllum gracile*, *Fimbricaria*, and many others, each year make shoots of considerable length, unless they are freely syringed every season before growth commences they in a few years get into a long, straggling condition, which necessitates in the after-training of the plants the branches being twisted and wound round the stakes, which practice should be carried out rather than used, as however full a head of bloom a plant so managed may carry, it has an unnatural appearance. After being cut back, growth should be encouraged as far as possible without any delay. Give air in the morning, but close the glass at the moon two or three hours before the sun goes up of the day, at the same time syringing the plants overhead, keeping the floors and under the stages well moistened.

Heaths.—Pick the flowers immediately off all those that have done blooming, and cut such of the fraser growers in as require it. This latter applies particularly to *E. Cavendishiana*, a Heath that admits of exceptional treatment in several ways. Any plants of this variety that have got too tall may be cut back to the extent of reducing their height as much as one half; they should be carried out rather than used, in a moist, growing temperature, such as required for *Azaleas*, elevating them well up to the glass and syringing overhead every afternoon. In this way they will grow very fast, and after being subjected to this treatment for a few weeks can stand out-of-doors for a short time to harden up the growth, to depress it is another plant that needs especial treatment to induce

free flowering; it rarely blooms sufficiently two years together, and in the intervening years best its producing a full crop of flowers it is much the best of its kind, and few in quantity, and the foliage is much out-of-doors from the middle of this month, or if earlier now the worse; it not thus fully exposed for a long season, however much growth it makes, it seldom flows freely. *T. Baines.*

ORCHIDS.—Whilst so many additions are continually being made to these plants from varied and different sources, reference here being had chiefly to imported plants, it will be needful to remind those who are first purchasers, and those who have a number of plants that are still in the imported state, that no time should be lost in thoroughly going over the plants and carefully examining every piece, scrutinising them so as to be fully aware of the state of the leaves, bulbs—whether the leaders for a pushing and growing state, and if any of the back bulbs and dormant eyes are sufficiently plump and solid to hold out the probability that by a partial cutting through they may be induced to push out new growth to be followed by roots, and thus add to the feeding growths, and, of course, considerably increase the value of the plants, as well as the much more quickly causing them to increase in size and develop greater blooming capacities. In treating of imported plants there will always be a few unmentionable that will be left to the judgment and discretion, but the matter of treatment of the individual who has charge of the collection. Speaking, however, generally, mention may be made of four distinct groups; and though, in some respects, the treatment of all are very similar, it will be found that each is the better for a little different method in the earlier stages. Thus we have the *Aerides*, *Dendrobiums*, *Cattleyas* and *Oncotossiums*. In reference to the first division, which will also include the *Vandas*, *Saccolabiums*, *Angreecums*, &c., these are probably the best, and are generally in a very dry condition, the few remaining leaves being very thin and yellow, and having but a small amount of roots that exhibit any signs of life. The best way with such is to fasten a piece of string or wire round each plant separately, and hang them up in the Cattleya or *tendrobium* house, and as the roots rot downwards in this state they must be syringed two or three times a day, and any excess of water will thus quickly run away; in a very short time—three weeks about—the leaves will have assumed a more natural green, as well as a growth more or less of roots, and they will also push out some new rootlets at various places. As soon as this is observed the plants should be taken down and potted in as small pots as can conveniently be used, using the crocks in potting so as to come nearly up to the edge of the pot, covering the whole with moss. Each piece should be kept separate, and then all stood in the East India-house, if it is convenient—all being stood together. Here they will come on very nicely, and be much less likely to go off than if they were potted so soon as received, there being no reason in this case for the roots rotting through the continued moisture of the moss, as well also as the water logging in the hearts of the plants and causing the centre leaves to turn black and damp off. When the plants have remained one season in the small pots, if it is required they may the following spring be made up in larger pots, in which in a season or two they will make nice blooming plants, and come in very useful for exhibition purposes. The quicker varieties of the *Aerides*, such as *odoratum*, *Dyanum*, *viridum*, *savaiianum*, &c., may be treated thus, and are much very satisfactory; but *Fideliopsis*, *Lobbia*, *affine*, *maculosa*, &c., which are slower in growth, should be kept in single pots for two seasons at least. They then stand putting together more certainly, and look better when seen as well as pleasing the eye in larger pots. The *Vandas*, *Saccolabiums*, and *Angreecums* should be kept separate; they can be managed thus better, since sometimes a piece, for which no reason can be assigned, will go off from the middle of the plant, and for a while considerably weaken and destroy the remaining plants. This collection must now be treated to very liberal supplies of water and fresh air; scarcely any fire-heat will be needed, and by the aid of the sun the houses must now, after syringing in the afternoon, run up to the maximum amount here for the whole of the day.

The *Oncotossium*-house, however, by the admission of air at the top and bottom ventilators and by copious waterings on the stages and floors, as well as by syringing the plants carefully overhead, must have the temperature kept close so that there be much less variation in this division than is permitted in the others. *W. Swan, in Filtonfold.*

FRUIT HOUSES.

FIGS.—If the course of treatment which was recommended for these subjects during the time the fruit was ripening has been pursued, its nature would naturally tend to increase acidity in the borders generally, and any measure of remedying this defect should be taken after the fruit is gathered, supply any deficiency which is lacking in this way by giving the roots copious sup-

plies of water, to which may be added some stimulating agent, until the borders are thoroughly saturated. In this division the chief aim now will be the enforcement of means to secure the season's crop of fruit in a satisfactory condition; no fire-heat need be applied yet, excepting under most unpropitious circumstances, but liberal treatment in regard to heat and moisture is essential when the fruit has attained the size of Walnuts. If they be thickly placed on the shelves, and well thinned, sowing the later and those which are placed nearest the base of the shoots; and if these or the spurs on the trees be at all crowded by all means thin them unsparingly, not only for the sake of the crop of fruit, but for the purpose of maintaining the growth, as water which is properly effected this year successful results must not be anticipated for the subsequent one. Continue to ply the syringe freely over the trees twice every day; slightly open the house early in the morning, keep the windows closed till about 10 o'clock, and close up till 8^h 85° in the afternoon and liberally ventilate wherever circumstances permits. In houses where crops of fruit are nearing maturity apply the same treatment as before advised under similar conditions. Keep all the water in the house, and do not stop watering, and tying in late houses well in hand, and take advantage of a rainfall for giving copious supplies of water at the roots. *G. T. Miles, Wycombe Abbey.*

CUCUMBERS.—From this time forward the most important point in this department is daily attention to detailed management. Real summer weather having set in, plants in all stages are growing rapidly without the aid of fire-heat. Those in bearing will be found to be in the best of health, and will prevent interlarding of young growths and overcrowding foliage. Use the syringe freely early in the morning, and at the time of closing in the afternoon, after which the temperature may run up to 90°. Where, however, the temperature is high, and the lights are movable, as few plants are more grateful for a thorough cleansing than the Cucumber. After the house has been closed about three hours admit a little air for the night, and see that the bottom-heat does not fall below 50°. Red-spider, one of the most troublesome insects we have to contend with, will now advance with rapid strides. The best remedy for its removal is a weak solution of Gishurst or sulphur-water, with sufficient soft-soap dissolved to make it slightly adhesive. Syringe the foliage, stems, and walls with it, and if the enemy still holds out repeat the dressing. Plants in pits and frames may require fumigating, particularly if the beds have been used for propagating. Prepare the plants by allowing the foliage and surface of the stems to be dried in the sun, and then, after leaving air on until the time arrives for smoking. Light smokings at intervals of three days are best, and the smoke should be made to pass through a layer of damp moss, to prevent scorching. Always syringe and shade the following morning before the sun touches the foliage. Use glasses for keeping the fruit straight and free from the unsightly blanching hue, which is produced by close contact with the surface of the soil. *W. Coleman.*

ORCHARD-HOUSE.—We have heard this season of several cases of fruit-dropping in unheated orchard-houses, and in every instance the cause has been traced to the severe frosts we had early in May. Frosts that do not kill tender bedding plants will not cause fruit to drop under glass if the past season's wood has been properly ripened and the roots are in a satisfactory state. Trees in pots which have cast their fruit should be marked for examination in the autumn. If plant-drip, lifting, and relaying of the roots in their appointment. Assuming that the fruit has been well thinned, all gross shoots stopped, and mulching attended to, the points to which I would now direct special attention are ventilation, syringing, and watering. If the fruit will not water, and after the Strawberry season is over, the ventilators may be allowed to remain wide open by night and by day until the crop is gathered. Water copiously all trees carrying fruit with some stimulating liquid as often as they require it, and wash the foliage with the garden engine every afternoon about 4 o'clock. Remove Cherries when they begin to change colour, otherwise they will crack; and discontinue wetting Plums when they show signs of ripening, as the Plums will not be so good if they are watered, and the fruit will be well mulched, and allow the roots to find their way through the bottoms of the pots into the border. Gather the fruit in the afternoon, and wash it well. Stop at the fifth leaf. Remove the leaves, and wash the fruit with light and air, and thin the fruit in proportion to the strength of the trees.

KITCHEN GARDEN.

As space becomes available by the removal of summer crops immediate steps should be taken to bring it into a state of preparation for the planting of

spring Broccoli and winter greens of all sorts; the ground should if possible be trenched over a good depth and a good supply of manure incorporated, and a sprinkling of sea-strew over the surface. The previous planting will be of a great advantage to the future crop, as all the Brassica tribe are partial to it. In selecting the various sorts of Broccoli for planting, see that they are perfect, as so many are apt to go back in the preparatory state, also observe to plant all the different sorts together in rotation, and the same with the late sorts; by this means the space occupied by the early sorts may often be cleared off and prepared for other crops long before the latest crops are ready. The Ross's Sprouting Broccoli is a very good variety, and well adapted to Cattle's Eclipse. See that all are correctly labelled and dated for future reference, and give the plants as much space as possible between both plants and rows, and the dwarf and more stocky they can grow the better it will be their chance of passing unharmed through the winter. In large families a good supply of winter Greens is not less in demand than Broccoli, and indeed in very severe winters is often the only reliance, so that a good breadth of the various sorts proportioned to the demand and the planting state, and when the ground becomes vacant, a good part of which will probably be that occupied by the early Potatoes, which as fast as they are cleared off should be manured and dug over and planted, reserving the later sorts, such as King of the Mountains, &c., for planting in Scotch Borcote, to the last planting. Continue to sow a few rows of Cabbages for succession, they are always useful, and it is better to trust in successional plantings than in the sprouts from older beds. The season for the very early Cabbages is now past, and although most things are much later than usual they have made a rapid stride lately; and as weeds grow likewise, the hoe must be kept constantly at work stirring the soil even if there are no weeds apparent, as the operation itself is so beneficial in many ways to the plants, and the stirring and covering and verised soil on the surface will help very much to prevent evaporation of moisture during drought. Celery, however, being naturally a marsh plant, must have copious supplies of water with now and then applications of liquid manure, and in which a few handfuls of salt may be stirred with great advantage.

Tomatos on walls or other structures should now be making good progress, and should be kept well thinned-out and securely fastened from the effects of wind, and the plants should be kept well watered, a good portion of the coarse foliage may be gradually removed. Capsicums and Chillies will also be making good growth, and should be firmly fastened to stout stakes, and the branches thinned out now and then. Irish and Swedish turnips will be getting a little attention in wintering to give them a good start. The thinning-out of some of the main crops will still require attention. The main crop of Carrots, where they came up well, will only now be ready for thinning. A distance of 6 inches is sufficient for them, and vacancies may be filled up by transplanting, and our first main sowing in the middle of April never (owing to bad weather and slugs) put forth an appearance; a timely supplemental sowing has, however, brought a good bed, which will not be much behind. Onions should be thinned off at once, and the surface well stirred between the rows. Thin out Lettuces sown in drills, and sow more both of Cos and Cabbage varieties for succession. The things may be transplanted if required, but they must not want for water, or they will be sure to be killed by the next fortnight. In the first place, a last sowing of Peas may be made in well-manured trenches, and as they advance in growth should be mulched and watered. A row of dwarf French Beans will be ready to sow, and if the plants that will be very useful for preparatory sowing of Endive may be made for early purposes, if it is much in request; but where Lettuces are preferred for autumn use the sowing for main winter crops should be deferred. A good sowing of Cabbages between an early treated head will be found most useful. Saladina will now be much in request, and attention must be paid to successional sowings of Radishes and small salads, whilst advancing crops must be kept well watered to render them crisp and juicy. Continue to sow a few rows of Walcheren Cauliflower; a cool bottom and rather shady place is best for them. Some interesting letters from various correspondents on the use of paraffin for preventing the ravages of mice on Peas are worthy of attention. I have great faith in its efficacy. My practice, however, differs from that of those who soak the Peas in paraffin for so many hours, as I do not give them as many minutes. When the drills are drawn, I put, say, a quart of Peas into a pan, and pour on them a wine-glassful of paraffin, and mix them up and sow at once. The rows have all been fully furnished, and the Peas will be ready to be sown after their whole length, but they never pulled out more than one Pea at a place, and that was apparently unpalatable. The rows have all been fully furnished. *John Cox, Reigate.*

THE
Gardeners' Chronicle.

SATURDAY, JUNE 23, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, June 25	Sale of Mr. Willis' New Dracænas, at Stevens' Rooms. Faulkner and South Hants Horticultural Society's Show. Sale of Orchids at Stevens' Rooms.
WEDNESDAY, June 27	Burton-on-Trent Floral and Horticultural Society's Show. Brighton and Sussex Horticultural Society's Summer Show (two days). Leeds Horticultural Exhibition (three days).
THURSDAY, June 28	Twelve Summer and Rose Show. Richmond Horticultural Society's Show. Sudbury Horticultural Fair (two days).
FRIDAY, June 29	Alexandra Palace Great Rose Show.

KEW is worth a visit at the present season—inquid we do not know when it is not so—find it when he may the plant lover is sure to find a vast deal to interest him. The Rhododendrons are of course past their best and have not on the whole been equal to what they are in some seasons. The Ghent Azaleas, so gorgeous last year, are not so fine this season. Indeed here, as elsewhere, the disastrous weather we have had up till quite lately after a very wet mild winter, has left its mark, and dying twigs, lacerated leaves and blackened buds show how cruel was the blow inflicted. Day by day, however, the traces of these disasters are rapidly being effaced. Kindly Nature not only heals the wounds, but she is careful to conceal their traces.

It will be remembered that several months ago we drew attention to some newly-formed beds in the pleasure-grounds, near the fine spar of Abies Douglasii, devoted to various shrubby plants, arranged according to their natural orders. Forming the edge to one of these beds is a raised border devoted to Helianthemums. When we saw them a few days since the plants were only in bud, but such was their number that they must now present a gorgeous spectacle, and will induce some of our cultivators once more to pay heed to these very beautiful but now almost entirely neglected plants. In the Temperate-house some of those fine Cordylines to which we alluded in our Special Supplement devoted to the illustration of the gardens, are now in bloom, and most graceful the flower-panicles are. In the herbaceous ground, one of the most noticeable plants is a very beautiful Crucifer—*Ethionema grandiflorum*—whose dense spikes of pink flowers render it especially attractive. This, again, is a plant that ought to be much more widely known. Against the wall of this department are now flowering *Convolvulus Cneorum*, which we have before alluded to, but which is so beautiful that no apology is needed for again calling attention to it. *Habrothamnus corymbosus* is also in flower, as also *Rosa sericea*, and the very pretty pink-flowered *Abelia triflora*. On the rockwork, which requires to be greatly extended, the Edelweiss of the Swiss Alps (*Gnaphalium Leontopodium*), which answers to our Forget-me-Not, is in bloom; as also the singular Californian Pitcher-plant (*Darlingtonia californica*), and the pretty *Jessaminea*—a shrub with leaves like those of a Ribes, and racemes of white flowers. The Orchid-house is not so full of bloom as it is at some seasons of the year, but the improved cultivation to which the plants have been subjected of late, is sufficiently obvious.

In the new T range, too, the stove plants are improved by thinning-out uninteresting plants, which can for most purposes be as well or better studied in the herbarium and by judicious pruning and regulating the form of some of the others, so that the plants have more the look of specimen plants than of the bundles of sticks

which usually characterise the Botanic Gardens, especially those of the Continent. There is really no reason whatever, where sufficient means are available, why the plants in a botanic garden should not be as well cultivated as they are in private establishments. At Kew, which is a show garden, and the national horticultural establishment, as well as a scientific establishment, good cultivation is eminently desirable, and when the immensity of the plants is considered, as well as the great diversity of conditions to be fulfilled, the state of the plants as a whole will be considered as very satisfactory. In the T range the Achimenes and Begonias are finely in flower. A small plant of the new *Torenia Fournieri* may also be seen. It is very like the old and ever beautiful *T. asiatica*, but has larger flowers with a deep orange eye contrasting with its lovely shades of violet and purple. The show house, No. 4, is kept gay all the year round. Just now *Schizanthus pinnatus* and its many varieties, a plant always well done at Kew, is very noticeable; while *Scutellaria Mocciniana* is particularly effective in small pots. *Venus de Medici Fuchsia* forms a fine display from one of the rafters, its free-flowering habit being of special value for this purpose. The grand old *Brygnania arborea* is in full bloom, and has not many rivals even now. Our present object, however, is not to write a catalogue, or even to call attention to the many treasures which Kew contains. We have already done this at some length in our Kew Supplement, and almost every week we have occasion to note some plants of interest that make their appearance in due season. Our more immediate object is to emphasize our oft-expressed opinion that the national botanic garden should afford examples of the best style of cultivation, as well as the richest and most interesting collections of living plants. Never, we believe, has Kew fulfilled those two conditions better than it now does.

If summer weather, a well-dressed crowd, and, last but not least, the presence of Royalty, constitute a success, then the ROYAL HORTICULTURAL SOCIETY may certainly be credited with a success worthy of its palmist days. And was not the show good too? some one may ask, and the reply must be emphatically in the affirmative. The show of Tuesday last was one of the best ever held at South Kensington. The quantity was large, the quality excellent, the arrangement good. Why, therefore, begin this article with an "if"? Do we intend to throw cold water on the Society now that a bright gleam of sunshine has—unwonted vision, twice in one season—shed its life-giving influence on the Society? Assuredly not. Conversant with its history, never absent from its meetings, familiar with its workings at Chiswick and Kensington, it is not likely that we are going to do more than whisper in the Council's ear hearty congratulations, but—"remember." Remember what? Why that all this is the mere effervescence of horticulture. It won't do to cultivate froth, and leave the body neglected and uncared for. Flower shows are all very well, but they are not, as most horticultural societies and the Royal Horticultural Society, which ought to know better, seem to think, the end-all and be-all of horticulture. But we have said all this a good many times already, and, were it not that we feel it necessary, we should be little disposed to play the part of CASSANDRA in the face of so brilliant a success as that of Tuesday last.

Looked at from a horticultural point of view the exhibition was specially remarkable for the groups of plants exhibited, one whole tent constituted a group in itself—we mean the Pelargonium tent. The plants were excellent samples of successful cultivation, and—may we dare say it?—only wanted half the flowers removed, and their place supplied by foliage, to be perfect specimens. But the florists, of course, won't admit that, and from their point of view they were of unusual merit. Some of the specimens were indeed cultural achievements of a high order,

while Mr. TURNER'S show Pelargoniums in "half specimen" plants had a richness of colouring and a perfection of culture which rendered them specially noteworthy.

Turning from the refrugent glare of these specimens to the ice trophy of Mr. WILLS, we felt more than ever thankful to that bold and successful innovator. We are not going to criticise the taste of this erection, for really it was so deliciously cool on that scorching hot day that had it been open to a thousand more objections than it was, we should not have expressed them. A friend of ours—a man of course—suggested that he would have liked, after the fashion of men, to have stood with his back to it, and turned up his coat-tails, as if by his own fireside in winter time. Can Mr. WILLS have a better testimonial than this?

Inside the large tent were some of the choicest groups it has ever been our lot to witness. In Messrs. VEITCH'S group the individual plants, though small, were of extraordinary interest and beauty: there was scarcely a plant which had not a special interest and value—the bank of *Masdevallias* was a truly wonderful study of colour, the *Nepenthes* were *hors ligne*, and the little tray of miniature Orchids as charming as it was novel. All thanks to you, Messrs. VEITCH, for this delightful novelty. Mr. BULL'S group formed a great contrast to that of Messrs. VEITCH. It was less densely packed, and the specimens were larger, and, therefore, as a whole, more effective. The central group of Cycads, with its surroundings of choice new or rare plants was specially noteworthy. Mr. WILLS' group at the end of the tent, of Palms and foliage-plants, with an edging of *Selaginella* and Water Lily, was really a triumph of art. The individual interest and botanical merit of the plants was less than in the two previous cases, but the general impression was noble. Mr. WILLIAMS' group, towered over by a noble plant of *Cycas circinalis*, formed a worthy companion to that of Mr. WILLS at the opposite end of the tent; but for the general details of this, as well as those furnished by Messrs. LEE, ROLLISON, JACKSON, and others, we must refer to our report in another column. Mr. SHUTTLEWORTH furnished a fine group of specimen plants; indeed, the members of the present Council, including Sir TREVOR LAWRENCE, who till lately was a member, are entitled to great thanks for the material aid they have given, as well as the time they have expended on the affairs of the Society. Mr. ELVES' group of miscellaneous bulbous plants, albeit exhibited in a motley and unseemly array of blacking bottles *cum multis aliis*, deserves special commendation as an example of one feature of a horticultural show which is far too much neglected by schedule-makers and exhibitors. The competition for Mr. BULL'S cups deserves also a word of notice in this place, because, as the years go on, the wisdom of Mr. BULL in awarding these prizes is shown. At first the plants were of necessity small and inconspicuous, so that only a specialist and a connoisseur could pronounce on their value, and some of them were sneered at as botanical curiosities—a very stupid error by the way—but now, as the plants advance in age, their merits as ornamental plants become more and more apparent. Special notice must also be given of Mr. TURNER'S cut Roses—twelve boxes—quite wonderful considering the season, and of the rich collection of Irises shown by Mr. PARKER, and by Messrs. BARR & SUGDEN; and of Mr. REEVES' collection of Tuberoses, Lilies, and other plants grown for market. The fruit exhibition was fair, while of vegetables three collections were especially noteworthy considering the extremely unpropitious season.

Mr. BARROW'S work as usual was sound and conscientious; but of the arrangements for the

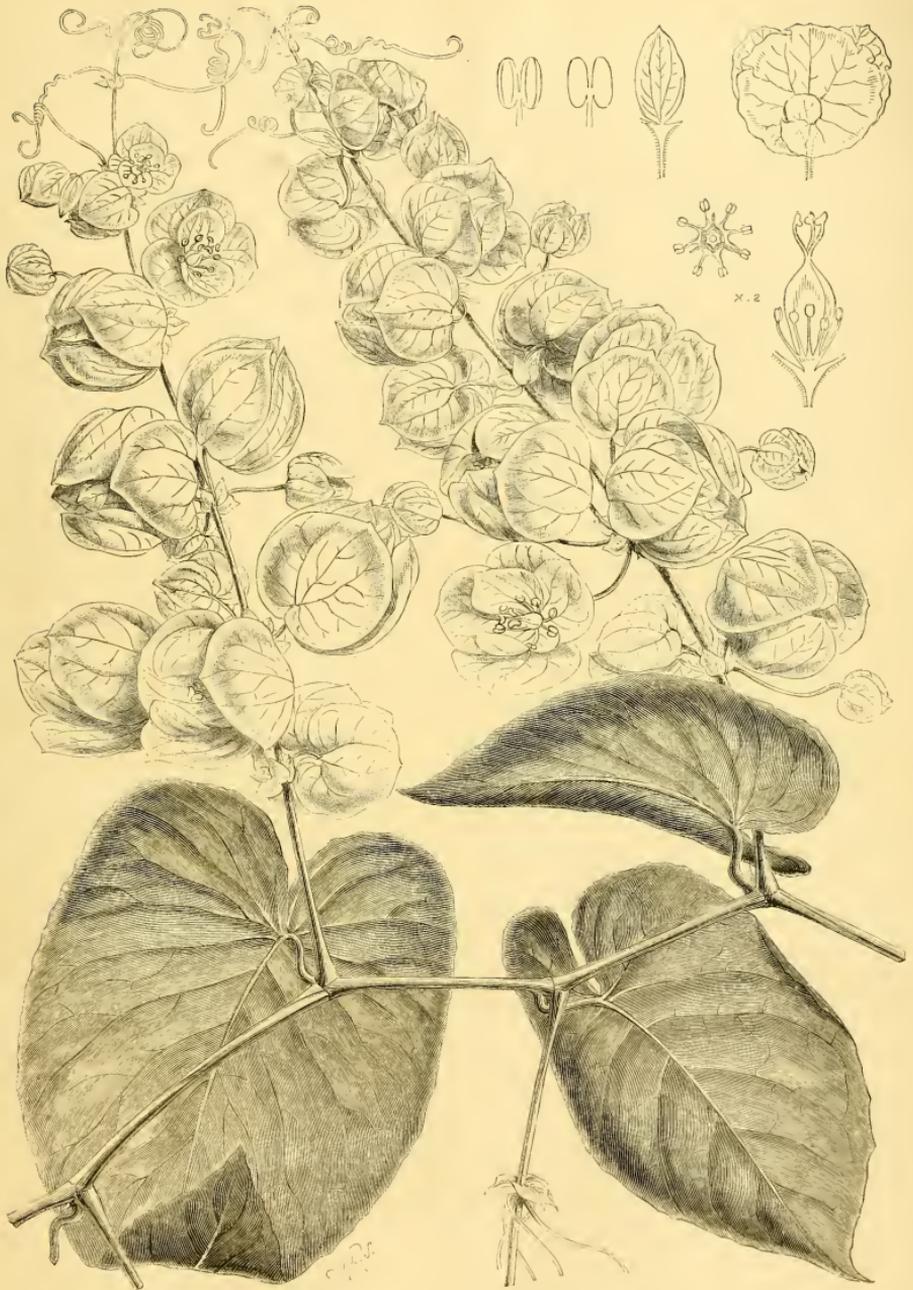


FIG. 126.—MR. BULL'S ANTIGONON INSIGNE (SEE P. 780).

general public the less said the better. There is no chance of improvement in general management till the Society is rich enough to pay handsomely a suitable commander-in-chief.

— THE Grand Conservatory of the ROYAL HORTICULTURAL SOCIETY at South Kensington is about to be devoted to purposes other than horticultural, but with the object of which few horticulturists will fail to have profound sympathy. On the 30th inst. the opening of the exhibition of objects incidental to the CANTON CELEBRATION will be inaugurated by the greater orator of his age, Mr. GLADSTONE, after which that gentleman will preside at a *déjeuner* to take place in the conservatory—a worthy place for such a feast of reason and flow of soul. On the 10th of next month the gardens will be made the scene of the annual *fête* of the NATIONAL TEMPERANCE LEAGUE, an earnest and well-intentioned body, animated with an intense desire to promote the spreading of sobriety and temperance amongst all classes of the community. The *fête* will consist of *concerts* *choregraphiques* in the conservatory and promenade of the gardens in the afternoon, to be followed by a monster tea in the long arcade; and in the evening there will be a huge meeting, combining address and music, in the Albert Hall. Hitherto these *fêtes* have been held at the rival Palaces, but the bar element at these places of entertainment, is fast converting them into merely huge public-houses. Later on a grand bazaar will be held in aid of the funds of a well-known hospital charity, also in the conservatory, when the most distinguished patronage will be dispensed by the fairest and most fashionable of the gentler sex.

— During the past Ascot week thousands of persons must have passed along the most delightful road that leads from the Bagshot turnpike to Wokingham, yet out of that number few perhaps, many that may have been struck with admiration for the grand wooded growth by which each side of the road is bordered, gave special attention to one particular tree out of the many noble SCOTCH FIRS that overhang and dispense a delightful shade. This one Fir tree has attained a great height, and because of the crowded growth is somewhat thickly branched, but its habit is of the most gracefully drooping character, and stands out in marked contrast to all the rest of its kind. The several branches project for a moderate distance from the stem, and then drop down to a length of some 10 or 12 feet. It were to be deplored that this charming variety should be allowed to pay the debt of Nature, as it inevitably will in some way or other presently, without some attempt being made to perpetuate and distribute it.

— A wish has been expressed by a number of friends of Mr. ROBERT FORD, gardener and forester to G. W. M. HENDERSON, Esq., Fordell, Fifeshire, to present him with some suitable token to mark their high esteem and deep respect for him, and to commemorate the rare event of the completion of his fiftieth year's service at Fordell. A strong committee has been appointed, with Mr. ANDREW HUNTER, Newbath, Musselburgh, N.B., as secretary and treasurer, by whom subscriptions will be received. It has also been proposed to present a testimonial in money to Mr. W. GARDNER, on his retirement from the management of the gardens at Weston House, Shipton-on-Stour, where he had been for forty-nine years. Donations will be thankfully received by Mr. K. GREENFIELD, The Priory Gardens, Warwick.

— From notes on the CULTIVATION OF HEMP in various parts of ITALY, continued in recent reports from this country, we learn that while it is extending in some parts it remains without any change in others. Thus its cultivation has increased in the neighbourhood of Florence, especially in the districts of Forlì and Cesena. The maximum yield of the latter district alone has been calculated at 3,000,000 quintals. The quality of the fibre is said to be similar to that of the Bolognese kind, and perhaps only slightly inferior. In the Venetian provinces, except in that of Rovigo, and in the communes bordering on the River Po, Hemp is not extensively cultivated. The Italian districts where this cultivation is chiefly carried on for exportation are situated southward of the Po. Both the grown in the Venetian districts, as well as that on the other side of the Po, may be

divided into three classes—the first or finer sort used in the manufacture of coarse cloth, canvas, and twine; the second, or middle class in respect of fineness, which is chiefly made into cordage; and the third or inferior kind, used for cables. The crops of Hemp this year are said to be very scarce, and the quality not equal to that of former years.

— The present unsettled state of Europe seems to be making itself felt in the PRICE OF BREAD in other parts of the Empire. In England, the price of bread, and the price of Maize has also risen considerably, owing to the scarcity of the last crop, and to an experiment made by the Italian Government, to feed cavalry horses with Maize in equal proportion to Oats, thus contributing to the dearth of Indian corn, to the great indignation of the poor classes, who lived almost exclusively on polenta.

— IN THE CULTIVATION OF THE VINE IN ITALY, particularly in the district of Cesena, three distinct systems are adopted. One is known as *afionis*, and consists in planting the Vines in single lines, and at intervals placing other plants, on Elm trees being generally planted at every six metres. In the second, known as *arignolo*, which prevails chiefly on the hills, a regular vineyard is formed. The third, *arignolo*, is a gradual amplification of the first into the second, when the land between the rows of Vines is unsuited to cereals or forage plants, and this system is also in use in the hill districts. On the borders of the districts of Forlì and Rimini a fourth system, known as *amaglio*, prevails. In this the Vines are trained to the Elm trees, in alternation to which the Vines are planted, the spaces between the rows being occupied by other cultures.

— Miss A. BUCKLEY, favourably known as the author of a short history of Natural Science, has lately published a tenth edition of Mrs. SOMERVILLE'S *Connection of the Physical Sciences* (Murray). It was no small task that was entered upon when the editor undertook to revise a book the last edition of which is already eighteen years old. Nevertheless, we are bound to say that on the whole the work has been well done, and that those who wish to obtain in small compass a brief general account of such subjects as astronomy, light, sound, heat, electricity, &c., will find this book adapted to their wants.

— We have received the following communication from Dr. ENGELMANN in reference to ABIES MENZIESII and A. ENGELMANNI:—

"There seems to be a confusion in regard to them. In Colorado they occupy different altitudes—Menziesii the lower elevations, wet places, bogs, banks of mountain streams up to 8500 feet altitude. Hence, up to the timber line A. Engelmanni is found, often forming large forests, or mixed with A. lasiocarpa (the Abies grandis of the Colorado botanists), Pinus contorta, flexilis, and aristata. A. Menziesii has a grey rough bark, which remains one of an Oak, A. Engelmanni a thin scaly cinnamon-brown bark. The leaves of the former are certainly very stiff, and, at least in Colorado, spinous, pointed, and often flattened; those of Engelmanni are more pliant, more linear, thick and shorter on higher altitudes. Both extend north-west to Oregon and British Columbia, and these forms of Menziesii occur with obtuse leaves. In cultivation the A. Menziesii from the north-western sea-coast undoubtedly behaves very differently from that the seeds of which were obtained in the Rocky Mountains. The same difference, I suppose, exists between other Conifers common to both regions, e.g., A. Douglasii, P. contorta and ponderosa. Now as to the light glaucous, or rather light blue variety of Menziesii, M. ANDRÉ justly extolled, and very appropriately named it after Dr. PARRY, who first introduced it. In several gardens at Cambridge, Mass., and the neighbourhood, fine young specimens can be seen, and some of regular form and stiff outlines, in which even the rigidity of the leaves is detected by the eye without the aid of the touch. Larger ones make a striking impression on the stranger in the lawns and yards about residences at Denver (Colorado); but he looks in vain for the same in the mountains. The fact is, that the old tree is mostly irregular and ugly, and has a grey sledge; only the young branches of the spring, and still more, the young sprouts showing the peculiar whitish blue colour, and many trees do not show scarcely any such tints. To be beautiful and striking it must be young. It is well known that the same colour variety is found in many other Conifers. A striking example is Abies concolor; the young plants mixed from the seeds I brought in 1874 from Glen

Eyre, at the base of Pike's Peak, are white, but that of Mendels, while others show this peculiarity much less. I may as well add the remark that the Abies concolor, heretofore considered a most rare tree of New Mexico, proves to be common from Southern Colorado, through New Mexico, Utah, and Arizona, and throughout the Californian Sierras. I have scarcely a doubt that, though so-called Abies grandis, Abies Lowiana, and Abies lasiocarpa (not the Oregon plant of Hooker, Fl. Bot. Am.) of these mountain ranges, are nothing but forms of this same A. concolor. G. Engelmann."

— M. NAUDIN writes to us as follows with reference to the BAHMÉ COTTON, lately figured in our columns:—

"The notes in the *Gardeners' Chronicle* respecting this pretended hybrid were so interesting to me that I asked M. DELCHEVALERIE for some seeds. I received them, and also some of the true Cotton (*Gossypium villosium*) and of *Hibiscus scouletianus*. In the course of five or six days all these seeds had germinated. It is true that at present only the cotyledons are visible, but up to this time I do not see one that at all resembles the *Hibiscus* sown by the side of it. Let us wait for the end before judging, but I confess that I shall be much surprised if the Kots Bahmé proves to be really a hybrid of the *Hibiscus*. I will return to the subject in a short time."

— The last part of the *Transactions of the Massachusetts Horticultural Society* is a particularly interesting one. Its contents show what our American cousins think are the proper functions of a Horticultural Society. In the present part we have reports of papers read before the Society on Squash (Pumpkin) and Melon Culture, on Fertilisation and Cross-Fertilisation, by Prof. GODDALL; on Injurious and other Fungi, by BYRON HALSTED; on the Improvement of Suburban Roads, by D. D. SLADE; on Entomology, by B. P. MANN, and others. After the reading of the paper discussion takes place, some of which is also reported, and as it records the opinions and observations of those who know what they are talking of, the advantage must be great.

— It is not generally known that in one of the museums at Kew (No. 2) there is a pane of glass with an inscription thereon scratched by the hand of JOHN EVELYN, and signed with his name. The inscriptions are imperfect (for there are two), so that it is difficult to read them, but one of them embodies a precept binding on all naturalists according to their ability—"Omnia explorare meliora retinet."

— A charming novelty is now in bloom in the York Nurseries—a pure white LELIA MAJALLS! Judging by the unusually small size of the bulb which is flowering, and the fact that two blooms are borne upon the stem, this must surely be a very "haughty" albino! It reminds of a white Lily, so pure and delicate is the colour. The labelum is faintly traced with pink veins, and has a very pale yellowish streak in the usual place.

— Is the fact that the lateral buds of some Conifers start into growth earlier than the terminal bud generally known? Of the fact itself, no one who sees the growth of Conifers at this season can doubt. Of course it is not universal, but it is very general. Abies Nordmanniana and Araucaria imbricata show it remarkably well. The lateral buds destined to form the topmost whorl of branches start into growth sooner than the terminal bud, and, for a time, grow faster. Very shortly, however, the terminal bud overtakes the lateral ones. Opposite our window is a vigorous young plant of Abies Nordmanniana, whose growth we have watched year by year with interest; and in the case of which we calculated one year that the new growths, if laid end to end, would have extended about three-quarters of a mile, the plant then being about 2 feet in height. In this plant, as in others, we have noticed that the terminal leader shoot grows most vigorously one season by comparison with the laterals, forming the topmost tier, while in another season precisely the reverse happens. Another circumstance worthy of notice, though of course it must have been seen year by year, though we have not been able to lay our hands on any record of the fact, is that the tufts of leaves of the Pines are developed from above downwards, that is to say the topmost ones on the growing shoot are the earliest to be developed. In some of the Pines, P. Murrayana being an instance,

the female cones which take two years to mature are in the first season erect and apparently terminal to the shoots; we say apparently, because in reality the terminal bud is a small leaf-bud, quite overshadowed by the more rapid growth of the cone. The true relation of things is shown in the following season, when the cones turn downwards out of the way and the terminal bud, left free to develop itself, produces a shoot. These matters are worth attending to, because the shape of the tree depends in great measure upon them, while from a botanical point of view no detail, however minute, is unimportant. One result of DARWIN'S teachings is the stress laid upon the significance of what appear to the careless and unobservant mere trifles.

— THE HOP BINE continues to make rapid progress, says the *Aldridge and Kentish Journal*, and although thin at places it presents a healthy appearance. Fly is to be met with, but not in sufficient quantities to cause serious alarm. The storm of last Monday evening has proved very beneficial, having imparted a healthy and bright aspect to the plant.

— One might almost exclaim PALMS FOR THE MILLION, on reading the announcement of the sale, on July 3, at Mr. HERBERT'S Nursery, New Road, Richmond, Surrey. Mr. HERBERT has an immense stock of young Palms, including many rare ones, such, for instance, as *Cocos Weddelliana*, of which he offers no less than 6000; and of *Areca crinita* 4000. We are glad to see a prospect of these handsome plants becoming reasonably cheap. About 20,000 plants will come under the hammer of Messrs. PROTIERRE & MORRIS next Tuesday week.

— We are requested to state that in consequence of the dinner of the Gardeners' Royal Benevolent Institution and that of the National Rose Society taking place on July 4, the usual monthly dinner of the Horticultural Club, fixed for July 3, will not be held.

— We hear that an International FRUIT SHOW is to be held at the ALEXANDRA PALACE this year on September 13, 14 and 15, when prizes amounting to upwards of £350 will be offered for all kinds of fruit, vegetables, table decorations, and some cut flowers. The schedule is now in course of preparation and will shortly be ready, when it may be obtained on application to JOHN A. MCKENZIE, 1 and 2, Great Winchester Street Buildings, London, E.C.

— MESSRS. JAMES CARTER & Co.'s EXHIBITION of ornamental foliated and flowering ANNUALS, grown in pots from seed, commenced on Wednesday last, in the corridor of the Royal Botanic Society's garden, Regent's Park. The exhibition will extend over fourteen days, during which time the exhibitors state that they will stage about 20,000 pots. We understand that the display is in fine order now, and, from its novel character, will be found well worthy of a visit.

— M. MARC MICHELLI, who has of late been in this country for the purpose of studying the Alliance of our herbaria, has just published in the *Bibliothèque Universelle de Genève* a review of the principal PUBLICATIONS RELATING TO VEGETABLE PHYSIOLOGY published in the various countries of Europe in 1876. We may find more hereafter for some extracts from this useful enumeration, in the meantime we may say that the subject-matter is arranged under the general head of growth of plants, influence of gravity, movement of fluids, spontaneous movements, protoplasmic currents; influence of temperature, electricity and light on plants; respiration and transpiration, nutrition of plants, carnivorous plants, fecundation of flowers, &c.

— Where the most is made of BOUGAINVILLEA GLABRA, either in a large or small state, it may be flowered two or three times a-year. Plants that have finished their first blooming should be well thinned out, removing the greater portion of the small growths not strong enough to flower, which the plant makes in quantity. The strong growths should be bent down round the stick or trellis to which it is trained. In a brisk heat it will quickly throw out numbers

of strong shoots; and if the plant is well elevated close up to the glass without any shading, and the shoots supported in an upright position, these will flower freely in the course of about two months. It is a gross feeder, and should be well supplied with manure-water, as upon the number and strength of its shoots the quantity of flower depends. This Bougainvillea is so extremely useful for cutting that it is deserving of all the attention that can be given it.

— THE PHYSIOLOGY OF THE TULIP is a subject of considerable interest, and it is one that in many of its aspects completely baffles the practical florist. Mr. WILLIAM WHITTAKER, of Salford, one of the leading Tulip cultivators in the North, states a few days ago that he had grown feathered byblemen Katley's Queen for the space of twenty years, and had never succeeded in all that long period in getting a second bulb. As is usual with Tulips, the old bulb decays every year and a new one is formed, but during that period Mr. WHITTAKER has never been rewarded with a second bulb. It appears to be resolutely opposed to anything in the shape of increase.

— There are now about 500 blooms of CYPRIPEDIUM SPECTABILE in a bed 36 feet square in the Messrs. JAMES DICKSON & SON'S Newton Nurseries, Chester, where this beautiful North American Orchid is cultivated most successfully as a perfectly hardy plant. The bed is made up of a mixture of peat and leaf soil, and, with the exception of a slight top-dressing of broken peat in the autumn, the plants have been entirely unprotected.

— Where the beautiful autumn-flowering LUCULIA GRATISSIMA is grown in pots, from its naturally strong habit it requires a good deal of room, and must have sufficient both root and head space, as the flowers produced will be proportionate in quantity to the size, strength, and matured condition the plants arrive at before the decline of summer. The ever-blooming *Stentellaria Mochiniana* is deserving of special attention; the distinct appearance of its flowers, differing in both form and colour from most other things, make it particularly suitable for associating with the general flowering occupants of the stove during either summer or winter. It does not require a very great amount of pot-room, but likes liberal treatment in the quality of the soil: a moderate amount of rotten manure and leaf-mould added to the loam assists it much.

Home Correspondence.

Memorial Trees—Horse Shoes—Witches.—The circumstance quoted on p. 726 of the *Gardeners' Chronicle* of Mr. Edward Peacock having learned that "several horse-hoos were found buried under the roots of Ash trees," may possibly be attributed to the custom which I know once prevailed in Lincolnshire of burying favourite horses and planting them in the graves—the trees being regarded as the memorials of the cherished animals. It perhaps may be well to give an instance or two of the practice as it has come under my immediate observation. In a gentleman's park in the Lindsey division of Lincolnshire, I have a particular recollection of having seen four old carriage horse graves, and buried, and four trees planted on their graves, which trees are now splendid specimens—valued not more for their intrinsic beauty than for preserving the memory and marking the tomb of its friends and favourites. They are sepulchral memorial-trees. The animals have, doubtless, long since mouldered to dust, but their iron shoes possibly remain under the roots of the trees. Subsequently I became gardener to another gentleman in the same district, and a few years ago, when I was asked to have cut had superintended the planting of a tree on the grave of some animal which has been interred—a horse, or occasionally a favourite dog, which may have died natural death, or been "killed out of their punishment." The last tree of this nature that I planted was on the grave of an old "general purposes" horse—a most willing and industrious animal—equally "at home" when drawing a lady's carriage, a load of Turnips, or the mowing-machine. I was instructed to find an appropriate tree for the grave, and I selected the Service Tree, which is flourishing well, and is now an attractive specimen. When planted in contiguity to the Purple Beech the silver leaves of the Service Tree have a fine effect in park scenery. I could point to at least fifty trees, under the roots of which, to my own knowledge, are horse-shoes, and could give evidence of many other trees which have

been similarly planted. I mention this custom not only because it may "throw light" on the circumstance alluded to by Mr. Peacock, but because it is preferable to shoot and bury animals which have been good servants, rather than to run the gamut over to the tender mercies of the higher, or the third-class cabman. By burying the animals, too, the parks become beautified, for were it not for the planting of these memorial trees, some demones would be driving your favourite dog, or some other animal which will one day take the place of the venerable monarchs planted by our forefathers. It may be, however, that this custom does not afford a sufficient explanation for the one shoe found under the Ash tree mentioned by Mr. Peacock. Horse-shoes are regarded as good luck, and grandmothers in Lincolnshire are possessing some occult and potent influence "against witches." Scarcely an old stable-door is to be found which has not one or more horse-shoes nailed on it; I mean the doors of buildings which have existed for generations, and perhaps for centuries. Some newer buildings are more or less decorated with horse-shoes, which are either preserved as mementos of some favourite animal, or are mere imitations of the old custom which originated in the dark ages, when witches were thought to have the witch's power of entering the horses could only be preserved by the affixing of one or more of their shoes on the doors of the stables, and so converting the buildings into fortresses and rendering them invulnerable to all phony enemies.

I have seen a number of old barns and out-buildings of baring a horse-shoe and planting a tree of some kind over it, and I have a distinct recollection of having seen an old dame, an octogenarian, whom no one could convince that she was not bewitched; she knew the "Witches" who were the witch's children, having "crossed" her, that is, of having rendered her powerless by the affixing of a horse shoe, a small branch of "Wicken tree" (Mountain Ash) gathered before sunrise and never suffered to touch the ground, and sundry incantations. The horse-shoe in this case was not planted something on it: it is this I am not quite certain, but I am sure she gathered the "Wicken" branch before sunrise, because I watched the poor old dame, who hobbled more than a mile for it about three o'clock one summer morning. Whether the Ash tree referred to by Mr. Peacock was a memorial tree which had been planted over a horse and its shoes, or whether the shoe had been placed under the roots of a tree to "drive away the witches," will probably never be known. The custom of planting a tree over a horse referred to were once common in that district of Lincolnshire where Kirton-in-Lindsey is situated. *East Anglian.*

Loquats: *Eriobotrya japonica*.—The Loquat flourishes well in the department of the Eastern Pyrenees. I have a large tree grafted on a Quince, which has been loaded with fruit this year. The fruits ripened in the second fortnight of May. It has frequently occurred to me that this fruit has been very much neglected. As a consequence it would be well to try to improve it, as all other fruit trees have been improved. On our Loquat trees the fruits are only as large as a moderate-sized Plum or a small Apricot, and the seeds are enormous, forming at least half the fruit, which is contrary to all the rules of fruit culture. Varieties are wanted without this defect, and having a less acid pulp. Such varieties must exist somewhere, in China, Japan, the Antilles, or elsewhere, and it would be very interesting if it could be proved. If in Covent Garden Market any one were at all in the assistance of a man that should be well to get a fleshy, sweet, and with less seeds, it would be gratifying to us southern experimenters to receive seeds of them, and for my own part I should feel very much obliged to any reader of the *Gardeners' Chronicle* who would send me some. *C. Naudin.*

Euonymus radicans variegata.—I do not remember having seen or heard of this plant being used to cover walls. Its only fault is that it does not root to the wall, but it has a close-growing habit, and with the assistance of a nail mat should be well to grow over, and it deserves to be classed amongst the choicest of wall plants. I planted one against a wall here in April, 1875, and it has covered a space of 6 feet by 3 feet, and grows as close as any of our Ivies. I also use it as a winter bedding plant with good or equal effect in a small state, as with an eyeing to Rose beds, clipping it in the same as Box edgings. *Ed. Woodman, Delancey House, Northwich.* [This and other species of a similar character do exceedingly well against a wall, and in panels on a terrace wall. *Eos.*]

Injurious Beetles.—During the recent bright and hot weather the Asparagus beetle (*Citocercus asparagi*) and the green Rose chafer (*Cetonia aurata*) have appeared in sufficient numbers to suggest they need looking to. Both these beetles are conspicuous, and in a small extent of ground, especially against the red and black and white-spotted Asparagus beetle might soon be cleared from the expand-

ing shoots before the egg-deposit now commencing has laid the foundation of mischief through the summer. The large bright green *Cicada* is still more conspicuous, and though it escapes attack but too often from its great beauty as it glances about like a living gem, the larvae from the eggs that are now being deposited will run many a Strawberry-bed by gnawing chambers in the thick part of the roots, and their destruction is exceedingly desirable. In either case, nothing more is requisite than just pulling them by the roots, crushing them with fingers or foot as they occur. O.

Helix pomatia.—This beautiful snail is common in the cool, damp woods in the north and centre of France, but is I believe wholly unknown in the Mediterranean districts where other smaller species abound. At Collioure, where the gardeners are very fond of the snail, the commonest species are *Helix* *aspersa*, *H. nemoralis*, *H. vermiculata*, *H. conspurcata*, *H. lapidica*, and several others, amongst which must be named the large *Bolimus decolatus*, which is carnivorous and devours the other snails. It is not less than a year and a half that *Helix pomatia* here. I brought some from Paris and put them in the garden, but they all disappeared without leaving a trace, having probably been destroyed by the heat and dryness of the summer, or devoured by the *Bolimus*. The snail which their acclimatization would be possible in the mountainous districts of the department at the height of 1200—1500m. I am of opinion that snails have been too much neglected by lovers of acclimatization, and that it would be interesting (or at least some scientific) to see how far they would go if an attempt were made to introduce into the South of France and Europe some of those large and beautiful *Helices* of tropical countries whose shells one sees in the cabinets of conchologists. This would be a pleasant experiment to make. *C. Naudin*.

Helleborus niger Seeding.—In the correspondence last year about the seeding of *Helleborus niger*, I think several persons said that they had seen such a thing. I now send you a ripe pod. The plant has seeded pretty freely here this year, but I find to-day that many have ripened off and shed upon the ground. It is a waste of time to sow a new lot, and frequent occurrence here in June. *T. Smith, Nevve*.

The Public Park at Gateshead.—In the *Gardener's Chronicle* of this date, I find a paragraph on the new public park at Gateshead, copied from the *Builder*. It is there stated that "on either side of the promenade the ground has been laid out under the direction of the Health Officer, by a professional gardener. Allow me to inform you that everything that has been done at this park has been done from my plans or directions, and that no such gentleman as is mentioned is known there. Mr. Bower, C.E., the Borough Engineer, has been good enough to take charge of the execution of my plans, and Mr. Lindsey, formerly gardener to Mr. Wallis, has continued the superintendence of the alterations and additions to the park. *Edw'd. Kemp, The Park, Birkenhead, 7 June 1872*.

Abies Engelmanni.—My attention was called this morning by our Mr. Synge to your notice in the *Chronicle*, which appears in your number of the 16th inst. Allow me to come to the rescue of one of our favourite trees, *Abies Engelmanni*, from your unqualified condemnation.—In comparison with *A. Menziesii* and *A. balsamifera*.—We found that the first of the latter grows in a strikingly fatal defect in our English climate—was *Abies Engelmanni*, which commenced to grow so early that all its young growth was completely killed by the May frosts; and this happens so constantly in the climate of Knap Hill that this year it was nearly all killed. It is a handsome or useful tree, never growing beyond the state of a miserable scrub." This sweeping condemnation will no doubt be accepted by every reader of your article who is not practically acquainted with the tree. Fortunately, after reading it, I had just time to order a plant of the latter. It is a splendid specimen of a most healthy plants, which have never been injured by May frosts since we raised them from seed. This plant my son has taken to London with him, and will be shown at Kensington to-morrow; and, I doubt not, will only reflect its character. It is only one out of many equally healthy. At the Royal Horticultural show at Birmingham in 1872 we obtained the Society's First-class Certificate for the same beautiful glaucous variety, and the green type is equally healthy. The soil at Knap Hill, however, is a yellow loam, where both soil and climate are most unfavourable to *Abies Engelmanni* stands better than any other Conifer—better than *Pinus austriaca*. Men of experience know that in light soils, with sheltered surroundings, where plants are early excited and are at the same time near water at the root, that late spring frosts are much

more destructive than in localities differently circumstanced; and I think you will agree with me that a tree which will stand unscathed for ten years in the midland counties in open and exposed situations without any frost, and in all great quantities, is not so common at last as a tree suited to the climate of England, and this *Abies Engelmanni* has done. Grand specimens of the well-known Silver Fir we find all over Great Britain, and yet in certain localities it suffers severely from the same state from which you are suffering, withstanding it continues to be grown extensively. *William Barron, Elvaston Nurseries, Boroovash*. [We merely stated the facts of the case. We have received, too late for publication in the present issue, a second letter from Mr. André on this subject enclosing one from Mr. Koczl. Eds.]

The Cucumber and Melon Disease, and Salus and Sulphurous Acid.—When I last wrote to the *Gardener's Chronicle* I was almost in despair about the ravages of this disease. I had little hope of the remedies proposed, and was also sceptical about Mr. Smith's worm theory, and the likelihood of any benefit from his prescription of Salus at the roots; still, as the Cucumbers were as bad as they well could be, and promised no eatable fruit as they were, I thought, here, at least, is a favourable opportunity for trying, and as you are very kind to say that they had Salus broth instead of pure water or sewage. After a few trials there was a decided improvement, and now the plants are almost cured by the application of Salus to the roots alone. As the results have been most surprising to myself, I send vouchers for the same statement for your perusal by the train of the foliage and fruit of those identical plants that were more than half dead with disease about five or six weeks since. There was a speck or two on one or two of the fruit, which may or may not be the result of the same cause as the decay of the leaves and the foliage alike may, I think, be pronounced in good health; and yet these are the identical plants that the diseased leaves and fruit were sent off to Mr. Smith, and became so weak afterwards that, but for the opportunity they afforded for experiment, they would have been thrown away, as numbers of young plants were that did not suffer nearly so much from the disease. The cure may be said to have been brought about by Salus alone, for the leaves and stems were so badly affected that it was impossible to take them to the garden, and, as so kindly recommended by some courteous correspondent. It was applied to the fruit in a few instances and seemed to make them worse—penetrating and appearing to bake the substance of the fruit. The Salus, therefore, at the roots had cured the Cucumbers, but the same treatment applied at the wrong end by dressing them with it which I, has been verified by the results. But if prevention is better than cure—and we all know how infinitely better it is in these diseases—the Salus may probably claim credit for curing your Cucumbers, and for curing the Melons from any symptom of disease at the present time. By the courtesy of my kind friends I have been supplied from various quarters. But to make security doubly sure, all our young plants in pits or houses have been treated with Salus at the roots, and all are clear and remarkably healthy. Nor does this exhaust the merits of the Salus. The Cucumber disease of last year speedily infected the Melons—this, in fact, was its worst feature. The failure of the out-of-door fruit crop induced us to press every available yard of glass to the service of the Cucumbers, and the whole of our plants, old and young, soon got infested with the disease. It was not, however, so virulent on the Melon as the Cucumber, neither were the plants so large. This enabled us to apply to the Cucumbers the remedy of Sulphurous Acid and sulphurous acid to the infested leaves. The acid was probably stronger than that used by "R." In many cases it ate the piece clean out of the leaves, as if they had been seared out with a hot iron; it seemed, however, to destroy the fungus, and prevent its spreading.—As to the use of Sulphurous Acid, sulphurous acid and Salus is that these Melons are now in robust health, without speck or spot, and are swelling off and ripening fine crops. All the young or successive crops are also clean. I feel it a public duty to state that the remedy of Sulphurous Acid may be able to record this fact, and heartily congratulate Mr. Smith on the success of his Salus for eradicating the Cucumber and Melon disease, or at least holding it in check for the present. I shall also hold a reserve of Sulphurous Acid, and keep a watchful eye for the first spot of disease, should any return. I can also confirm Mr. Smith's statement that the Salus is an excellent stimulant to the roots of plants. One or two sets of our Melons had got into a weak state through the crippling effects of the disease, and I was much obliged to Mr. Smith for sending them to robust health and vigour. The effects here recorded are as gratifying as they were unexpected; and should the Salus prove as potent a remedy for the Potato disease as it has proved for the Cucumber and Melon disease has, at present, there is no honour

too high for Mr. Smith to receive from the hands of a grateful nation. *D. T. Fish*. [The specimens forwarded by Mr. Fish fully bear out the statements made in this letter. With the exception of a few small spots on the fruit of the *Cucumbers* before the specimens appear perfectly healthy. We shall revert to this important subject shortly, and in the meantime request information from those who may have had experience with the Salus. Eds.]

Aloes roseo-cincta.—*A. Hanburyana*, Nain. (in *New Hort.*)—The bloom of this beautiful *Aloes* in the open air, has been splendid this year. Amongst the hundreds of flowers one only developed fruit, from which I intended to raise the plant from seed, as it does not, like most other *Aloes*, produce lateral shoots. Unfortunately a detestable *Helix aspersa* discovered this solitary fruit, and made one mouthful of it. *Sic transit omnia. C. Naudin*.

Phaius Marshallii.—In your report of the Royal Botanical and Horticultural Show at Manchester this plant is described as having a "crimson pencilled yellow lip." Mr. Phaius Marshall, of Mr. Swan's, says in his note thereon at p. 719 "yellow and crimson lip." Thus it appears that the "crimson" is quite a feature in the flower, as exhibited at Manchester. Allow me to say this is quite a new feature in *P. Marshallii*, for the plant that was shown at the Floral Committee on June 23, 1871, and again June 10, 1872, had not the slightest trace of crimson in the flowers. They were large, pure white, with a lemon-tinted lip, spike rather loose, allowing each flower ample room for expansion, thus differing entirely from the *Phaius Marshallii* of Mr. Phaius Marshall. We have plants of the original stock here, and although I have seen the flowers from the original stock (not plant, for there were several plants), every season since 1871, I have never yet seen a trace of crimson in any of them. As I have not seen the Manchester plant, I am unable to form an opinion upon the comparative merits of the two varieties, but it is plainly evident that they are quite distinct in colour. *W. Wilson, Gr. to Mrs. Adams, Chase Park, Enfield*. [The markings in question were faint pencillings on the yellow disk of the lip. Eds.]

The Fruit Crop in Guernsey.—As far as can be seen at present, the season for fruit does not offer much encouragement. In sheltered spots the bloom has escaped the destructive effects of the cold winds and night frosts, but elsewhere much havoc has certainly been done. It is, indeed, to be regretted that settlers are seen to their advantage—Pears like our valuable Chaumont hardly ever fail to set well. This quality is, however, possessed by other fruit-trees of inferior market value, so that, on the whole, the *Peach*, *Plum*, *Cherry*, and *Peach* crop that will be below the general average. Apples have also suffered in places, as we hear. One great preservative against hurt from wind and frost is to have our trees as vigorous as possible, and to obtain this there is nothing that equals regular and good draining. The *Peach* crop, indeed, with the exception of *Peaches* on the open wall, which, not being protected at all, have immensely suffered from blight. A few such trees, and *Peach* trees in the open would be wrecks, &c., if not protected, and well, too. What have we done to the wind that it has assumed the "eastward position" so long? *T. C. Brabant*.

The Endowment of Research.—Whether in distributing considerable sums of money to scientific men, to aid them in promoting in their several ways scientific inquiry, the Government have acted with discretion, or otherwise, it is not worth while to discuss. The fact remains that about £4000 has been thus distributed amongst thirty-four gentlemen, whose researches have been directed to chemistry, geology, electricity, and other natural sciences. Your contemporary, *Nature*, announces, "that this inaugurates a new era in scientific activity;" but, however this may be, it cannot be doubted that, without such assistance, scientific men have marvelously and unselfishly active in the promotion of research in time past, and will prove to be as persevering and successful in the future. The chief difficulty that will lie in the path of the Government will be the selection of fitting subjects for the dispersion of its bounty, and this can only be satisfactorily surmounted by making it conditional that all such research should be of a strictly horticultural character, and usefulness. In looking over the list of recipients, I find that a very small portion of the grant goes to favour objects of a strictly horticultural character, and it was with a feeling of disappointment that I looked in vain for the names of our best specialists. The chief difficulty that will lie in the path of the Government will be the selection of fitting subjects for the dispersion of its bounty, and this can only be satisfactorily surmounted by making it conditional that all such research should be of a strictly horticultural character, and usefulness. 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national importance, and, when specially destructive in its operation, becomes a national calamity. Next to Wheat the Potato presents the most important article of diet of general consumption, and its cultivation and distribution has developed into an extensive branch of national industry. Here we have at once a subject that should have attracted the attention of the Government, for the discovery of a means by which this terrible disease can be subjected to curative efforts would indeed prove a truly national blessing. No man in the promotion of scientific research stumbles over the philosopher's stone at the first onset, and Mr. Smith does not claim to have accomplished all that his heart is set upon; but in his complete analysis of the life history of the *Peronospora* he has cleared the way for action—as no curative efforts were fairly possible as long as the enemy to be contended with remained partially involved in mystery. That Mr. Smith's patient investigations have not received some tangible aid and recognition from the Government may not be due to any want of appreciation on its part; probably it is so far ignorant of what Mr.

promotion of truth, without reference to consequence, are what the highest class of scientific men do, or should work for. Practical results are sure to follow, and it is a fact beyond dispute, that all, or an overwhelming majority of the great discoveries that have been so beneficial to mankind from a practical point of view have originated in researches made for purely scientific purposes, and while those made from the practical point of view have been relatively unimportant and always limited in their scope, not fertile in the elements of progress. The factions of the Royal Agricultural and Royal Horticultural Societies are different. They have to deal with applied science. Turning now to the particular instance of Mr. Smith, the Royal Horticultural Society has done all it could do; the Royal Agricultural Society, which, from circumstances we need not now recall, had a special duty to perform in this matter, has utterly ignored it, and suffers in reputation accordingly. Mr. Smith's work was done so unselfishly and patiently, and was ultimately carried to so successful an issue, that we quite agree, and have repeatedly urged, that some

specimens of Dr. Pappé's *L. Dalgaïrnsiæ* accessible in this country, while Mr. Ball's plant, which is undoubtedly closely allied to *L. Boryana* (magellanicæ) and possibly a variety of it, has the less leathery fronds, glabrous on the surface, and with the upper pinnae confluent, which are set down by Dr. Pappé as the peculiarity of the plant, which he named *L. Dalgaïrnsiæ*. Whatever its name may be, it is a very fine greenhouse Fern of arborescent character, with something the aspect of another arborescent form of the same species known to cultivators as *L. zamoides*. It has a blackish trunk, which is shaggy at the apex, with long subulate dark brown scales. The fronds are but subarborescent in texture, pinnate in the lower part, and pinnatifid above; the pinnae lanceolate, acute, the lower ones small, tapered to the base, but scarcely stalked, the upper ones adnate, and the uppermost decurrently confluent. Below the small basal pinnae each edge of the stipes is set with a row of abortive ones reduced to wart-like excrescences, or ciliolities. The colour of the sterile fronds is a dark green on the upper surface, and a paler green beneath. No



FIG. 127.—*LOMARIA DALGAÏRNSIÆ*.

Smith has done, and is still doing, and, if the case were properly represented, would perchance yet bestow a fitting reward. It may be that the gentlemen whose names appear on the list as recipients of the Government grants may have had no lack of friends at Court, and thus their good fortune. The Scientific Committee of the Royal Horticultural Society, with whose work so far, as a body, horticulturists have not yet been greatly impressed, might find this a fitting subject for their consideration, especially as Mr. Smith is a valuable member. Probably representations from that body would have their due weight with the Government, and horticulturists would then see with satisfaction a national acknowledgment of Mr. Smith's services. *A. D.* (Our correspondent is confusing affairs somewhat. The Government grant was administered by the Royal Society, and a committee of that body selected, with, on the whole, excellent judgment, from among the very numerous applications made to it those that seemed the most appropriate. We entirely demur that the Royal Society should make immediate practical advantage the aim to be sought. To our thinking, that is just what the Royal Society should not do. The advancement of pure science, and the

recognition should be made to him. That Mr. Smith's name does not appear in the list referred to by our correspondent probably arises from the fact that Mr. Smith made no application to the Royal Society, and did not require to do so, having completed his investigations into the life history of the Potato fungus before such a thing as a Government grant in aid of scientific research was made. At the same time there can be no question that this would have been a very proper object for aid from the fund in question. *Eds.]*

Hardiness of *Ceanothus*.—We seldom find *Ceanothus* away from a wall, but it appears to be perfectly hardy when once established. My *C. divaricata* has been a splendid bush for the past month, with all the effect of a blue *Rhododendron*. I presume that *C. Veitchii* is merely a variety of the same species. *H. K.*

***Lomaria Dalgaïrnsiæ*.**—We adopt this name for a plant now being distributed by Mr. Bull, and of which a figure from his catalogue (fig. 127) is here reproduced, though with some hesitation, because so far as we are aware, there are no authentic

fertile fronds have yet been produced. The plants to which the above description applies have been recently imported from South Africa, and are, therefore, to be classed as greenhouse Ferns. As such they are a valuable acquisition, since they prove to be of free-growing habit, not indicating the tendency of other allied forms to dwindle away; but on the contrary, pushing their fronds with remarkable vigour in Mr. Ball's cool conservatory. *T. M.*

Crop of *Peziza*.—It may interest some of your readers to learn that a large crop of *Peziza* has made its appearance on the walls, ceilings, and floor of a house in Edinburgh, the roof of which was burnt off some time ago. The *Peziza* has appeared in immense numbers, and consists of two species, the least common one being *Peziza tectoria*, Cooke; the other, *Peziza domiciliana*, Cooke, has not hitherto been described, although I had a single specimen sent to me some years ago found growing in a garden at Hackney. This is really a beautiful addition to the *Cochleata* group, in size from 1 to 3 inches, and of all shades of colour between pure white and amethystine violet, here and there with a rosette specimen. In many cases the cups are quite regular, but in the

Markets.

COVENT GARDEN, June 21.

Business has been brisk during the past week, with a good demand for all classes of goods. Hothouse Strawberries, owing to the backward season, are making as good prices as at any time. James Webber, Wholesale Apple Market.

FRUIT.

Table listing various fruits and their prices, including Apples, Cherries, Grapes, Lemons, Melons, Oranges, Peaches, Pears, Pineapples, Strawberries, and Figs.

VEGETABLES.

Table listing various vegetables and their prices, including Artichokes, Asparagus, Beans, Carrots, Celery, Chilis, Cypresses, Endives, Garlic, Gooseberries, Herbs, and Potatoes.

CUT FLOWERS.

Table listing various cut flowers and their prices, including Botanydras, Carnations, Campanulas, Dahlias, Eschscholzia, Gardenia, Heliotrope, Lily of the Valley, Magnolia, Myosotis, Pelargonium, and Pinks.

PLANTS IN POTS.

Table listing various plants in pots and their prices, including Balsams, Begonias, Bouvardias, Calceolarias, Cactuses, Coleus, Coriandrum, Fuchsia, Heliotrope, Hydrangea, Impatiens, Magnolia, Myosotis, Palms, Pelargonium, Rhododendron, Strepitoides, and Valeriana.

CORN.

At Mark Lane on Monday the supply of English Wheat was small, but there were liberal importations of foreign and holders could not get it at a reduction of from 2s. to 3s. per qr. as compared with the rates of that day work. Barley was cheaper to sell, especially grinding qualities; while as regards Oats, a fall of from 6d. to 1s. per bush was submitted to. Malt was much the same in price; Malze was weaker, although no decided fall was reported; and a heavy market prevailed for Beans, Peas, and Lentils. On Wednesday was extremely dull. Very few transactions occurred in Wheat, and though no decided fall was reported, the prices of Monday were not supported. Other kinds of produce were cheaper when pressed for sale, but as a rule holders were not very anxious sellers. Average prices of barley for the week ending June 16: Wheat, 44s. 1d.; Corn, 34s. 7d.; Oats, 26s. 1d. For correspondence period last year: Wheat, 47s. 11d.; Barley, 34s.; Oats, 28s. 3d.

POTATOS.

The Borough and Spitalfields markets reports for June 18 state that there was not much trade, and the following were the prices: Kent Regents, 20s. to 22s. per ton; Essex do., 20s. to 21s. 6d.; rocks, 100s. to 120s.; Hales, 150s. to 175s.; Victoria, 150s. to 170s. Trade on Thursday was quiet, at previous rates. The Potatoes reported in London last week from the Continent comprised 241 packages 1657 bags and 150 bushels from Malta, 2526 bags Hamburg, 2354 Antwerp, 7040 Stettin, 111 packages Havana, 1785 packages 400 boxes Lisbon, 874 sacks London, 1000 packages 606 bags Ghent, 300 Harlingen, and 256 packages Taganog.

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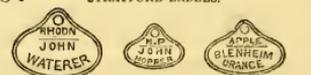
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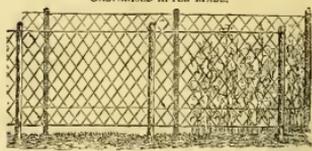
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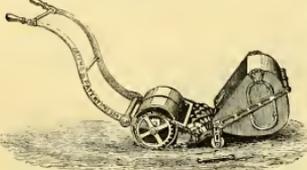
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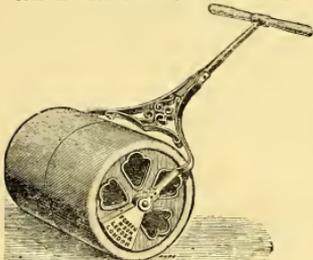
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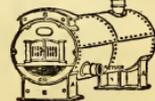


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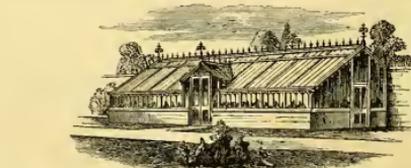
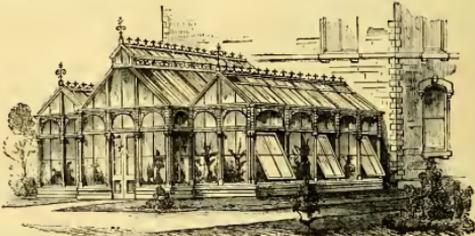
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will be held at the Royal Aquarium, Westminster, WEDNESDAY and THURSDAY, July 19 and 20. Schedules and full particulars may be obtained on application to Mr. E. S. DODWELL, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W.; or Mr. E. BENNETT, Rablay Nurseries, Basing, Herts.; or Mr. W. W. ROBERTSON, Royal Aquarium, Westminster, S.W.

SELBY HORTICULTURAL SOCIETY.

THE SEVENTH FLOWER SHOW, GARDEN and ATHLETIC FESTIVAL of the above Society, will be held on JULY 24. For Schedules of Flower Show and Athletic Sports Prizes, apply to FRED. F. SMITH, Hon. Sec. Market Place, Selby.

KENDAL FLOWER SHOW.

JULY 25. Open Prizes of THIRTY POUNDS for COLLECTION of SHIVE and GREENHOUSE PLANTS, and TWENTY POUNDS for COLLECTIONS of FRUIT. ENTRIES CLOSE JULY 19. Secretaries, Kendal.

COVENTRY and WARWICKSHIRE FLOKAL and HORTICULTURAL SOCIETY.

THE SECOND SHOW of the Season will be held at Combe Abbey, AGGISTON. Special Prizes open to England for best collection of Fruit, 1st dish, £5; 2d, £4; for three bunches of Black Grapes, £5; £4; for three bunches of White Grapes, £5; £4. For Schedules and every information may be had on application to THOS. WIGSTON, Sec. 35, Bishop Street, Coventry.

Sutton's Choice Strains of FLOWERS.

SUTTON'S CALCEOLARIA "PERFECTION," 2s. 6d. per packet.
SUTTON'S PRIZE PRIMULA, 2s. 6d. per packet.
SUTTON'S SUPERB CINEARIA, 2s. 6d. per packet.
SUTTON'S PRIZE CYCLAMEN, 2s. 6d. per packet.

The Queen's Seedman, Reading.

PAUL and SONS, Old Nurseries, Cheshunt.

—The ROSES, including their new ones of the year, Emily Laxton and Marchioness of Exeter, and those for last and also for next year, now freely in bloom. Frequent trains from Liverpool Street to Cheshunt Station.

PRICKLY COMFREY.—The most productive

Forage Plant, permanent, very early; weeds are kept under by its rapid growth. 100 lbs. per acre have been produced in one season; cut five times a year. Strong plants, 4s. per 100; sets, 4s.; carriage paid. The present is a good time for forming permanent plantings of it, also for propagation. FREEMAN, Economic Seedman, Norwich.

COLLARDS for SALE.—Several millions of

strong plants, at 2s. per 1000, for cash only. R. KATH, Wansant Park, Croydon.

BRUSSELS SPROUTS, 1,000,000 for Sale.

T. DORROWDALE, Swanley, Kent.

Clearance Sale.

CHOICE AMERICAN and OTHER POTATOS.—Price, 1s. per peck, or 8s. per cwt. fine red, New York, Early Rose, Champion, Regents, Redskin Flourball, Breeze's Prize, Brunwell's Beauty, Yorkshire Hero, Scotch Blue Regents, Woolf's Scarlet Frills, &c. Orders will be sent out in succession till all are cleared. DANIELS BROS., Seedsmen to the Queen, Norwich.

To the Trade.—Turnip Seeds.

H. AND F. SHARPE are prepared to make and sell this kind of seed, and also all the fine selected home-grown TURNIP SEEDS, comprising all the variety of cultivation. Special quotations, with samples, may be had on application. Seed Growing Establishment, Wisbech.

ORCHARD-HOUSE TREES, Fruiting in

Pots.—Peaches, Nectarines, Plums, Pears, Apples, Figs, Apricots, Mulberries, and Oranges. RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Mushroom Spaw.

OSBORN and SONS beg to announce that they have the honor of obtaining for the first time, as they are so constantly receiving assurances of the excellent qualities of their Spaw, they can recommend it with the greatest confidence. Price 5s. per bushel. Trade Price on application. Fulham Nurseries, London, S.W.

Gentlemen's Gardeners, Amateurs, and Others

requesting to send their orders to GARDEN PARTS of best quality, are requested to send their orders to J. MATTHEWS, Royal Park, Weston-super-Mare, Price List on application.

Pandanus utilis

SPECIAL OFFER TO THE TRADE.—Fresh Seed, just arrived, of good germinating quality, price 10s. per 100.

Mr. WILLIAM WILBES' Establishment for New and Rare Plants, King's Road, Chelsea, S.W.

Royal Botanic Society of London.

JAMES CARTER and CO. announce their GREAT EXHIBITION of ORNAMENTAL-FOLIAGED and FLOWERING ANNUALS and other PLANTS in Pots from Seed, to open WEDNESDAY, June 20, in the Corridor of the Royal Botanic Gardens, Regent's Park, W., and continue daily.

J. CARTER, The Queen's Seedman, High Holborn, London, W.C.

EAST LOTHIAN INTERMEDIATE STOCKS.

We have to offer finest strains of the above for present sowing, in four varieties, Scarlet, Purple, White, and White wall-banded, in packets, 1s., 2s., 4s. and 5s. each variety. These Seeds are of the same strain as that supplied to Batters Park, which has been much admired.

THOMAS METHVEN and SONS, 15, Princes Street, Edinburgh.

JEAN VERSCHAFFELT'S NURSERIES,

111, Fushoog de Brouckere, Leidenberg, Ghent, Belgium. CATALOGUES free on application.

Agents in London: Messrs. R. SILBERRAD and SON, 5, Horse Lane, Great St. Martin, London, E.C.

Harrison's Musk

H. CANNELL begs to assure the Public generally that the above has proved better than expected, in fact it is a great acquisition (a real everybody's plant). H. C. will send two plants post-free for 2s., 20s. per 100.

Swanley, Kent.

Surplus Bedding Plants.

J. LEWENDON and SON have to offer fine dwarf plants of CINEARIA, PRIMA, strong; LETUCE PLANTS, &c. per 100.

11, St. Albans, Reading.

LOBELIA BLUE BEAUTY without doubt

the best preserved the Blue Lobelia, also one of the very best Bedding and Decorative plants in cultivation. Strong plants, in flower, 6s. per dozen, 60s. per 100. Three plants, free by post, for 2s. Instant Trade discount, 10s. per 100.

FREDERICK PERKINS, Nurseryman, Regent Street, Leamington.

Fansies and Violas.

MESSRS. DOWNIE and LAIRD, Royal Victoria Gardens, Edinburgh, beg to intimate that their Collection of Show and Fancy FANSIES, also VIOLAS, embracing all the finest in cultivation, are now in fine flower at their Nurseries, and may be seen any day (Sunday excepted). Over fifty varieties of bedding FANSIES and Violas have been planted out in rows 30 feet long to test their merit.

The Finest New Bedding Plant of the Season.

AGERATUM "LADY JANE," &c.

For medium-sized beds or ribbon lines is far excellence—compact habit, dense green foliage, and good constitution. It grows from 18 to 24 inches high. The flowers when fully expanded are a bright blue, produced in abundance throughout the season.

Price 12s. per dozen; 100s. per 1000.

E. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N.

CHARLES TURNER'S New Spring

CATALOGUE contains choice selections, with full descriptions of Cines, Cines, Fancies, Zonal, and Tricolor; New Roses, &c. All the new and rar Bedding Plants; which may be had, post-free, on application.

The Royal Nurseries, Slough.

New and Choice Orchids, &c.

THE NEW PLANT and BULB COMPANY

beg to call attention to their NEW LIST (No. 34), just published, and respectfully invite all intending Purchasers to send for a copy before giving their Orders. Post-free on application. 11, St. Albans, Wokingham.

Primula, Primulas, Primulas.

WILLIAMS' choice assortment, same size and price. The above are quite equal to those have sent out in previous years. Cash with order.

JOHN STEVENS, The Nurseries, Coventry.

NEW REGAL PELARGONIUM,

"PRINCE OF WALES."

Much brighter in color, larger in size, and very superior in every way to Pelargonium "Gaius Kaikes."

Price 10s. per 100.

WILLIAM HUI, F.R.S., Establishment for New and Rare Plants, King's Road, Chelsea, S.W.

PROTHERO and MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 68, Gracechurch Street, City, E. C., and at Leytonstone, E. Monthly Horticultural Register had on application.

With the Number for next Saturday (July 7) will be presented a Special Twelve-page ROSE SUPPLEMENT, and a beautifully COLOURED PLATE of a GROUP of ROSES.

ROYAL HORTICULTURAL SOCIETY,

South Kensington, S.W.

NOTICE.—SCIENTIFIC and FLORAL COMMITTEES' MEETINGS, and EXHIBITION of NEW PLANT and FRUIT PLANTS, on FRIDAY, July 27, at 11 o'clock. GENERAL MEETING for ELECTION of FELLOWS, at 3 o'clock. Band of the Royal Horse Guards from 1 o'clock.

N.B.—THE FRUIT and FLORAL COMMITTEES on this occasion will meet in the CONSERVATORY.

ROYAL HORTICULTURAL SOCIETY,

GREAT SUMMER SHOW, June 19.

ERRATA.—LIST of AWARDS.

Mr. E. S. WILLIAMS, The Nurseries, Upper Holloway, N.

for Group of Plants, Large Gold Bankian Medal.

Mr. J. WALK, Royal Exotic Nurseries, South Kensington, S.W.,

for Group of Plants, Large Gold Bankian Medal.

Mr. E. SAWYER, Hyde Nursery, Edmonton, for Group of Decorative Plants, Silver Flora Medal.

Mrs. M. HOULINGS, 35, Hyde Grove, Manchester, for Skeleton Leaves, Flowers, and Ferns, Large Silver Bankian Medal.

ROYAL BOTANIC SOCIETY,

Gardens, Regent's Park, N.W.

EVENTING FEET and SPECIAL EXHIBITION of

FLORAL TABLE and other DECORATIONS

BOUQUETS, &c., WEDNESDAY, July 4. Gates open 9 to 12 o'clock. Tickets to be obtained at the Gardens only by purchase from Feltows, the price 20s., or on the day or evening of the Fête, 15s. each.

ROYAL BOTANIC SOCIETY,

Gardens, Regent's Park, N.W.

EXHIBITION of ANNUALS, grown by Messrs. Carter, High Holborn, and District Nurseries. Admission as on ordinary days, or by tickets, at 2s. each.

LEICESTER GRAND ROSE SHOW,

July 5, 1877.—FIFTY-TWO POUNDS offered for CUT ROSES. Open to all England. Further information on application to the Secretary.

Mr. W. C. MARRIS, 8, New Street, Leicester.

THE OUNDLE FLOWER and POULTRY

SHOW will be held on WEDNESDAY, July 11. PRIZES, upwards of ONE HUNDRED and EIGHTY POUNDS, in Mulberry, Currant, Strawberry, and Greenhouse Plants and Ferns, and TWENTY POUNDS for Roses. ALL ENTRIES CLOSE July 4. Schedules of

Dundee. ALFRED KING, Secretary.

WIMBLEDON and DISTRICT HORTICULTURAL and COTTAGE GARDEN SOCIETY.

Notice.—The Royal and District Nurseries, and Greenhouse Plants and Ferns, and TWENTY POUNDS for Roses. ALL ENTRIES CLOSE July 4. Schedules of

Dundee. ALFRED KING, Secretary.

WEST of ENGLAND ROSE SHOW,

Hereford, FRIDAY, July 6. TWO HUNDRED POUNDS in Prizes. ENTRIES CLOSE Tuesday, July 3.

ROSES IN BLOOM.



WM. PAUL & SON

BEG TO ANNOUNCE THAT THE

COLLECTION of ROSES at the WALTHAM CROSS NURSERIES IS NOW IN BLOOM.

Old and New Sorts, Show and Decorative Roses are alike Cultivated.

Admittance free on presentation of Address Card. Adjoining the "Waltham" Station, Great Eastern Railway, half an hour's ride from Liverpool Street or St. Pancras Stations.

WM. PAUL & SON,

(Successor to the late A. PAUL & SON—Established 1806)

WALTHAM CROSS.



TREE FERNS.

THE LARGEST AND BEST STOCK IN EUROPE.



WILLIAM BULL, F.L.S.,

Respectfully invites the Nobility and Gentry to an inspection of the above; also of his

MAGNIFICENT SPECIMEN ORNAMENTAL PLANTS,

Adapted for the Decoration of Conservatories and Greenhouses, or suited for Sub-tropical Gardening.

ESTABLISHMENT FOR NEW AND RARE PLANTS, KING'S ROAD, CHELSEA, LONDON, S.W.

OSBORN & SONS

BEG TO ANNOUNCE THAT THEIR

PLANT CATALOGUE FOR 1877

IS NOW READY.

It contains a DESCRIPTIVE LIST of the LEADING NOVELTIES of the SEASON, and a SELECT GENERAL LIST of STOVE and GREENHOUSE PLANTS, PALMS, FERNS, MISCELLANEOUS PLANTS suitable for Bedding and other purposes, and Sundries.

Post-free on application.

FULHAM NURSERIES, LONDON, S.W.

NEW ENGLISH-RAISED SEEDLING ROSES.

MESSRS. PAUL & SON,

THE OLD NURSERIES, CHESHUNT, N.

(THESE NURSERIES ESTABLISHED IN 1806).

Have great pleasure in announcing as a continuation of the series of English Roses raised or sent out by them since 1860, inclusive of LORD CLYDE (Paul & Son), DUKE OF EDINBURGH (Paul & Son), CHESHUNT HYBRID (Paul & Son), ANNIE LAXTON (Laxton), DUKE OF CONNAUGHT (Paul & Son), &c., &c., and containing never a bad one in the lot,

TWO NEW ENGLISH SEEDLING ROSES.

H.P. EMILY LAXTON (Laxton), a large full flower with globular, pointed bud, opening into large globular flower. In the way of Monsieur Noman, but of a rich cherry-rose, deeper and fuller than that kind, and with strong vigorous habit, making a grand pillar Rose.

First-class Certificate Royal Horticultural Society; First-class Certificate at the Leeds and Crystal Palace Rose Shows, and 1st Prize at Exeter for twenty-four of any one kind.

H.P. MARCHIONESS OF EXETER (Laxton), clear, rose-flushed, light cherry-rose, large, finely built-up flower, very sweet, and of strong vigorous growth; a larger more double Annie Laxton, yet perfectly distinct from that kind.

Plants in pots of the above, ready early in June, 7s. 6d. each, 14s. the two varieties; Blooming Plants, in 24-pots, 10s. 6d. each, 20s. the two varieties.

The two kinds described above have been proved two seasons at Cheshunt, and can be recommended as continuing the race begun by this raiser with H.P. Annie Laxton.

PAUL & SON,

THE OLD NURSERIES, CHESHUNT, N.

(These Nurseries Established 1806.)

TEA SCENTED ROSES.

SPECIAL CULTURE.

We have this season devoted nearly the whole extent of our Glass-houses to the Culture of Tea-Scented and other Roses, and are now enabled to offer plants of very superior quality.

PLANTS, in 5-inch pots, suitable for planting out, 15s. to 18s. per dozen.

.. extra size, in 6-inch pots, for Greenhouse, set with buds, 24s. per dozen.

.. extra size, in 8-inch pots, for Greenhouse, set with buds, 30s. to 35s. per dozen.

Half Specimens, 12s. to 17s. 6d. each.

NEW FRENCH ROSES of 1877, 30s. per dozen.

HYBRID PERPETUAL ROSES, established in 9 and 10-inch pots, now showing for bloom, 30s. to 42s. per dozen.

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

Address—CRANSTON & CO.

Cabbage Plants, from 2s. 6d. per thousand.



FREEMAN'S DOUBLE QUICK DRUM-HEAD CABBAGE—A remarkable variety, very large, comes in half the time the Champion Drumhead requires. **FREEMAN'S MASSIVE DRUM-HEAD**, a magnificent selection, plants 4s. per 1000. **ROBINSON'S CHAMPION DRUM-HEAD**, and other varieties, 2s. 6d. per 1000. Cash. C. R. FREEMAN, Norwich.

COCOANUT FIBRE REFUSE, invaluable for Gardening purposes. One thousand tons! Four-bushel bag, 1s. 4d. included; truck-load, loose, free to any Rail, 25s.

POTTER OYLER, Spitalfields Market, N.E.

COCOANUT FIBRE REFUSE, may be had in 2s. per 4-bushel bag, bag included; a truck, 25s bushels, 1s. 4d.; one-horse load may be had at the factory, 3s., by sending for it.

M. GAREY, 57, Old Montague Street, Whitechapel, E.

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

COCOANUT FIBRE REFUSE, newly made—Reduced prices, in 4 bushel bags at 12s. bags included; 100, 20s.; or Truck-load, 30s. Delivered free to any rail in London.

J. STEVENS AND CO. Fibre Works, Greyhound Yard, 174 High Street, Battersea, S.W.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best material for Orchids, Stove Plants, &c., 26s. per truck **BLACK FIBROUS PEAT**, for Rhododendrons, Antreas, Heaths, American Flower Beds, &c., 17s. per ton. Delivered on rail at Blackwater, S. E. R., or Farborough S. W. R. by the truck-load. Sample sack, 5s. 6d. each.

Fresh Stock on hand. Price List post-free. WALKER AND CO., Farborough Station, Hants.

HAWLEY'S GARDEN MANURES

TRADE MARK SPECIALLY PREPARED.

The Best Manures for all Garden purposes. Sold in neat bags with full directions for use at the following (retrospective) prices:—

HAWLEY'S UNIVERSAL GARDEN MANURE, 28 lb., 4s.; 56 lb., 7s. 6d.; per cwt., 15s.

HAWLEY'S GENUINE PERUVIAN GUANO, 7 lb., 2s.; 14 lb., 3s. 6d.; 28 lb., 7s.; 56 lb., 12s. 6d.; per cwt., 21s.

HAWLEY'S MANURE FOR ROSES, 28 lb., 1s. 6d.; 56 lb., 2s. 6d.; per cwt., 12s.

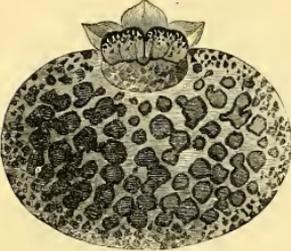
HAWLEY'S BONE MANURE FOR VINES, 28 lb., 7s.; 56 lb., 12s. 6d.; per cwt., 15s.

HAWLEY'S SUPER-PHOSPHATE OF LIME, 7 lb., 1s. 6d.; 14 lb., 2s. 6d.; 28 lb., 5s.; per cwt., 12s.

CRU-THIEBONES and all other GARDEN MANURES, PEAT, SILVER SAND, COARSE FIBRE REFUSE, RAFFIA FIBRE for Yivng, GARDEN MATS, SEEDS of all kinds, and HORTICULTURAL REQUISITES in large or small quantities. Price List post-free.

Post-office Orders to be made payable at Forest Gate. Cheques to be crossed "London and County Bank."

SAMUEL HAWLEY, Manure Depot, Forest Gate, E.



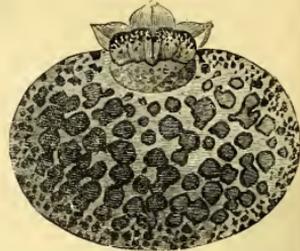
SUTTON'S

IMPROVED STRAIN

OF

CALCEOLARIA

"PERFECTION."



After many years' careful selection we have succeeded in producing a strain of *Calceolaria* which, for beauty and form of flower, richness of colour and habit of plant, is acknowledged to be one of the finest in cultivation. Our houses have been visited during the blooming season by some of the most eminent authorities of the day, all of whom agree in pronouncing our Improved Strain to be of unusual excellence.

Price, 3s. 6d. per Packet, post-free.

From "THE GARDEN," June 2, 1877.

"The *Calceolaria* at Messrs. Sutton & Sons' Nurseries, Reading, are just now beautifully in bloom, and should be seen by all who take an interest in this class of plant. The strain is one of the finest, being the result of years of careful selection. Many of the individual flowers measure $\frac{1}{2}$ inches across, and are perfect in shape and colour."

From "THE GARDENERS' CHRONICLE," June 2, 1877.

"A remarkable collection of *Calceolaria* is now in bloom at Messrs. Sutton & Sons' Nursery, Reading. The house, which is of good size, is ever crowded with specimen plants, but it seems to show off their great beauty and attractiveness en masse. Each plant is densely laden with large flowers, and the colours are very varied, from creamy white handsomely spotted on the body to rich dark maroon."

From Mr. B. BARHAM, Gr. to the Right Hon. the Earl of Sefton.

"It affords me great pleasure to be able to inform you that your *Calceolaria* seed has given extreme satisfaction. I have just now in flower one of the finest lots of hybrid *Calceolaria* it has ever been my lot to look upon. They are excellent in variety, form, and size of flower. Many have seen them and are highly gratified."

From "THE GARDENERS' MAGAZINE," June 2, 1877.

"The strain of *Calceolaria* distributed by Messrs. Sutton has flower-heads of immense size and perfect in colour. The flowers, which are borne in large clusters, are of immense size and of the finest possible shape, and embrace every colour. The yellow ground flowers are as a matter of course the most strongly represented, and with their splendid crimson markings are wonderfully effective, and of those of a straw-coloured ground and spotted and marked with purple, these are sufficient to make a most pleasing variety. The rose and purple self-flowers, some of which are quite new in colour, are also numerous, and present a striking contrast to those spotted with crimson, purple, and rose respectively. Sutton's strain of *Calceolaria* may certainly be said to combine all the good qualities yet found in these attractive flowers."

From A. E. RUSSELL, Esq., Dalnabreck.

"My *Calceolaria* plants from seed purchased of you last year are particularly fine, of very compact habit, and beautiful in colour."

From Mr. W. GEARLE, Gr. to R. M. Jaques, Esq., Easby Abbey.

"I have some very fine *Calceolaria* from seed supplied by you; they are the admiration of all who see them."

JAMES' INTERNATIONAL PRIZE CALCEOLARIA 2 6
SUTTON'S SUPERB CINERARIA 2 6

SUTTON'S PRIZE CYCLAMEN 2 6
SUTTON'S PRIZE PRIMULA 2 6

THE QUEEN'S SEEDSMEN,
READING, BERKS.

Sutton's Sons

THE QUEEN'S SEEDSMEN,
READING, BERKS.

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Each half-yearly Volume complete in itself, with Title-page and Index,

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Subscription for Twelve Months, 13s.; Six Months, 6s. 6d.

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PAXTON'S CALENDAR.

Now Ready, a New and thoroughly Revised Edition of the

COTTAGER'S CALENDAR OF GARDEN OPERATIONS.

ORIGINALLY COMPILED BY THE LATE SIR JOSEPH PAXTON, M.P.

OPINIONS OF THE PRESS.

"It has been carefully revised by an experienced gardener, and the lists of vegetables, fruit, and flowers, have been corrected by the substitution of the most approved modern kinds, in place of those which were mentioned in the first edition, and many of which have ceased to be worthy of cultivation. It is a thoroughly sound, practical treatise; but it has been so long before the public, and so deservedly appreciated, that any special commendation of it now is unnecessary."—*Milford Cottage Herald*.

"This is a handy volume, consisting of seventy pages of letterpress and illustration, containing much and varied information likely to prove useful to all cottagers, &c., who possess a garden. To all such, who require a cheap and reliable book of reference, we heartily recommend it."—*Lloyd's*.

"We are quite glad to see this useful little book once more, and it is like a whiff of perfume from the heather in bloom to read on the wrapper "two hundred and twenty-first thousand." We advise all who are interested in the promotion of cottage gardening to sow this little book broadcast."—*Gardener's Magazine*.

"The information conveyed in this little book is well adapted for all persons having small plots of ground. The necessary operations for each month are clearly laid down, and are of a thoroughly practical nature. The sorts of brush fruit and vegetables are well selected, many of them being excellent in quality. To our readers who are interested in the cultivation of their flower and kitchen gardens, we can safely recommend this as being a most concise and useful work."—*Bell's Messenger*.

Price 3d., Post Free 3½d.

W. RICHARDS, 41, WELLINGTON STREET, STRAND, LONDON, W.C.

RODGER, MUCLELLAND AND CO. have
 DRACENA DRACO, 1½ foot, 30s. per dozen.
 AUSTRALIS, 1½ foot, 22s. per dozen.
 CHAMÆPELICE CASSABONÆ, 4s. per dozen.
 DIACANTHA, 6s. per dozen.
 ARALIA OCTOLOBE-FOLIA, good plants, 30s. to 42s. per doz.
 SIBELDII, 30s. per dozen.
 SEMPERVIVUM BOLLII, 4s. per dozen.
 TUBERIFERA, 6s. per dozen.
 ECHEVERIA METALLICA GLAUCA, very strong, 12s. per dozen.
 BEGONIAS, tuberosus, good plants and sorts, now out-of-doors, 6s., 9s., and 12s. per dozen.
 64, Hill Street, Newry.

CHOICE FLOWER SEEDS
 For Present Sowing.

Our own super strains, guaranteed of unsurpassable quality. Post-free on receipt of P.O.O. or Stamps.

AURICULA, choicest mixed, alpine	6d. and 1 s 0
CALCEOLARIA, HYBRIDA, very choicest, mixed	2s. 6d. 2 s 0
CINERARIA HYBRIDA, from named flowers	1s. 2 s 0
CARNATION and PICOTEÉ, from stage flowers	1s. 2 s 0
HOLLYHOCK, Frisee Double	6d. 1 s 0
INDIAN PINK, splendid double, mixed	6d. 1 s 0
MIMULUS, Chapman's superb, very fine	1 s 0
MYSOPIUS DUMFRIEGLA, forget-me-not	1 s 0
PANSY, choicest mixed English	6d. and 1 s 0
PRIMULA SINENSIS, choicest mixed	1s. 2 s 0
POLYANTHUS, finest gold-laced, choicest	1 s 0
STOCK, Eruption, scarlet Giant	1 s 0
East Lothian, splendid	1 s 0
SWEET WILLIAM, very choicest, mixed	1 s 0
WALL-FLOWERS, splendid double, mixed	6d. and 1 s 0
GREENHOUSE PERENNIALS, 12 fine varieties	6 s 0
HARDY PERENNIALS, 12 choicest sorts, Pansy, Holly-hock, &c.	4 s 6

DANIELS BROS.
 ROYAL NORFOLK NURSERY ESTABLISHMENT,
 Norwich.



Pine-Apple Nursery, Malda Vale, London, W.
E. G. HENDERSON AND SON are now sending out the following plants—several of which are being offered for the first time. See the May Bidding and Self-wooded Greenhouse Plant Catalogue for descriptions, which will be forwarded on application—

PELLARGONIUM Queen of Stripes, large flowered stem, with Carnation-like striped flowers.
 Ivy-leaved Nemesis, the finest coloured in the group.
 Duke Blanche, very delicate colour.
BOUARDIA ROZELII, new species.
LOBELIA Pine-apple Gem and Princess of Wales.
MIKANIA SCANDENS VARIKATA, a useful plant.
CUPHEA MINIATA IGNEA, brilliant.
DACTYLIS ELEGANTISSIMA AUREA, fine.
MIMULUS, collection of new colours, and double-flowered.
VERBENAS and PETUNIAS, new colours and varieties.
SALVIA SPLENDENS RELIANTA, the finest.
ABUTILON DARWINII TESSLATA, useful.
 SEED—the best quality that can be grown—of Calceolaria, Cineraria, Primula, single and double; Cyclamen, Pansy, &c. See Advertisement May 5, or our SEED CATALOGUE, for prices, &c.

QUANTITY AND QUALITY.

NEW ROSES, IN POTS.
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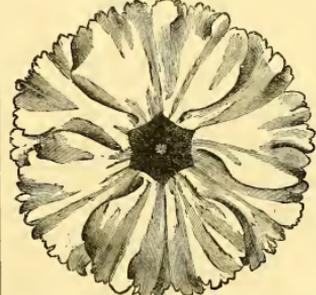
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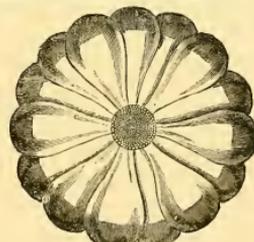
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From Mr. F. DENNING, *Gardener to J. Fenton, Esq., Vardley, February 26, 1877.*

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



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

From Mr. J. WELLS, *Gardener, Chesham Park, May 21, 1877.*
 "Sir,—Four strains of Cinerarias, which have now been in bloom some time, have been and are now the admiration of all that have seen them, and are considered by gardeners to be the best ever seen in this neighbourhood. Had they very dwarf and compact, quite equal to the drawing in your catalogue."

CYCLAMEN PERSICUM GIGANTEUM (new) 5s., 3s. 6d., 2s. 6d., and 1 s 6
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SATURDAY, JUNE 30, 1877.

FURZE, GORSE, WHINS.

THE Whins of our day, and of the days that are long gone by, have never been propagated, sowed, or planted by mortal hands; they are purely the gift of God. There were Whins on the commons of Barnes and of Battersa when our good king was student at the University of Göttingen. The robbers on the great North Road owed much to the shelter of the Whins on Finchley Common, as did those gentlemen of the highway westward to those on Hounslow Heath; and when Macaulay's artist from the antipodes sketches the ruins of London in the latter days, he will no doubt find the Whins of Surrey rank in growth and sharp in spine, the lineal descendants of the yellow bush now browsed by the half-starved "moke."

My acquaintance with this plant is of long standing. The Whin linnet made its nest in the Whin bush on the common, and long before I became acquainted with the nature of the plant, I knew where to look for the linnet's nest in the prickly bosom of the Whin bush; and as there were some 50 acres of common uncultivated, on which we could delve the earth or dam the brook without let or hindrance, it is easy to see that the Gorse on the common was an item of the highest importance to schoolboys.

When patches of Gorse or Whin bushes have been burnt, the roots do not always die in the ground, but frequently break out from the collar forming what botanists call adventitious buds. I mention this to show that this truly native shrub is prepared to hold its own against fearful odds. The seeds ripen in the autumn of the same year in which the flowers appear, but the pods do not open until the following year, when they do so with a crack, and scatter the seeds to some distance, thereby sowing the future Whins.

The common Heather (*Calluna vulgaris*), and the Whin (*Ulex europæus*), may be regarded as the scrub of our heaths and moors, and where the Whin has once got full possession it is no easy matter to dislodge it. The poets seem to have despised this homely bush. Burns hitches it into rhyme to hide a corpse—which it seems well adapted to do, being an evergreen and thickly set with thorns; for in the adventures of the inimitable "Tam o' Shanter" we read:—

"By this time he had passed the ford
 Where in the snow the chapman snored,
 And up the Whins and by the cairn
 Where hunters found the murdered bairn."

It would have been strange if Byron had been silent on this subject seeing that he was of the "north country," but in order to suit the metre he calls the plant the yellow Thorn. This is of course a poetical licence, as there are no true Thorns of the Cratægus family of a yellow colour. It is therefore clear that he means the yellow flower of the thorny Whin when he says,

"The blooming Heath, the yellow Thorn,
 The spreading Yew, the waving corn—
 All these bring back before my view
 My native hills—the hills of blue."

The double flowered Gorse is at present (middle of June) a sheet of gold, with scarcely a sprig of green to relieve the grand display and act as a foil to this bush of gold, not given sparingly but with heaped-up mea-

sure. Linnaeus—an excellent judge—admired, nay worshipped our Whins on a Surrey common—the symmetry of the bush feathered to the ground, and the gushing grandeur of the flower; and he seemed amazed to see that such a shrub was so neglected. I for one took the hint from such a high quarter, and planted double Gorse in long lines and in large clumps, and the effect was beyond our most sanguine expectations.

The foxhunters of Leicestershire have long been aware of the importance of Whins for cover, and many years ago they sent to Aberdeenshire for seed to fill up vacancies in the Furze covers of Melton Mowbray. This genuine English sport of foxhunting is never known to flag in interest however high the rate of exchange may be; so that we may look with some consolation on the thought that as long as the fox-hunting fraternity enjoy their sport so long will the "yellow Thorn" of the poet be respected.

This is not the place to speak of Whins grown for profit. I only name the important fact that green Gorse well bruised is very good winter fodder for the horse, as well as for the costermonger's ass.

In places where game is preserved, and hares and rabbits bark all kinds of trees and shrubs in hard winters, the Whin is little the worse for a ring of bark taken off all round, for it will sprout from adventitious buds and thus renew itself. Wherever there is a rabbit warren all kinds of brushwood and prunings should be utilised by carting them into the enclosure, thereby giving the rabbits not only food but medicine. The farmer at Farley, near Alton Towers, Staffordshire, had a rabbit warren, and no one complained of his stock doing any damage, for he kept them to himself; but that was the spot to learn what rabbits enclosed within stone walls would eat, for if the article had green leaves or a grey bark it was reckoned serviceable for the inmates of the warren.

Gorse sown for cover in early summer makes very little way the first season, and it is well to sow a small portion of Broom in the same plot, as it will attain a useful height long before the Whins; but when the Whin is drawn up by being thickly sown it will rise to 5 or 6 feet, and can only be entered by the best dogs—mankind, of course, being totally excluded. This, then, is the cover that defends the fox, for he is but a small animal, clever to creep through small openings, and lithe of limb and swift of foot, and will cunningly double back to regain the good Gorse cover that he had left.

Of other cover plants the Bramble in a gorge may be as good as any, so long as it is green, but although it retains its sharp hooks, it casts its leaves, and thereby loses its value as cover. The tall Bracken, again, is an excellent undergrowth, filling up the blanks in thin plantations, but it does not grow till fine weather sets in, and although a native herb, it is often damaged by frost, and thus for half the year this excellent cropper is useless for cover, but it will be hard weather indeed when the Whin bush cannot hold its own.

I need scarcely remark in this periodical that the double-flowered Gorse is got by cuttings, and not from seed; but the single succeeds well in common soil, what our French neighbours would call *pleine terre*. The clumps of double Gorse now in bloom have no parallel. The Laburnum waves its ringlets in the wind, but it does not carry the weight of gold in which the Gorse comes forth. The May Thorns of many hues, elegantly mounted on their tiny twigs, are truly fair to see, but they are flattered; and we constantly hear of the double Scarlet Thorn, though I have never seen one, and we have to be contented with "Mays" of white and "Mays" of various shades of purple, but the purple is never named, and as

there is nothing in that name we buy and pay for Scarlet Thorn; and who knows but we may get one this time—

"Put this his gods in later times perform."

Lastly, the early blossoms of the Furze are of the highest value to the beekeeper, just as are the buds to the supply of honey later on; and hundreds of acres of broken ground might grow Gorse with little trouble—stony ground, rocky ground, moor and fell. If only confined rabbits to their warrens, as predators are imprisoned, instead of keeping them as robbers at large, that would mend matters; and a field walled in as a warren, and planted with trees more or less, and with Gorse for underwood shelter and cover would go far to keep the rabbit to his burrow, no more to consort with hares, the only animals worthy of the appellation of ground game.

Before leaving this subject let me point out to amateurs and young gardeners that Gorse is very impatient of transplanting, and it should therefore be done when young, say at the height of 1 foot or 18 inches; and when taken up out of the nursery it should have its roots clipped into four or five to prevent the roots from damage in transit. It will be labour well bestowed to puddle each plant as it is planted; this will secure the success of the plantation, whereas the rough and ready way will result in having to pay for the plants, with only angry words and withered Whins by way of reward.

Alex. Forsyth.

New Garden Plants.

FRITILLARIA (NOTHOLIRION) HOOKERI, Baker, in *Journ. Linn. Soc.* xiv. 269; LILIIUM HOOKERI, *Gard. in Gard. Chron.* 1874, p. 201.

I have described this so fully in the *Gardener's Chronicle* already that I need do no more than say that it is fairly established in European gardens. I have received a specimen in flower from Herr Leichter, and Mr. Elwes tells me he also has flowered it at Cirencester. The fresh flowers are just the colour of those of *F. macropetala*, Don, as figured under the name of *Lilium roseum* in *Bot. Mag.*, t. 4735. It is a native of the temperate zone in Sikkim, and it is to Mr. Elwes we owe its introduction.

CATTLEYA SKINNERI (Bala.) Alva.

This is an exceedingly rare plant, as it was lost both by Mr. Sell and the late Mr. Endres. The flowers are of the purest white, with some purplish markings and some sulphur-yellow on the lip. Mr. Endres brought it as an extra rarity from Costa Rica to Messrs. Veitch, where it has lately flourished, and was exhibited at a recent meeting of the Royal Horticultural Society. *H. G. Rehb. f.*

PONERA KIENASTII, n. sp.^b

A creeping stem, bearing small pseudobulbs, with single ligulate or (both) blunt acute, exceedingly thick glaucous leaves. A capillary raceme has its 1-2 flowers. Bracts triangular, blunt, shorter than the stalked ovary. The flower has a well-developed chlo. Sepals ligulate, acute, greenish, with a brown hue. Tepals linear, acute, the lip forming a *goblet*; base oblong, blunt, acute, with a transverse callus at base. It forms quite a new, very curious section of the *Ponera* for its fleshy leaves. It was discovered near Comsapecque, Salteepe, Arcos, in cold places, forming dense masses and patches on trees, and descending to the soil, where it grows between moss. I have great pleasure in dedicating it to its discoverer, Consul Kienast, of Zurich, who is an enthusiastic lover of Orchids, which he for a long time observed in Mexico. *H. G. Rehb. f.*

KESTREPIA POREKENSIS, n. sp.^b

This is one of "the lovely little gems" forming large masses of creeping rhizomes with very small, narrow,

^a *Ponera Kienastii*, n. sp. — Rhizome repens, pseudobulbi ligulati monophylli, folia lineariligulata sive ligulata crassa, pedunculo capillari racemoso; bractea triangulis ovata, stipite bifido; callositate sive ligula; sepala lineariligulata, lobis adnato ventriculo oblongo obtuso, base callosi linearis transverso, medio incrassato. — Pseudobulbi viridissimi. — In Mexico, so nihil, ab arce Mexici det. com. Kienast, *Rehb. f.*

^b *Kestrepia porekensis*, n. sp. (Proreprens.) — Rhizomate repens, caulis crassus, bulbis brevissimis monophylli, a vagina amplice apice vestitis; lobis callosis linearibus apice emarginatis; sepala lineariligulata, lobis adnatis longioribus bipartitis bi-trigulatis, bractea callositate ovata triangulari pedicellato subaequali; sepala solum linearibus obtusiusculis; sepala lateralia ovata bifida; lobis linearibus ovatis ovum atriatis bidentatis (arce bifidis), tepala multo angustioribus, brevioribus, linearibus, lobis pedunculo, ante

fleshy leaves, which are emarginate at their top and have a small blunt apiculus between. The flowers are solitary, standing on a long capillary peduncle and nodding, bending the two straight linear petals forward and having both sepals widely clasping. The inferior one is longer than the other. The calyx boat-shaped and much narrower towards the top. The lip is unusually small, scarcely equal to the column, pandurate, blunt acute, with a small angle before each base and a lamella on each middle side. The whole of the inferior one is one of the most elegant and new discoveries of the late M. Endres. It has flowered several times in the Hamburg Botanic Garden. It is of some interest in having a good deal of similarity to the obscure and only once seen *Piniella hypolepta*, in habit and appearance. This plant, however, had better be named *Epidendrum hypoleptum*. *H. G. Rehb. f.*

STANHOPEA PULLA, n. sp.^b

This is an extremely interesting novelty, and with *Stanhopea Calceolae*, Rehb. f. (still a rather obscure species), no doubt one of the smallest flowered species. We have now seen it six times in bloom, and found it quite congruent with wild-grown specimens. The pseudobulbs are short, conical, ribbed, dark; leaves dark, of the shape of those of the *Stanhopea Wardii*. A strong short peduncle, covered with short hairs—as it appears conical—two flowers, one usually looking at the other, as if they would like to bite each other. "Comme deux chiens de faucon" say our French friends. The ground colour of the bloom is apricot-yellow. The lateral oblong acute sepals are reflexed, the upper sepal narrower, the ligulate acute, narrower, and shorter petals of a very bright yellow. The lip is very shining, as if covered with varnish—much like a very plump shoe, such as is used by the Dutch peasants—with a roundish knob at its tip, and with sharp serrated sides bordering the inside stands a fleshy square body with four keels, two on top, and two converging like the letter V. Between it and the apical knob is a transverse inconspicuous slit. The knob is white, the other parts apricot coloured, the side borders and the two V-like keels nearly brownish-purple. It is near the old *Stanhopea eorumata*, Lem. (now scarce in gardens, and as it appears, very difficult to keep, when Mexican and Brazilian and New Grenadian *Stanhopeas* are nearly grown-proof Orchids), but the flowers are not so large, and the lip is not so broad. This is a chief charm in the species, which flowered very freely at Hamburg Botanic Garden. We obtained it from our friend, the late M. Endres, who discovered it in Costa Rica. *H. G. Rehb. f.*

A GIGANTIC ANNUAL GARDEN.

SUCH a garden meets the eyes of the passengers by the Great Eastern Railway as they journey up or down the line between Ardleigh and Manningtree Station. This garden is a field of 15 acres, known as the Pond Field, and is a part of the extensive seed farms of Messrs. James Carter, Dunnett & Beale, at Dedham. The field is of peculiar shape, but it slopes downwards from the high ground close by Stour House, the residence of Mr. W. H. Dunnett, to the railway, and travellers can take in almost the whole extent of it at a glance. Shortly before reaching the field the line changes from a cutting to a level, and this is the best place for a cutting again to attain the confinement of the Pond Field.

The annuals are all planted in what is termed stretches, that is, beds running right across the field; each stretch has generally five lines of plants, in some instances only four, in others six or seven. In the case of annuals in large demand, such as Virginian Stock, Candytuft, &c., one and even several stretches are occupied by them, while others only in partial demand require only a portion of a stretch. Each stretch is slightly raised in the centre, with a very

basin utriusque minute angulato, carina inflata utriusque columnae trigone carina, utroque angulo antico emarginato. *H. G. Rehb. f.*

Stanhopea pulla, n. sp. (Stanhopeaceae) — Labello callositate anteriori apice pinnatifido pulvinari superiori pulvinari inferiori inflexo; corpore callositate solidiore liberiore liberiore utriusque lobis callositate ovata, lobis adnatis longioribus bipartitis bi-trigulatis, bractea callositate ovata triangulari pedicellato subaequali; sepala lineariligulata, lobis adnatis longioribus bipartitis bi-trigulatis, bractea callositate ovata triangulari pedicellato subaequali; sepala solum linearibus obtusiusculis; sepala lateralia ovata bifida; lobis linearibus ovatis ovum atriatis bidentatis (arce bifidis), tepala multo angustioribus, brevioribus, linearibus, lobis pedunculo, ante

gentle falling away to the sides, which is formed of narrow furrows to carry off heavy rains, and to enable the workmen to freely move about among the beds for the purposes of weeding, roguing, &c.

At the eastern extremity is a very large breadth of red Virginian Stock, which opening of a bright rose red changes to purple with age. But what a glorious mass of colour is then presented to view. Then came Dunnett's dark crimson Candytuft, only just beginning to show its colour, and which will be grand in expression three weeks hence; white Virginian Stock, *Convolvulus minor*, blue, very fine *in mass*; *Malope grandiflora*, *Convolvulus minor*, dark purple; *Clarkia pulchella*, *Iberis odorata*, a pretty dwarf early white fragrant Candytuft; *Erysimum Peroffskianum*, with a fine glow of orange; *Convolvulus minor*, striped, very prettily striped with blue on a white ground—a selection from the blue variety, as the earlier flowers will

Clary, purple tipped; *Cyanus minor*, striped; *Godetia insignis*, rose and white, very pretty; small blue Lupines, a capital hardy annual, a good blue in colour, with a nice branching habit of growth; sulphur Lupines, very good; *Clarkia elegans*, white Hawkweed, *Leptosiphon androsaceus* *blacina*, very good lilac and exceedingly pretty; *Nemophila maculata*, scarlet Tom Thumb Nasturtium, and *Nemophila insignis*. Of the two last there were great breadths, and they appropriately formed the west wing of this vast floral army. Only a good rain is required to make this vast garden of annuals one of the most imposing floral sights that can be looked upon in any part of the United Kingdom during the summer.

A body of six men, with occasional assistance from others, are constantly at work here. Hoeing, and especially roguing, *i.e.*, pulling out plants from stray seeds, occupies their time, and if during their progress over the various beds any approach to a new sport is detected, the attention of Mr. Dunnett is called to it,

DOUBLE PYRETHRUMS.

AMONG hardy herbaceous plants now in bloom there are none so showy or more generally useful than double Pyrethrums, the blooms of the best varieties of which are as full and well formed as *Asters* or *Chrysanthemums*, and coming in as they do by the end of May, or early in June, when there are so few really good flowers outdoors, they are doubly valuable on that account. I was not aware they would force till this season, but find they do so almost as readily as *Spirea japonica*; when this fact becomes known I have no doubt they will be largely grown for the purpose, as under glass they are even more delicate in their rich tints of colouring than in the open borders, where just now they are making a brilliant display. Fortunately they may be increased with the greatest facility by division, and therefore a stock of plants

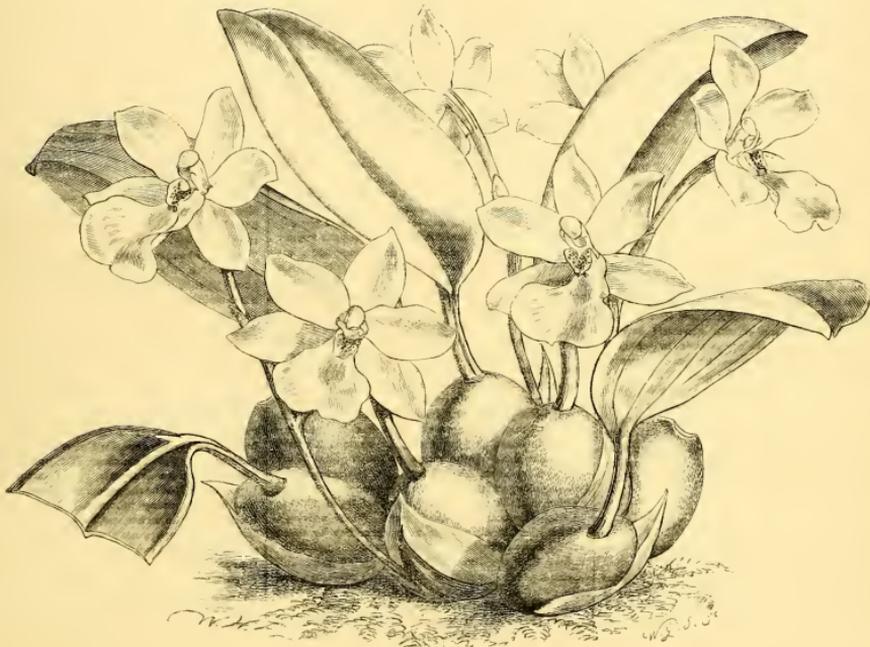


FIG. 123.—ODONTOGLOSSUM OERSTEDI.

often come self-coloured, like those of the *Petunia*, and be succeeded by blossoms true to character; dark purple Candytuft, white *Convolvulus minor*, *Clarkia pulchella*, double; *Godetia The Bride*; Hawkweed, red, an extremely pretty annual about 15 inches in height, and of a charming fleshy rose colour, very free, and excellent for cutting from at this season of the year; red *Lavatera*; *Convolvulus minor* sub-cerulea, pale mauve, a selection from the blue; *Virginian Stock*, dwarf rose, low in growth, and compact and branching in habit; *Collinsia grandiflora*, a pretty hue of purple; *Clarkia pulcherrima*, a dark variety of *C. pulchella*; *Lupinus albo-corrulens*, blue, scarlet, and white, a charming hardy annual; *Godetia rosea* alba Tom Thumb, *Dianthus chinensis*, *Cyanus minor*, blue; *Godetia rosea* alba; *Gilia rosea* splendens, pale rose, very good indeed; *Viscaria oculata*; yellow Hawkweed; *Centranthus macrocephalus* albus, *Schizanthus pinnatus*; *Cyanus minor*, pink; Clary, white tipped, growing about 15 inches in height; *Cyanus minor*, pink; *Leptosiphon androsaceus* albus, particularly neat in appearance and pleasing to the eye;

and it is invariably marked and the seed saved for trial another year. Many of the newer forms of annuals have been obtained in this way, among them some charming variations of a particularly pleasing character, and a few of the newest among them are under cultivation every year till their character becomes sufficiently fixed to admit of their being distributed. R. D.

ODONTOGLOSSUM OERSTEDI.

WE have now the opportunity of figuring this remarkable *Odontoglossum*—described by Prof. Reichenbach at p. 302 of the present volume. The flowers are white, with the disc of the lip yellow, with a few red spots. Our illustration (fig. 123) was taken from a plant grown by the Messrs. Veitch, of Chelsea, and exhibited by them at a recent meeting of the Royal Horticultural Society. It is a native of Costa Rica, whence it was introduced by the late M. Endres.

can soon be got up in that way. The best time to do this is early in spring, just as they begin to grow, when they should be dug up and have the soil shaken from amongst their roots, so that each separate crown may be traced out and severed without loss or injury to those adjoining.

In this way one large tuft will afford a good many plants, and if these are put out in nursery rows, in deep rich soil, and kept duly watered and cared for, they will be strong enough to force the following winter, when they can be taken up with fair sized balls of earth, and started in gentle heat near the glass. For very early work I have no doubt that the best way would be to grow them in pots, so as to get them well rooted and thoroughly established, although, from their cross-feeding habit, it is a question if they would be so strong and floriferous as those favoured with a more extended larder; but if they could be obtained a week or two sooner that would amply compensate for any little deficiency in the above

respect, so valuable are flowers during the early spring months, and especially such as double Pyrethrum, that last fresh for such a great length of time in a cut state. With us they are much prized on this account, as well as for their great beauty. That you may see how grand they are in this respect, I send a few flowers, and as each plant we have now in the borders is bearing from twenty to fifty, or more, nearly as fine, you can form some idea of the splendid display they are making.

It is only within the last few years that such an improvement has taken place amongst Pyrethrum, and as yet they appear to be little known or cultivated, but why this should be the case I cannot imagine, unless it is that, being hardy and not servicable to take part in fashionable bedding arrangements, there has been no demand for them on that account. Those, however, who are fond of border flowers cannot possibly have anything more showy or servicable, or that give so little trouble for the return they make, as all they require is a few neat sticks and a strand of matting run round to prevent the blooms being dashed to the ground by wind or heavy rain, and even this slight attention some of them are independent of, as they have stems sufficiently strong to stand erect without any artificial support.

To do them well they require a good depth of soil, rather inclined to light than otherwise, as when it is stiff and cold they are apt to go off in the winter after the manner of their congener, the popular Golden Feather, now so much used. They are, however, so dissimilar in habit and character to this that one would hardly suppose they belong to the same family; indeed those who have only seen the weedy looking flowers of this useful edging plant, can have no conception of the size and great beauty of the double variety. I have never seen any one who has neglected seeds to endeavour to raise them in that way, but they have always turned out most disappointingly, as I have never had anything much better in form than the old Ox-eye Daisy, although the colours of many were all that could be desired. Those therefore who may like to embark in their cultivation should buy a dozen or so of the best and most distinct kinds that can be obtained, and as the nurseries generally supply them in pots it will be a saving of time to get them at once and plant them out where they are to grow. Before doing this, however, the ground should be broken up to a good depth, and have some thoroughly decayed manure worked in, so as to insure the seed to lie down so as not to come in immediate contact with the roots of the plants. So treated, their growth will be strong and vigorous, without any after attention beyond the ordinary removal of dead flowers, stems, &c., to give them a tidy appearance. *S. W.*

WORKERS IN HOTHOUSES.

SINCE the repeal of the duty on glass it would be difficult to point to a single pursuit in which people are engaged, for either pleasure or profit, that has advanced so much as gardening under glass, not alone in the immense increase in the growth of exotic fruits, but in the almost unlimited extent to which tender plants for all purposes for which they can be used are now grown. Nor is it difficult to account for this; for the unprecedented increase in trade and attendant prosperity have enabled great numbers of those engaged in manufacturing and mercantile pursuits to amass large fortunes; and, although wealth has thus accumulated, there could be no possible increase in the fertile area of the country, and numbers of individuals throughout the length and breadth of the kingdom, possessing the means and also the inclination to purchase large estates, had such been obtainable, have been obliged to be content with a very moderate portion of land on which to build a villa or a mansion, often out of all proportion in importance to the limited extent of the grounds attached. The natural result of this has been, that as the owners could not ride for miles across their own broad acres, the space at command has been made the most of, often converted almost wholly into gardens in which the glass erections form a conspicuous part, filled with the most rare and costly plants brought from every part of the world, remarkable for either the beauty of their flowers or foliage.

And it is not alone in the extent to which this gardening under glass has been carried, but also the very great improvements that have been made in the character of the houses, with a view to render them

better adapted to the health and general requirements of the things grown in them; so much so that, so far as the adaptability of the best modern plant as well as fruit houses, &c., there may be said to be little left to be desired. But whilst the inventive powers of the garden architect and ingenuity of the builder have been employed in planning and erecting houses in every way suited to the well-being of the plants they are destined to grow, it may be said that, with few exceptions, scarcely a thought would seem to ever have been given to the health or comfort of the men who in many cases now spend almost all, or a great portion of their time in the hot humid atmosphere necessary to be kept up for plants that require a high or moderately high temperature for their successful cultivation, and through which the health of the men cannot fail to be seriously affected, and in many cases permanently undermined. Any one who has ever been engaged in working in hothouses even so far as where Grape forcing is carried out to a considerable extent, well knows the chills and severe colds resulting from damp clothing after being shut up for even the short time required for syringing in the afternoons during the early stages of growth, and the rheumatic affections following the plunging of Pines or thinning of Grapes.

The above cases, as large numbers of gardeners to their cost can testify, are sufficient to introduce to the system the germs of permanent suffering in after-life; yet they are as nothing compared with what those who are shut up almost all their time undergo in the hot damp atmosphere of houses devoted to the growth of stove plants or Orchids, the cultivation of the latter of which has so much increased and is still increasing that they seem ere long destined to become a prominent feature in most gardens where gardening under glass is carried out to any considerable extent. Gardening has hitherto been looked upon as a healthy occupation, and no doubt it is, so far as the greater portion of outdoor operations are concerned; but when those engaged in it are shut up in hot, or even moderately warm houses, the baneful influences of which are so unmistakably apparent in those who are so employed, it becomes one of the most unhealthy callings that a man can follow, and calculated to ruin even the stoutest constitution. And yet there is no reason why the plants that require a warm, humid atmosphere for their well-being cannot be grown to any extent, and the health of those engaged in their cultivation be cared for as well.

In a few private establishments, and some of the nurseries, there has been erected a small glass compartment immediately adjoining, and connected with the houses in which the plants are grown, into which they can be taken, without exposure to the open air, when potting or insect-cleaning operations have to be carried out, the latter of which, especially in the case of Orchids, occupies so much time. Where provision of this kind is made there is no necessity for those engaged to remain longer in the damp, confined atmosphere than the time occupied in giving water and syringing. As a matter of course, it is necessary that the small compartment in which the work is done should be provided with a hot-water pipe, so that it can be kept at a temperature of 45° or 50° in cold weather; and the more it consists of glass the better, so as to afford a maximum of light. Most of the ordinary potting sheds are so dark as to be of little use in winter; even on the score of economy the little cost of a place such as above described where to do the work would be money well spent, as a man will get through much more work, and do it better in a healthy atmosphere than when under the relaxing influences of combined heat and moisture.

Of late much has been said about better accommodation for the men in private gardens that the wretched hothouses that in many places still exist; but it is quite as necessary to provide means for carrying out the work of the garden, so that their health may not suffer. Not only should those who, either for pleasure or profit, grow plants extensively that require considerable heat for their existence, thus provide suitable places wherein the work can be done without injuring the health of those engaged in it, but it is equally incumbent on gardeners who have charge of young men to see that they do not needlessly endanger their health by doing work amongst plants in the houses in which they are grown that could just as well be carried out in a cooler atmosphere. Many young men are extremely heedless in these matters, and need to be continually cautioned as to the danger they incur. *T. Boies.*

THE CRESSAGE OAK.

ONE of the oldest and most interesting Oaks in England stands in an arable field, formerly a wood, half a mile from the village of Cressage in Shropshire. A few fields off the Severn passes in its southern course, and on the opposite bank the conical Wrekin rises above that beautiful and fertile district which lies, in Shropshire phrase, "all round the Wrekin."

The Cressage Oak was probably a sapling when Schoobesburgh—the old name for Shrewsbury—stood in the scrub or bush which gave the town its name. In that eventful year, 577, when the advancing Saxons seized this district, a frightened squirrel may have trembled among its branches at the destruction by fire of the Roman city of Uriconium, situated 4 miles distant, where the village of Wroxeter now stands. The British poet, singing the death-song of Uriconium, spoke of it as "the white town in the valley," whose chieftain's hall was left without fire, without light, without songs, in the midst of vast and silent woods. Of all the Oaks that flourished in those woods at that early period, this decrepit dotard alone remains. Before a stone had been laid of any of the cathedrals or other churches in Meria dedicated to St. Chad or some other saint, the tree grew in a heathen land preparing a shade for the congregations of the first Christian missionaries. The reign of Offa extended from 758 to 796, and supposing the Cressage Oak to have been then approaching its maturity of growth at 300 or 400 years, its present age must be about fourteen centuries. It is hardly to be less.

Those who have given attention to the subject of the longevity of Oaks could not fail to assign to the Cressage Oak a greater antiquity than that of the Venison Tree near Bagin's ark, which is known to have been standing at the Conquest. One half only of the Cressage Oak remains, consisting of a massive "skin" of timber 18 inches thick. The circumference of the tree, above the projecting base, would be about 30 feet, if it were complete, the measurement of the remaining half being 14 feet. Part of the standing portion of the shell was so much injured by a fire mischievously lighted many years ago in the hollow trunk, that its envelope of bark is now dead, as well as the crown above it. In the remainder of the crown life still remains, and a crop of small branches is still fed by the bark below. The tree is in fact a natural pollard, with an overhanging rugged crown.

The shape of the outer shell, which, complete, was that of a dice-box, the overhanging of the upper part being due to the deposit of new material with each successive crop of branches. The crown was originally divided into five parts, each forming a matrix of branches—that be the proper term—such as repeated lopping or pruning produces. It now carries only fifteen living branches, each from 15 feet to 20 feet long. The living portion of the tree is on the south side, where a breadth of 6 feet of living bark and timber now supports the slender remains of the once magnificent head. At the present time a new growth of wood is taking place in the fragment of the trunk, and the thick bark covering this part is now bursting and splitting in deep cracks from the expansion of young wood beneath. A similar growth of a former century has tied and strengthened a portion of the shell which had split, from the crown downwards, and would have parted but for the new wood, which has the appearance of having run in the seam like molten metal, soldering the two parts together.

It would be a bold task to estimate the age of this ancient tree within a few centuries. It obviously belongs to a longer-lived type than the Venison tree, which is known to have been cowed with the Conquest. The latter may have been assisted in its decay by the sportsmen who have emptied their guns and rifles in its trunk—an outrage which may have robbed it of a few years. Its duration, however, would have been many centuries greater if its trunk had been short, instead of long. Sixty years ago the Venison tree was well branched—it was an old, not a decrepit tree, but within the memory of persons who are yet living the trunk broke at 12 feet or 15 feet from the ground, and the tree is already a wreck, dying from the decay of the neck of the stock, so severe for the constitutional powers to withstand.

The repair of wounds, even in very old trees, is a common phenomenon. By means of a new growth the stump of a broken limb is sometimes healed over, a gaping hole in a hollow trunk reduced or closed, and a parting split neatly tied by new wood. A large

deposit of new wood is in progress within the hollow trunk of the Swilcar Lawn Oak at the present time, and the huge structure is being strengthened and its duration prolonged. The largest limb on the west side of that tree fell twenty years since, measuring 9 cubic feet. There is a limb extending 45 feet from the trunk on the south side, at a height of about 8 feet from the ground, and skillfully supported by an iron rod. The corresponding limb on the opposite side has fallen: seven great trunk limbs yet remain. The loss of limbs kills a tree by cutting off the supply of elaborated sap and destroying the bark beneath them; and the result of the natural pollarding of the long-lived type of Oaks, is that their life is renewed with their limbs.

In the case of the Venison tree, the remaining portion of the broken trunk has put forth a feeble spray, but the renewal of the foliage is probably insufficient to sustain the life of this patriarch of Bugro's Park for many more years.

The form of growth most favourable to longevity consists of a nest of several branches springing from the crown of a comparatively short trunk. The loss of one or more of these branches—which never go all together—proves but the beginning of a new epoch in the existence of the parent tree. As fast as they fall they are followed by a growth of smaller branches, and thus a green old age of extreme length is secured. Oaks are said by Dryden to enjoy three centuries of growth and three centuries of maturity, and to suffer three centuries of age, dotage, and slow sinking into earth. In the case, however, of Oaks of the long-lived type the last period is protracted far beyond 12 centuries.

There were very few acorns on the Cressage Oak in this sterile season of 1876, and they were of the stalked variety. The name of Lady Oak was given to this tree, probably in the twelfth century, at the period of the institution of the rosary, when certain forms of devotion were introduced which have since received the designation of Mariolatry. The original Saxon name was Criste-ache (Christ's Oak), and hence the name of the adjoining village. *H. Evershed.*

GERANIUM PLATYPETALUM.

AMONG the many varieties of hardy Geraniums the above is one of the best and most showy, and is a plant deserving a much more extended cultivation than it has hitherto met with, as it is alike suitable for the herbaceous border, wild garden, or rockery, in either of which positions, from its strong growing spreading habit, it soon forms a fine mass of elegantly divided foliage, and flowers from May to July in the most profuse manner possible. The individual flowers are about the size of half-a-crown, and of a deep blue colour, pendant while in the bud state, but as they expand they stand erect, and show themselves and the vein of the petals to great advantage. In fully exposed positions the habit of the plant is somewhat close and compact, while under partial shade it is more procumbent, and therefore well adapted for trailing over rockwork, as indeed most of the species are, and look more at home there than anywhere else. We have many in use in that way here, as well as in clumps in the borders; but there are none amongst them that will compare with *G. platypetalum* for the size and beauty of its flowers, or the display they make when fully expanded.

This fine Geranium is a native of the Caucasus, and has been in cultivation some years; but although that is the case it is as yet very seldom met with except in botanical collections, which is to be regretted, as it is quite worthy of being introduced in any herbaceous border or choice bit of rockery, however select they may be. One great advantage in growing plants of this hardy character is, that with ordinary attention there is no fear of losing them; as once they become established they will take care of themselves, and from the ready way the above may be propagated either by division or seed, there is no difficulty in increasing it to any extent desired. The seed ripens towards the end of August, and should either be sown at that time or kept till the following April, when it will be found to germinate readily in any warm border under the protection of a handglass. The best time for dividing the plants is just as they are starting into growth, when, by examining the crowns to see where they can be separated, they may be cut through by using a sharp spade without risk of destroying or damaging, to any serious extent, the main part left in the ground.

After repeated trials in using the pollen of the above-named Geranium to fertilise different varieties of Pelargoniums, including several sections of that numerous family, I have not as yet succeeded in getting them to be used together; and as I believe the same thing has been used by hybridisers much more skilful than myself, it would appear that the thing is impossible of accomplishment; but there may, perhaps, be some among the Cape kinds, or others of trailing habit having a closer affinity, with which success may yet be achieved; or, if not, we shall probably have to wait long before we get any decided new colours, and particularly anything approaching a blue, which would be a small fortune to its possessor. *F. S.*

PLANT PORTRAITS.

PELARGONIUM CAPTAIN RAIKES, *Flore des Serres*, t. 271-72.

PRITCHARDIA PACIFICA, *Flore des Serres*, t. 2262-3.—A noble Fan Palm, from the Fiji Islands, which has no more than one local name under notice.

RHOODENDRON HIPPOCISTE VAN DE WESTYNE, *Flore des Serres*, t. 2280.—A new hybrid obtained in M. Van Houtte's establishment, with large trusses of lilac flowers of good form and substance apparently, and densely spotted with dark spots. The plant is described as hardy and of robust habit.

ROMNEYA COULTEI, *Floral Magazine*, t. 352.—A very handsome white-flowered Papaveraceous plant, native of California. The plant is nearly if not quite hardy, and if it can be made to bloom as freely as in its native country it will be sure to attract great attention. The figure falls to do justice to this very striking plant.

ROSE, H. P., SÉNATEUR RÉVEIL, *Flore des Serres*, t. 2283.—A very dark crimson Rose, of good form but small size. It is said to be very hardy and a free bloomer.

SOLANUM ACANTHODES, Hook. f., *Botanical Magazine*, t. 6283.—A very handsome stone plant, which would probably also serve as a "subtropical plant." It is covered with rusty down, and beset with straight or curved spines, the leaves are obovate, and deeply pinnately cut. The flowers are large, rotate, fully 2 inches in diameter, and of a pale violet colour, with a central white stripe on each petal. The plant is an old inhabitant of the Palm-house at Kew, but little is known as to its origin.

SONERILA MARGARITACEA var. HENDERSONI, *Gartenflora*, t. 897.—The original species was first described by Dr. Lindley in these pages in 1854. The variety Hendersoni is distinguished by its leaves, spotted with silvery markings.

STENANDRUM IGNEUM, Ed. André, *Illustration Horticole*, t. 266.—This is the plant known in gardens as Eranthemum igneum, but which, having now flowered, is discovered to belong to the genus Stenandrium.

SYNLEPIS ACONITIFOLIA, *Gartenflora*, t. 887.—A handsome shrub about 4 feet high, with deeply palmately divided leaves, like those of Aconitum Napellus, and with heads of flesh-coloured flowers, surrounded by bracts of the same colour. It is a Composite plant, from the Amur River, and probably hardy. It is the same as Senecio aconitifolius of Turczaninow and Cactalia aconitifolia of Bunge.

TIGRIDIA LUTEA, *Botanical Magazine*, t. 6295.—A small flowered species, with creamy yellow flowers, the base of the segments marked with a pale blue eye-spot, and sprinkled with fine dots. It is a native of Chile, and flowered with Mr. H. J. Elwes.

TORONIA EXAPPENDICULATA, *Gartenflora*, t. 892.—A stove plant of somewhat straggling habit, with stalked ovate serrate leaves, and terminal tufts of irregular white flowers, two of the rounded lobes of which are of a blue colour. It belongs to the Scrophularia family, and is supposed to be a native of Southern China.

TULIPA HAGERI, Heldreich, *Belgique Horticole*, 1872, t. 2.—A handsome species, quite recently figured in the *Botanical Magazine*.

TUPISTRA MACROSTIGMA, *Botanical Magazine*, t. 6280.—A species originally combined by Mr. Baker with the better known *T. squida*, from which it differs in its narrower leaves, looser spikes, and larger stigmas. The plant is a native of the Khasia Mountains, and is mainly of botanical interest.

XANTHORRIZA MINOR, *Botanical Magazine*, t. 6297.—A very interesting plant, native of South

Australia and Tasmania, where it covers large tracts of ground. The plant is of tufted habit, with numerous long whiplash-like leaves, from amid which it sends up a dense spike of whitish flowers. The country is described as in some seasons white with the flowers of this and allied species of so-called Grass-tree.

THE MANUFACTURE OF PALM OIL IN WESTERN AFRICA.

AT p. 372 of the present volume of the *Gardener's Chronicle* we gave a figure and a short description of the Oil Palm (*Elaeis guineensis*). A very full and detailed account of the cultivation and produce of this most useful Palm on the West Coast of Africa has recently been received at Kew from the Colonial Office. From this report we gather the following. Referring first to cultivation, we are told that the ground is first well raked, and the ripe nuts which have been selected for sowing are scattered broadcast over the prepared ground, and lightly covered with earth, or a number of inches ranging from six to ten is deposited in one spot, at various distances, and covered with earth. The planting must be during the rainy season, as it requires a good quantity of water. When the young shoots have grown to about 1 foot in height they are carefully removed in the evening and transplanted at distances of at least 15 feet from each other, and if planted during one season it is better to allow them to remain until the next before they are transplanted.

The Palm grows luxuriantly and bears more abundantly at the height of from 10 to 12 feet in a damp semi-marshy soil, but where water does not, however, stand. In arid dry soil it becomes stumpy, and grows very slowly, and sometimes bears at 4 feet; but to cultivate the plant so as to ensure a proper growth, a development of a good number of spadices, large in size, with nuts or fruits well supplied with flesh, or what is technically called "fat nuts," the trees must be at a distance of at least 20 feet from one another, and well supplied with water. The supply of nuts fit for use is biennial, but the most abundant supply of commercial oil is obtained from nuts gathered during the rainy season.

For the production of commercial Palm-oil, that is, oil for exportation, we are told that the spadices are cut down from the trees, and put in a heap outside in the air where they are allowed to remain for a week or ten days, which causes the joints of the nuts to be weakened by the process of decomposition, and they are easily detached by simply beating them. The nuts or fruits are gathered together, and the husks that adhere to their base are removed either by the hand or by rubbing them together, and separated by throwing them in the air, and allowing a strong breeze to blow them away. A hole about 4 feet deep is dug in the earth, which is lined with Plantain leaves, into which the nuts with the hard unyielding pulp are put and covered over, first with Plantain leaves, and then with Palm leaves and earth. The nuts are allowed to remain for various periods—from three weeks to three months—until more or less decomposition has taken place, so that when removed the pulp is soft, and appears as if it had been thoroughly boiled. They are now put into a trough made by digging a hole 4 feet deep in the earth, and paving it below and around with rough stones.

In some cases a portion of the nuts is boiled in iron or earthenware pots and then mixed with the unboiled portion before being put into the trough. They are now pounded with wooden pestles by several persons standing round the trough until the pulp is quite removed from the surface of the hard nut; the whole is removed from the trough, put into a heap, and the stones taken out, leaving the oily fibrous pulp which is put into a pot with a small quantity of water under a good fire, and well stirred until the oil begins to melt out. The pulp is then removed, and put into a rough net open at both ends, to which are attached two or three short sticks, by turning which in opposite directions the oil is squeezed out from the nuts; it runs into a receiver or tub, leaving the fibre behind. The longer the oil-nuts remain under the press, the thicker the oil will be when made, the quality will also be inferior and the smell bad. On the other hand the shorter time, within certain limits, will be the nuts are under-grown the more superior will be the quality of the oil made from them. This is a great measure will account for the difference in the quality of the oil shipped from different parts of the coast.

The following is given as the method of manufacture of the oil for internal consumption. The spadicæ are kept in a hot place for three or four days, and the nuts are then taken out. A small quantity—from 3 lb. to 4 lb.—is made at a time. They are boiled in iron pots, then put into a wooden mortar and pounded with wooden pestles. The pulpy mass is then mixed with tepid water with the hand. The chaff is first removed, and afterwards the stones. The oil remains mixed with the water, which is passed through a sieve to remove the remaining chaff into a pot placed over the fire, and heated up to boiling point, and allowed to continue in that state whilst the oil floats up as a bright red substance. The water at this stage is being continually stirred, and the oil removed as it floats up until the whole is removed. The oil is now put into a pot and heated, to drive out any water that may remain. The nuts which have been subjected to the process already described in making oil are deprived of their external pulp, or old nuts picked up from under the Palm trees are put in the sun for days, and even months, until they are perfectly dry. They are then broken between two stones, and the kernels obtained whole or in perfect condition and fit for exportation, and so form the commercial Palm kernels. If they have not been perfectly dried the kernels break into pieces. The oil obtained from these kernels by the following process is called white kernel oil. They are put into wooden mortars, and pounded very finely, then removed to a grinding-stone and ground into a homogeneous mass, which is put into cold water and stirred with the hand. The oil rises in white lumps on the surface of the water, which is collected and boiled. It is of a very light straw colour, and, when exposed to the sun and dew, becomes, after a time, perfectly white.

Brown or black oil is thus obtained. The kernels are put into a pan and fried, the oil oozes out and is strained, the fried nuts are put into wooden mortars, pounded, and afterwards finely ground on a grinding stone. The mass is thrown into a small quantity of boiling water and stirred continually, the oil rises, and is continually removed until it ceases to rise. The pulpy mass is removed from the fire and spread out in a large bowl and allowed to cool, after which it is again ground and put by until the cool of the day, when it is mixed with a little water to soften it. It is now beaten with the hand for some time until the oil comes out in white pellets. As soon as this is observed a large quantity of water is put into it, and the oil is in some fatty substance floats on the top, which is skimmed off and boiled, and the pure oil obtained. As pointed out in the report, under the circumstances here stated, the exported kernels could not possibly retain their germinating powers, so that it would be impossible to raise plants from them.

A SHOW OF ANNUALS.

To Messrs. James Carter & Co. credit is due for having originated and practically carried out to a successful issue an entirely new idea in the way of special exhibitions. We have had special shows of almost everything before now, but it was left to the Hon. Genl. to make a show of annuals, and judging by the results it could not have been intrusted to better hands, for the exhibition which has been on view in the long corridor in the Royal Botanic Society's garden at Regent's Park during the week has been at once interesting and eminently instructive, and as artistically effective in its arrangement as the nature of its situation would permit.

We cannot pretend to name all the sorts shown, nor indeed would they all be worth it, but we may note a few of the best as they came under our notice. First of all, because in the greatest numbers, comes that pretty innocent little flower *Ionopodium acule*, which formed a continuous line in front of all for the entire length of staging. Next comes the showy and useful *Rhodanthes*, *Mangonia*, *maculata*, a fine crimson colour, *atrocarnea*, dark scarlet, and *maculata alba*, a fine white; *Clarkia elegans*, and its varieties Purple King and Salmon Queen, both appropriately named; *Clarkia integrifolia*, white, and Tom Thumb, bright rose, and very showy; the new Carmine Candytuft, free in habit and chaste in colour; a pretty assortment of the attractive Lupines, all good, and which need not be individually particularised; the white rose, and dark violet coloured varieties of the neat habit and free-flowering *Kauffusia*

ameloides; a double white and extremely effective *Chrysanthemum* for the mixed border, also double yellow and double yellow quilled varieties of the same useful but much neglected plant; *Silene pendula compacta*, extremely showy, and admirably adapted for pot culture, as witness the specimens here shown and the numbers sent to Covent Garden. The style and character of this plant, as grown in pots, is well shown in the accompanying illustration (fig 129). Then come various varieties of the brilliant *Nasturtiums* of the Tom Thumb section—as for instance, Pearl, pure lemon-yellow, Crimson, a fine dark colour, and Brilliant, a bright scarlet; and *Nasturtium King Theodore*, very dark, almost black; *Tropæolum canariense*, admirably grown and flowered; *Convolvulus minor*, dark purple, and wonderfully brilliant; the sweet white *Alyssum maritimum*; *Sphenogynspeciosa*, a remarkably showy Composite, with long straw-coloured petals, and a striking, almost black disc; *Waltia acuminata*, a very double golden-yellow everlasting; the invaluable *Limnanthes Douglasii*, the pretty blue *Cyanus minor*, red and white *Hawkweed*, various Sweet Peas and *Leptosiphons*, *Collinsia bicolor* and *C. bartisifolia*, fine in the size of its spike, and distinct and bright in colour.

There could scarcely have been less than 10,000 pots of annuals in full bloom at any time during the week, and as many of them had to be frequently re-



FIG. 129.—*SILENE PENDULA COMPACTA*.

placed as they went out of condition, it speaks well for Messrs. Carter's resources that the display should have been kept bright and gay for so long a time.

OUTDOOR GRAPES.

"**FORSYTH ON FRUIT TREES**" was published by order of Government in the year of grace 1810, and dedicated to the King (George III.). At this date William Forsyth had been gardener to his Majesty at Kensington and St. James's seventeen years, and it is stated that 1500 copies of this work in quarto were sold in eight months. A royal commission, composed of noblemen and gentlemen, was issued, and they reported favourably on the state of the garden, and particularly on the composition for coating the wounds and bark of fruit trees, and on their recommendation, aided no doubt by royal favour, a grant of money was awarded for the discovery. Now there is at Cardiff an experiment going on to try if Grapes can be ripened in the open air in England, with a profit to the grower; and here let me introduce a paragraph from Forsyth's book, where he speaks of putting the bunches of Grapes, grown on the open wall in Kensington Gardens, into bags, to keep the wasps, birds, &c. from them; and in this way five men were employed three weeks—no trifling experiment; and speaking elsewhere of training the Vine in a serpentine form, instead of training it in straight lines, he states that in the year 1793 he sent for the use of his Majesty and the royal family 275 punnets of Grapes, each weighing about 3 lb. The whole of the Thames Valley is notorious for its fruit growing, but where do we see now anything approaching to this wholesale vintage. On the score of Pear trees we are told how to take the bull by the horns; for where an old standard Pear tree had been nearly devoured by canker it was headed down on June 20 to near the place where it was grafted, and next year it was loaded with fruit and had to be propped up. We are further advised to look

in the nurseries, not for the young trees to plant, but for strong ones that will bear to be headed down. Few will dare to follow this doctrine, but the splendid shoots that rise from stools in a coppice where crate-wood is grown, proves the high importance of heading down. I think it was Charles Lawrence, Esq., of Cirencester, that told me of a tree he had coddled, and for its greater safety he had it planted not far from his house door, and it lived a miserable life, but one night a cabman blundered and drove right over it, and so it was broken off only a little above the ground, and had to be headed back, which instead of being a loss was vigorously. But Forsyth laid great stress upon coating the wounds of trees with his celebrated composition, which he verred was compounded of the following materials:—1 bush cowdung, ½ bush lime rubbish, as plaster of rooms, &c., ½ bush wood-ashes, ½ bush sand. The old plaster, the wood-ashes, and the sand had to be sifted through a fine sieve, and all the materials worked up until the stuff was smooth, like fine plaster for the ceilings of rooms.

This was laid on over the wounds about an eighth of an inch thick; wood-ashes, and ashes of burnt bones being used outside the plaster by a dredger, until the surface was smooth and dry.

It was further stated that the best way of using the composition was found by experience to be in a liquid state, so that it had to be reduced to the consistency of a pretty thick putty by mixing it up with urine and soap suds, and laid on with a painter's brush. The wood-ashes and burnt bones to be applied as before directed, patting it down with the hand. The bark that had been coated with the composition was said to be refreshed, just as we see a meadow that has been mulched. Our American cousins, who are, as all the world knows, a go-a-head people, when they receive fruit trees that have been carried across the Atlantic, and are consequently dried a good deal, bury them bodily in earth until the sap begins to show signs of moving, when they rear them on, and after the refresher they have had it is certain that they have had something between them and the drought, and are in the way to be kept moist without being under water. In grafting, the scion and the stock are both wounded, and either grafting-wax or puddle must be used to keep the weather from drying the edges of the wounds, and in the London nurseries, when the "Rose Acacia" was in fashion, the stocks were headed down, and the grafts were so near the ground that they were ridged up with earth at both sides to keep the clay daubing moist. Some years ago there was a statement in the periodicals of horticulture, of loam being washed to get the fine cream parts separated from other substances, and this was used for propagating *Gloxinias* and the like, as it covered the wound and excluded the air, and was more manageable than silver-sand. When I have had to propagate such herbaceous plants as *Verbenas*, instead of inserting every cutting into silver-sand and fastening it there, as a labourer would dabble in Cabbage plants, I got a saucer of puddle made of washed loam with a dash of cow-dung in it, and by dipping each cutting into the creamy puddle there was formed a knob, or head, to every one, so that a stranger, seeing them, would have thought that each was a perfect plant, with a ball of earth attached; and great saving was done in other substances, as the cuttings required only insertion in a little loam sand, as they had each got their wounds dressed before entering the propagating pit. From all this it is evident that wounds in botany should be bound up as well as wounds in surgery, and if there be any virtue in W. Forsyth's specific mixture, we may as well have the benefit of it. I saw the Black Esperino Grape ripen on a wall in the kitchen garden, Kensington, and the foreman in Malcolm's Nursery (the elder Mr. Holland) knew W. Forsyth, and had seen his work; and after giving him credit for getting great crops of fruit, hinted that, being a king's man, his success in those early days was favoured by His Majesty's gardeners. In looking over the columns of the *Birmingham Journal* I find a Mr. Thomas Edwards, who is described as a shoemaker, and also a naturalist and Curator of the Museum, Academy Buildings, Banff, has been highly honoured, and handsomely rewarded by the Queen, for his researches in natural history. An age before aquariums had been established in our towns, Edwards had collected specimens of marine vegetation, and also of rare crustacea—wield-like crabs of monstrous shapes and markings walking with a "gauffer long legs" kind of gait, but yet with equal ease and grace

forward, backward, or on the starboard or larboard tack, showing what means

"The dark unfathom'd caves of ocean bear."

We see them in perfection for a small fee in our aquariums, but Edwards had no such aid in his task, for the north-east coast is famous for rocks, where seawrack abounds, and tangles, dulse, and baderlocks are articles of commerce; and many a weary mile of walks and wanderings must have been traversed before Thomas Edwards could get his specimens collected and arranged, and in our admiration of the man we must endeavour to give honour to whom it is due, for it is alike praiseworthy to the sovereign who gave it as to the talented shoemaker who received the royal grant; and it was on reading this that I came to examine what claims W. Forsyth had to be rewarded with a grant from Government—for I had misgivings as to whether his work was sterling stuff or quackery. In the parish of Oldmeldrum, Aberdeenshire, where he was born, there was a free school—this was one step toward his future rise—and a venerable gentleman, one of the Society of Friends, took him from being a "herd laddie," and got him educated and fitted out for London—this was another step in the right direction—and his own good conduct did the rest. His work did not lack criticism, but he was able to hold his own against all comers. We are apt to lose sight of a fact bearing on this subject, which we see every day; for if we plant a tree we simply coat its stem below the collar and its roots with moist earth, more or less mediated with manure, and out of this small beginning arises the stately Oak and lofty mountain Pine; and if we

is meant to be sat upon, a statement that might be deemed superfluous were it not that garden chairs are often so supremely uncomfortable. There is no reason whatever why they should be so, and those whose love of the grotesque and fanciful leads them to the

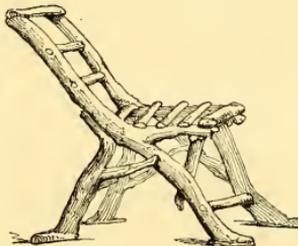


FIG. 131.—GARDEN CHAIR.

construction of such seats, should be condemned to sit in them.

Foreign Correspondence.

BANGALORE: Effects of Drought on Vegetation.

April 21, 1877.—In Mysore and other parts of India that are afflicted by the severe drought, it is remarkable and gratifying to observe how well the trees, shrubs, and natural herbage of the country have survived the unusual test and flourish. Annual and many tender perennial and herbaceous plants succumbed at an early period for lack of moisture, and latterly nearly all surface-rooting plants have suffered the same fate, where they were not under the shade of trees or receiving special treatment. The cereals and annual crops of subsistence would have yielded fair returns in some localities if the rains had fallen impartially and at timely seasons, which they did not.

"With regard to indigenous and acclimatized vegetation, deciduous plants have been covered with a thicker coat of dust, and been apparently 'dead' for a much longer period than usually occurs in a genial season, but they are now responding vigorously

to the call of Nature, and the gorgeous show of blossom produced by many genera at Bangalore during the first four months of the year has exhibited the result of "drying off" on a magnificent scale. Where flowers precede the young leaves, as in *Butea frondosa*, *Cochlospermum gossypium*, and the various species of *Erythrina* and others, the blossoms were abundant, and better coloured than I have observed before." The *Bongainvillea speciosa*, which fills the visitor with admiration at Bangalore, usually remains in bloom from January to April, but in 1876 the plants commenced to unfold their purple bracts as early as September, and they have uninterruptedly flowered in great profusion and brilliancy up to the present time, April 18, 1877.* Colonel Puckle, of the Mysore Commission, has graciously depicted the beauty of the *Bongainvillea* in the *Gardener's Chronicle*, and as that gentleman truly remarks, "all writing would be necessary to exaggerate the reality." The genus *Lantana*, of which there are a good many species and a great number of varieties at Bangalore, are common hedge plants of a rather straggling woody character naturally, but they make pretty and useful hedges when well kept, and they grow freely among rocks and in dry places where less hardy plants would fail.† Last year the roadsides were very gay with many coloured, sweet-scented flowers. The excessive drought has caused the death of many *Lantanas* where they were very much exposed.

"The beautiful *Lagerstrœmia regina*, with its large panicles of lilac flowers overtopping the bright green foliage, and the more sombre *Poinciana regia* are objects of great attraction at present.‡ The common *Aloe*, *A. barbadensis*, flowered very freely eight months ago; in a late ravine, 100 yards east of the Government gardens, a forest of stately flower-spikes were assembled in various groups. It has been reported that the poor natives in the famine-stricken districts were obliged to eat 'Aloe' roots to sustain life; but I find on inquiry that it is the pulpy substance contained in the suppressed stem of *Agave americana* which they eat. The pulp is boiled and strained thoroughly, and boiled a second time, before it is fit for consumption. The Frizzly Pear, *Opuntia Dillenii*, has been chopped up and given to cattle as a substitute for green food. A great many *Bamboos* in the Mysore province are flowering and seeding at the present time, and poor people may be



FIG. 130.—GARDEN TABLE.

examine the root of a healthy tree we find it supple and moist, just what we want the inner bark to be above the collar, that the sap may move freely, and when we prune and find the shoots dried we know that the circulation is weak, and the danger of death imminent, unless assisted by a rainy season. W. Forsyth speaks of covering a wall 165 feet long with five Vines in two years, and two Vines the second year produced 1100 bunches of fine Grapes (p. 199).

Now if any system of pruning, training, or plastering could enable our best gardeners, within twenty miles of London, or elsewhere in England, to grow good Grapes in such abundance from open walls now, as certainly were grown in the Kensington Gardens 100 years ago—for we have the signatures of twelve noblemen and gentlemen to prove the fact, far beyond the power of any gardener to bribe, or in any way to bias—therefore, if heading down will renovate a barren fruit tree, by all means let us have its head off; and if wrapping up the stem with a chemical compound does good service here is the recipe—the wet blanket against the sun and wind. We are, perhaps, at the end of our tether with both these Grapes, but with Vines on a wall and with fruit trees on walls and as standards, with Speechley's work and Forsyth now before me (1789), we seem to be nearly one hundred years behind. *Alex. Forsyth*.

RUSTIC CHAIRS.

In the sultry days of summer no accessory contributes more to the comfort of a garden than a seat in a shady nook or other convenient spot. Any carpenter should be able to put together seats and tables of the character of those of which we give illustrations. It is as well to add that a chair

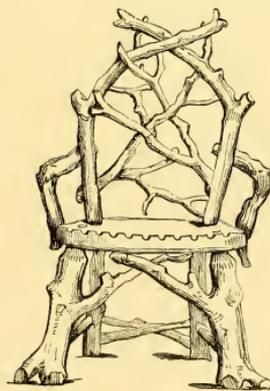


FIG. 132.—GARDEN SEAT.

to the call of Nature, and the gorgeous show of blossom produced by many genera at Bangalore during the first four months of the year has exhibited the result of "drying off" on a magnificent scale. Where flowers precede the young leaves, as in *Butea frondosa*, *Cochlospermum gossypium*, and the various species of *Erythrina* and others, the blossoms were abundant, and better coloured than I have observed before." The *Bongainvillea speciosa*, which fills the visitor with admiration at Bangalore, usually remains in bloom from January to April, but in 1876 the plants commenced to unfold their purple bracts as early as September, and they have uninterruptedly flowered in great profusion and brilliancy up to the present time, April 18, 1877.* Colonel Puckle, of the Mysore Commission, has graciously depicted the beauty of the *Bongainvillea* in the *Gardener's Chronicle*, and as that gentleman truly remarks, "all writing would be necessary to exaggerate the reality." The genus *Lantana*, of which there are a good many species and a great number of varieties at Bangalore, are common hedge plants of a rather straggling woody character naturally, but they make pretty and useful hedges when well kept, and they grow freely among rocks and in dry places where less hardy plants would fail.† Last year the roadsides were very gay with many coloured, sweet-scented flowers. The excessive drought has caused the death of many *Lantanas* where they were very much exposed.

* The sober-flowered *Pongamia alata*, and the gaudy and sweet-scented *Cassia fistula*, may be also included. *J. P.*



FIG. 133.—GARDEN TABLE.

seen gathering up the seeds and eating them greedily as they fall from these gigantic grasses. All this indicates the pernicious effects of drought in a country where the vegetation is naturally of luxuriant growth, and where there is ample food for all when the rain falls impartially and in moderate quantities. As I have already remarked, it is wonderful to see vegetation looking so fresh and green after two successive years of drought, and it speaks well for the moisture-retaining properties of the soil. *J. Cameron, Superintendent, Government Gardens, Bangalore.*"

I would qualify this slightly. It would, I think, be more strictly correct to say that the *Bongainvillea* sp. began to show bloom at that time, and continued to push them forward until the end of December, when the plants everywhere began to clothe themselves in their grand purple beauty, flecked with the delicate lemon-yellow flowers. During all January and early in February this was very full and noteworthy, but by the middle of end of February the purple bracts had generally died off. At the same time fresh crops of them came out, and in some instances old plants again formed abundant bloom on the western side, or where they had any accidental shelter, and continued to show bloom till April 22, when I left Bangalore for England. At Malia, in January last, the darker coloured variety of this climber was in great beauty, and slightly out on May 18, when I again touched there. But they train it against the wall at the Florino Gardens, and cut it back hard, not allowing it to have the advantage of its natural habit of growth, which in such a climate would produce a much better effect. For instance, the old plants inside the enclosure by the entrance gates, opposite Valetta, should not be so persistently cut back, but should be allowed to overtop the wall, and a skeleton verandah should be erected, and the mistopped shoots encouraged to trail over it, where they would do in the most natural and graceful manner. There would be a double advantage in this. The plants would be shown off to the best advantage, and there would be a sheltered verandah for visitors at the town entrance, with a living roof.—N.B. The remarks respecting the blooming of the *B. speciosa* at Bangalore from September to February are not to be taken as an inference, but from personal observation from that date to April 22. *J. P.*

† As a hedge plant the *Leadwort*, with its masses of delicately coloured bloom, can hardly be surpassed for hardness and beauty and use for hedges, &c., if only tolerable attention is paid to its growth. *J. P.*

‡ The *P. regia* was most profuse in its flowering, and made a gorgeous display. *J. P.*

Notices of Books.

Agricultural Text-Book, &c. By John Wrightson. Collins & Co.

This is a little book expressly prepared for the use of students at the Science and Art Department at South Kensington. Its subject-matter embraces an elementary account of soils, manures, rotations of crops, and live stock. The author, till lately, was Professor of Agriculture in the Agricultural College at Cirencester. Having said thus much, few words will be required in recommendation of what may be expected to be a good book, and which, so far as its scope allows, amply fulfils any expectations that may fairly be raised. An idea of the way in which the author has treated his subject may best be afforded by giving an extract, and as a favourable example of condensation of a large amount of experience in a short compass, we give the following:—

"Nitrate of soda (sodium nitrate) is imported from Peru, where it occurs in beds, sometimes 7 to 8 feet thick, preserved from solution by the extremely arid character of the climate. The source appears to be inexhaustible. Refined nitrate of soda, as imported, contains only about 5 per cent. of impurities, and may be purchased at from £13 to £16 per ton, according to the fluctuations of supply and demand. It is soluble so rapidly when it is dissolved. Being exceedingly soluble, and therefore liable to be washed through the soil, it should be distributed over the land in March and April, just at the time active vegetation commences. It exerts the strongest influence upon grasses or herbage of all kinds. Hence it is very beneficial to Wheat and the other cereals, to Italian Eye-grass, and all pastures and meadow grasses. In this respect its action resembles that of all nitrogenous and ammoniacal manures, which invariably stimulate the growth of grasses and cereals. The quantity applied is small, 84 to 112 lb. being sufficient for an acre of land. The effect is especially seen in the darker colour of the foliage a very few days after the application, the rapid development of the plant, and, in time, a more abundant crop. Nitrate of soda acts more powerfully upon the leaf and stem than upon the flower and fruit; but that it also acts upon the grain has been frequently proved. The increase from its use has sometimes amounted to from 10 to 12 bushels per acre; and in its experiments undertaken by the author in 1871, 4 to 4½ bushels of Wheat were in several cases obtained from the use of 100 lb. of the nitrate. When applied to 'roots,' it should be applied with care, as if brought in contact with the seed the nitrate is apt to injure its vitality. If distributed broadcast over Sweden, just before the second hoeing, it exerts a very beneficial effect."

Miss Arabella Buckley has published in convenient form a set of *Botanical Tables* for the use of junior students (Stanford). The idea is a good one, but the compiler should have sought the assistance of a botanist to revise her work. The definitions of "struck," "tubers," "suckers," and "radical leaves" betray a vagueness of knowledge not desirable at any time, but particularly undesirable in so condensed a publication as that under notice. We commend the examinee who writes in response to the question, "What is a tendril?" asserts that "Thread-like leaves, stipules or petioles are called tendrils."

PUBLICATIONS RECEIVED.—Proceedings of the Liverpool Naturalists' Field Club for the year 1876-77 (misprinted 1866 7).—Revue Horticole.—Buletino della R. Società Toscana di Orticoltura.—Buletino de la Société Royale d'Horticulture de Liège (price 1s.).—Gardener's Monthly.—Florist and Pomologist.—Gardener.—Journal des Roses.

Natural History.

THE CLOUDED YELLOW BUTTERFLIES are unusually early this year. On June 4 I noticed a "stranger" flitting about some flowering plants, in a minute or so it settled, when I got a good opportunity to examine it; and was astonished to recognise C. Hylae at this early date. C. EDWARDS has very plentifully hibernated during the last fortnight. A friend of mine took eight specimens on June 9, seven of them being ♀, and in good condition. In his *British Butterflies* the Rev. F. O. Morris says, p. 129—"One was observed by Mr. S. Stevens on June 29, 1851, and it is the earliest record of its appearance that I have ever heard of;" and in his description of C. Hylae, he says—"It is said to be

double brooded, appearing in May and in August, or September"—(Stainton mentions the autumn for both species); but although I have been a rather persevering collector of Lepidoptera many years, I never knew of these species appearing so early as they have done this season. W. Wilson, Enfield.

BIRDS' NESTS.—At Fairy Croft, Saffron Walden, a robin has built its nest in a tea kettle, and is now sitting on five eggs, and a blue tit built its nest in a pump (which is dry). It enters the pump by a hole under the handle; it has nine eggs. X.

Forestry.

TREES BEST FITTED TO BEAR THE WEIGHT OF SNOW.—While the influences which soil, climate, and situation exercise upon forest trees are duly considered and discussed, the structure and formation of the trees themselves hefting and adapting them to various situations is frequently only glanced at, and passed by without note or comment. What I wish particularly to refer to, is the special characteristics of those trees whose branches are best adapted to sustain severe exposures of wind, heavy falls of snow, or sustaining masses of fruit and foliage. Every one who has witnessed the wreck and desolation of a wood or forest after a snow fall deplors the serious results, and wishes that some means could be devised, if not to cure, at least to prevent, such occurrences. That some species of trees are better adapted for withstanding such casualties as a great wind, and therefore become the duty and interest of every one connected with the culture of trees to find out which are least liable to injury from the influences referred to. So far as my own observation has gone, I conclude that amongst Conifers the common Larch and the Silver Fir are of all others decidedly the best. The branches of the Larch are so situated upon the stem as to render them very difficult to break off. Not only is their connection strongly and substantially formed, and curiously fortified and buttressed; but the branches being pendent at the base, and afterwards turned up at the points, are thus in the best possible position to sustain a great weight, and to shake off, in case of heavy judgments of snow, a plantation of forest of Larch trees should be so grown that the branches are comparatively slender, plant, and airy; in which state, together with their other advantages, they are almost proof against injury from the causes referred to. It is only when the Larch is grown either as a single tree or with too much room for its lateral branches, that it assumes that habit of growth attended with disastrous results by breakage. Indeed I do not remember ever seeing the branches of a Larch tree in a well-grown plantation either broken or seriously injured; while, on the other hand, it is somewhat rare to find single specimens without some of their branches being shattered or broken. In addition to these it possesses other and by no means unimportant advantages over that of most other forest trees in its conical and sharply pointed top, which is rarely if ever broken, either by snow, winds, or otherwise. Being deciduous is also an advantage to the Larch specially and peculiarly its own, for there are few other Conifers which shed their leaves in autumn. And in this provision of Nature there is probably one of the greatest advantages gained for it as a mountain tree. The branches and whole structure of the tree being thereby greatly lightened, adds vastly to its security and protection against those unfavourable influences to which it is exposed.

Next to the Larch is the Silver Fir, in suitability and adaptation to severe exposures, judgments of snow, &c., not only in its young and tender condition, but especially in the fully developed and majestic old tree. The form of the branches, which are fan-shaped, dense and pondersous, is of all others in these respects most liable to become loaded with snow whenever it falls; but while this is the case, the whole structure of the tree is yet such as to enable it to sustain any weight of snow that may fall upon it. The connection between the branches and stems is of the strongest and most perfect description. The peculiar and familiar hard swell or enlargement at the base of the branch, is doubtless there for a higher purpose than that of testing the woodman's axe. The protuberance forms to the branch an excellent buttress, and secures it against being torn from the stem, as the Scots Fir is liable to be. The branches, like the Larch, grow from the stem in a pendulous form,

sometimes with a graceful sweep, first bending downwards and afterwards curving upwards at the extremities. The woody texture of the branches, too, is much harder than any other part of the tree, and is not only harder but tougher and more elastic. The bowmen in ancient times are said to have made extensive use of Silver Fir and Spruce branches for bows, which when bent in the opposite way to which they naturally incline by growth possess and retain an elasticity scarcely excelled by the buffalo horns. I find that upon the upland and severe exposures of this estate the Silver Fir and Larch succeed and pay better than any other forest tree. They make wood and grow faster at high altitudes, maintain an erect and upright position, and are less liable to sustain injury in any way, all things considered, than any other Conifers. As a profitable crop, too, they pay better than any other species. The Silver Fir is tender in its young state, as regards frost, but at high altitudes, and when above the frost line, at any age it grows with the only other practical difficulty in growing Silver Fir is its tendency to produce plurality of leaders, caused by the central top buds being often abortive, the result frequently of late spring frosts. It succeeds in a colder and inferior soil than the Larch and Scots Fir, at least I find it growing well in places when the Scots Pine degenerates. The practice of growing both Silver Fir and Larch at high altitudes, as subjects of profit, should be with numerous but comparatively slender side branches, which is attained by proper and judicious thinning. It is not to be inferred from this that crowding in the young state is either desirable or necessary, but on the contrary, that the proportion of relation balanced between the girth of stem and its height be maintained, which signifies as many feet in height as there are inches in girth near the ground. C. Y. Michie, Cullin House, Cullin, June 21.

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—There are many plants that, however handsome the flowers which they produce may be in themselves, do not associate well either on the plant or in a cut state with others, and by this are much reduced in value for general purposes. Amongst small subjects in every way exempt from this defect may be named *Didymocarpus bifolius*. This is one of the best plants that can possibly be grown in quantity for standing amongst *Orchids*, or on the side stages of the stove amongst or in front of low-growing things; those who have only to grow it used to find that a few isolated plants can have no idea of the effect it produces when employed in sufficient numbers. Not only is it an especially desirable plant used in this way, but for mixing in a cut state with other choice flowers, particularly *Orchids*, it has few equals. When well grown the foot-stalks will get 9 or 10 inches in length—great essential where flowers have to be used in water for filling vases or stands; its enduring capabilities and long-flowering habit are also worth taking into account. The more general mode of increase has been by division, but this is comparatively slow, and it may be better to grow it from seed which vegetates freely soon, through the winter and spring months. Seeds sown now in pots or pans, drained and filled with a mixture of peat, leaf-mould, and sand, stood in a stove or intermediate house, and when large enough pricked off 2 inches apart into pans or pots—these kept through the winter, and moved in spring singly into small pots, giving them a slight taper, will make useful plants by the twelvemonth's end. The little room they occupy (a 6 or 7-inch pot is big enough for a full-sized plant) makes them suitable for either a small or a large house. Amongst handsome flowering stove plants of recent introduction that can be bloomed in a small state there are few so effective as the South Sea Island varieties of *Hibiscus rose-sinensis*—miniatus semi-plenus, vivicans. By yearly propagating and keeping the plants well headed back after flowering, they may be had in such size as adults of their being stood in flower in small positions in the stove for which plants of larger growth are unsuited. They strike freely, cuttings of the half-ripened wood put in now root readily, and will produce their large, brilliant-coloured, Carnation-like flowers which they have attained and reached the stage. *Fraxinacea* that have done blooming should be freely cut back before starting into growth. This particularly applies to the species conferti-

flora and calycina, which, through a too sparing use of the knife, often get leggy and bare of foliage. With strong plants last year's growth should be reduced one-half—in the case of *F. calycina* and *F. confertiflora* two-thirds—always as soon as cut back, giving them a thorough watering when they are affected with mealy-bug. Being free-rooting, such plants as require it should be moved into larger pots when they have commenced growth; those that have plenty of root-room will grow strongly by the assistance of manure-water regularly applied. *Griffinia* now about commencing their growth, should be kept a little drier at the root, but they must not be subjected to this treatment until all the leaves are fully developed, neither must the drying process be carried so far as ever to cause them to flag. *Eucharis amazonica* that have been strong growers, should be kept a little drier, and submitted to dry treatment at the roots for a time, but with these, as with the last-named plant, the leaves must be fully grown and solidified before being subjected to the drying process, or they will fail to flower satisfactorily. The roots will bear drying more than those of *Griffinia*, but, as with all other evergreen bulbs, it must not be carried too far. Where *Gardenias* are grown in quantity, so as to give a long succession of flowers, plants that bloomed early in the winter should be kept a little drier to check their growth; to induce a free disposition in flowering stand them well up to the light, giving no more shade than is found necessary to prevent the leaves scorching. If moved to a house or pit where more air can be given them than in the shade, they will be found to open. *Hoya bella*, at the time of planting or suspending in the stove, can be had in effusive condition for flowering next spring, if at the present time shoots are taken off some 3 or 4 inches in length, a few of the bottom leaves stripped off, and struck six or eight together in 4 or 5 inch pots, and covered with bell-glasses, kept warm, and covered with bell-glasses, or in a propagating frame. When well rooted remove the glasses, and as soon as they have commenced to grow put the whole together in pots 2 or 3 inches larger than the present ones, and give them to grow on to the end of the season; with another shift in the spring they will bloom nicely. Old plants of this *Hoya* now past flowering should be cut back freely; in this matter causes them to get into a straggling unmanageable state. Plants of the beautiful *Dichorandra mosaica*, propagated last year, should not be allowed to want for room, or their blooming capabilities will be comparatively weaker. Where in small pots more at once; if longer delayed, the autumn flowers will be less, and the benefit from the shift, which occurs that will be flowing, should be slightly cut in, thoroughly cleaned from insects, and again started to grow in a brisk heat, syringing freely overhead once a day; so managed, they will bloom well a second time. *T. Baines.*

FLOWER GARDEN, ETC.

The flower beds must now have every attention in order to assist them to ripen their produce as possible. After the watering the beds have had, a good stirring with a small hoe will loosen the ground and encourage root action. As soon as the plants get well established and begin to cover the surface, which in many places will soon be the case, let the plants be ragged down and stopped, as may be necessary. Any blinks that have occurred since planting had better be filled up without further delay from the reserve ground. All plants that require sticks should be attended to before they get too far advanced, as they are more liable to be broken off by damage. Roses will be much improved by a thorough soaking of water, and if liquid manure, from the cesspool or stable tank, so much the better. The buds are plentiful and strong this season, and with good weather we may expect to see fine crops of flowers. Briers should be looked over and prepared for budding; any gross shoots may be cut back, which will stimulate the growth of the weaker shoots. Budding may be done as soon as the bark rises freely; this is generally the case, especially after rain and during showery or dull weather. The bud inserted as near the bottom of the shoot as possible, as they are not so liable to get broken off when placed near the stem. Climbing plants are now growing fast, and must have attention, those on walls or corners, trellises, or fences, to be nailed or tied as shoots advance, and all branches not wanted for filling up may be removed. Where annuals are growing in beds or borders, they will be greatly improved by being thinned out sufficiently to give the plants room to be free from crowding, which will add much to their effect, and prolong their season of flowering. Shrubbery clumps and borders will require a free use of the hoe to keep down weeds. All plants that have bloomed, and are beginning to look over the top, should be kept in good order. The grass lawns require constant care and attention; gravel walks also need to be frequently looked over, and all weeds and litter removed. Lose no opportunity of having the walks well rolled after rain. *T. Blair, Strindland Park.*

FRUIT HOUSES.

PINES.—Unless very adverse weather prevails, the powerful influence of solar heat at this season and onwards until the middle of September, will ordinarily be sufficient to keep up the requisite temperature to heat about these plants without having recourse to any other means for the purpose. The potency of this expedient, when properly utilised in Pine-houses, ensures the most improving condition for vegetation to be desired, and neglect not, therefore, any opportunities which happen to this end, and pursue the same course of treatment in regard to ventilation, &c., as was advised in the preceding Pine Calendar. As regards the requirements in respect to the roots, the composition of the beds, &c., as will not be necessary to repeat in the pots, artificial means should be resorted to in order to effect it. Keep the internal atmosphere constantly moist, so that the fruiting plants, which are occupied with growing or fruiting plants, and under powerful solar heat a slight shade over the plants will be found beneficial for a few hours at mid-day. By this time all the Queens which started about the beginning of last February will be cut or in a condition to be removed elsewhere without injury. As soon as a compartment can be made a few inches deep, and cleansing it should be effected, to eradicate the countless numbers of insects which speedily accumulate and increase in such places; a good dressing of hot lime should be applied over the internal walls, so that all insects which may be stopped, and whatever painting is required should be done. This proceeding is very necessary annually where other objects are to be grown in the same house; it is also a commendable practice to entirely clear out the beds of fermenting matter at intervals, and to re-make the same. In such beds as are heated by hot water, and which contain more than 1 yard in depth of such material. After the beds are refilled with fresh materials and plants, watchfulness will be necessary, or the plants will be liable to injury from an over-abundance of heat at the roots, which will check the growth of the fruiting plants at this season should be potted forthwith into good fibrous loam, and be watered at once; place them in a bottom-heat of 90° in a moist pit, shade them from sunshine altogether for about ten days, and allow ample space between the plants to prevent them being drawn. It is not generally necessary to save stools for stock, excepting in the case of new varieties; if, however, it be desirable to do so cut off the leaves and plant the stools in the sucker pit, where they will be secured, and the fruit will soon be secured. *G. T. Alder, Wymode Abby.*

VINES.—Late Grapes, including Lady Downe's, Alicante, and Muscals intended for use after Christmas, should now be stopped. The final thinning and tying out of the shoulders to admit of full development of the berries, without crowding or binding, as Grapes which are not well thinned do not keep so well through November and December as when they are properly thinned. Grapes which have the leaves are falling. Having brought the thinning to a close, let all borders, inside and out, receive a good mulching of half-rotten dung, and water copiously with tepid guno-water or liquid manure. Keep all lateral growths within reasonable bounds where the trellis is already filled with healthy foliage, but avoid the close stopping principle, particularly up to the completion of the stoning process. If any part of the trellis remains uncovered, young growths may be laid in and allowed to ripen, and when the fruit is ready to be set, the next year's fruiting should be kept pinched from the base up to the pruning-bud. Where inside or outside borders were disturbed last autumn, the laterals should have full play until the crop begins to mature, when the main stem may be stopped. Vines subjected to the partial lifting process before the foliage falls form new sponges during the autumn, and if allowed a low night temperature the following season, always furnish good crops of perfectly-coloured Grapes. Melons, which are beginning to change colour, will derive great benefit from a thorough soaking of liquid manure at a temperature of 90°, and if the material with which the roots have been protected still remains, great caution will be needed in its removal, if this can be decided upon, as it is more than probable that many melons will be found working on the surface of the border, and on no account must these be injured or exposed at this critical period. *W. Coleman.*

MELONS.—Owing to the scarcity of hardy fruits, good Melons will be keenly sought after by dealers and consumers; cultivators will therefore do well to turn out all pits, frames, and houses as fast as the crops are cleared, and having thoroughly cleansed the glass, and started about the middle of the month, vigorous young plants, either in pots or on hills. I give the preference to pots plunged in fermenting materials, as much valuable time is saved by having the plants established in their fruiting pots, a foot or more in height, in an intermediate house, on the day

the last. Melon is cut from the compartment they are intended to occupy. For producing a gentle bottom-heat at this season, the use of the pits, and the leaves, which should be turned and sweetened before they are placed in the pits, and Sealale pots answer admirably for growing the plants in. A good sowing of several kinds should now be made for giving a succession of Melons. Put in the pits in good soil, as the young plants show the rough leaf, and keep them sturdy by placing close to the glass. Feed liberally plants which are swelling off crops of fruit. Beware of canker, in some places very troublesome. The best remedy for this is Serravallo's Potash, and also the parts affected. The pits should also be well ventilated by having apertures opposite the pipes if possible, in a line with the tops of the fruiting pots or hills. Fruit intended for keeping should be cut before they are quite ripe. *W. Coleman, Eastover Castle.*

HARDY FRUIT GARDEN.

Summer at last! has no doubt been the joyful exclamation of many, and to none has its advent been more welcome than to those who have charge of that department of the garden of which I write, and although unfortunately its coming now will not repair the misfortune of the season, yet to many of us such a change has been in time to save many Peach and Nectarine trees that appeared a month or so back to be in an almost hopeless condition, but which have since rallied, and during the last fortnight grown with surprising rapidity. As the season is now so far advanced, most of the short season left us, every assistance should be afforded in order that there may be no further check to their progress, and more especially will this help be needed to such as were transplanted during winter, and which are now in a very young state in light shallow soils that part quickly with what little moisture they contained. Dryness at the root is sure to bring on red-spider, and although this pest may always be held in subjection by frequent applications of cold water, either in the morning or evening, or to any good engine, trees should never be allowed to get into such a poverty-stricken state as to be liable to their attacks. Were mauling more generally resorted to, this would not be the case, as by its use the roots are maintained in a more uniform condition in regard to heat and moisture than they otherwise could be. It should be borne in mind that trees in hard elevated borders get but little benefit from any rainfall during the summer months, and having no natural shade such as is usually afforded by their own branches, what little water they receive is lost by evaporation, and the influence of sun and air acting with full force on a cracked and exposed surface. Mulching, however, should vary in thickness and material according to the nature of the soil to be dealt with, as that which is stiff and cold will not be covered to the same extent, or with such non-conducting material as is requisite for that which is shallow and poor. In the former case, a slight coating of half-decomposed leaves will be ample, while in the latter manure will have advantage, the juices of which may be gradually washed down and have a very salutary effect on the plants. Owing to the slow growth they have made both Morello and dessert Cherry trees are badly infested with black-fly, which, in addition to the damage they do to the young shoots, disfigure the fruit by the excreta they exude, and should therefore be taken in hand at once. The best remedy is to dip them in a wash made with Tobacco and Fowler's insecticide, using 4 oz. of the latter to a gallon of water, and Tobacco in the same proportion, as they are more liable to be injured by the former than by the latter, and their oily coats appearing to be proof against anything, except such penetrating mixtures as the above-mentioned when added together. Except on sunny walls, Pears are generally an almost total failure, and even the young shoots not required for laying in to vacancies, should be stopped back to within two or three joints of their base, in order to concentrate the sap and induce a formation of fruit-buds, of which it is to be hoped trees will this year set an abundance, as they are decided upon, as it is more than probable that many melons will be found working on the surface of the border, and on no account must these be injured or exposed at this critical period. *W. Coleman.*

THE
Gardeners' Chronicle.

SATURDAY, JUNE 30, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, July 2	Wolverhampton Floral and Horticultural Society's Show (two days). Royal Horticultural Society's Show (two days). Horticultural Society's Rose Show (two days).
TUESDAY, July 3	International Horticultural Society's Meeting of Fruit and Floral Committees, at 11 A.M. 1.1. Salisbury Horticultural Society's Meeting of Mr. Herbert's Collection of Palms, by Pucheran & Morris. Royal Botanic Society's Evening Fête. National Rose Show at St. James's Hall. Bournemouth and Western Horticultural Society's Show.
WEDNESDAY, July 4	Forty-fourth Anniversary Dinner of the Gardeners' Royal Benevolent Institution. Royal Horticultural Society's Orchids, by Stevens (three days). Royal Horticultural Society of Ireland: Spring Show.
THURSDAY, July 5	Wimbledon and District Royal Horticultural Society's Show. West of England Rose Show at Hereford. Tottenham Wells Horticultural Society's Show.
FRIDAY, July 6	West Kent Horticultural Society's Show.
SATURDAY, July 7	Southgate Horticultural Society's Show.

THE announcement in the daily papers that the COLORADO POTATO BEETLE has been found in full force in some fields near Cologne is unfortunately too likely to be true. It is not long since we heard of its introduction into Germany by means of a vessel trading between the United States and Bremen, so that its appearance near Cologne is nothing more than what might have been expected; and its presence in our own Potato fields may assuredly be expected to be announced at any time. It behoves Potato growers, then, to be on the look-out, and to take such measures as may be deemed most desirable. We have from time to time advertised to this new pest, having derived almost all our information on the subject from the writings of Mr. C. V. RILEY, the State Entomologist of Missouri, who has done excellent service, alike to science and to practical cultivation, by the exhaustive accounts he has published concerning the nature and habits of this and other insect pests. Mr. RILEY'S papers are to be found in the annual reports on the noxious, beneficial, and other insects of the State of Missouri, reports which justify the wisdom of our American friends in the establishment of such an office, and the still greater wisdom exercised in the selection of a man to fill it. Unfortunately these reports are not very accessible in this country. True, they may be found in some of the libraries, but the number who can thus avail themselves of Mr. RILEY'S information is but small. The beetle (*Doryphora 10-lineata*) is particularly objectionable; while in the grub or larva stage it not only destroys the Potato haulms, but the juices of the perfect insect have, in some instances at least, proved to be of a venomous character. The ill effects, however, seem to be only produced when large quantities of the insect are crushed, or burnt, or scalded, when the vapours produce the symptoms of poisoning by an acid or irritant substance.

Fortunately the Americans have discovered a remedy in the shape of Paris-green—"by means of intelligence and a little Paris-green," writes Mr. RILEY, "the American farmer is pretty much master of the *Doryphora*." Now as the Paris-green is a preparation of arsenic (arsenite of copper), and consequently a most dangerous poison, it is evident that a considerable amount of intelligence and no slight degree of care must be used in the employment of this substance, and more especially so in the kitchen garden. Still, within the last few years we are told that millions of bushels of Potatoes have been raised, the leaves of which have been most thoroughly sprinkled with Paris-green without any injurious effect on the tuber, or to persons using Potatoes raised in this manner. The Paris-green requires to be well-mixed with from twenty to thirty parts of flour or water,

according to the mode of use. The quantity which becomes incorporated with the soil is too minute to be of consequence, inasmuch as the substance speedily undergoes decomposition, and becomes converted into an insoluble and harmless substance. The Paris-green could not "well collect in sufficient quantities to be directly deleterious to man in the field in any imaginable way, while the injury through the plant in the case of the question, for the plant could not absorb enough without being killed. The idea that the earth is being sown with death by those who fight the Colorado Potato beetle with this mineral may, therefore, be dismissed as a pure phantasmagoria."

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

From the ninth report of Professor RILEY we gain some idea of what we have to expect:—"The captain of a New London vessel found that the insects boarded him in such numbers while at sea that the hatches had to be closed." On the Central Railroad, near Grinnell Station, the rails were covered with them for a mile, and after a few revolutions of the drivers the wheels lost the friction and slipped as if oiled. . . . the beetles had to be swept off and the track sanded before any progress was made." It is while in the larva or grub stage that the insect does most harm to the haulm (the tubers not being attacked), but it is while in the perfect, winged state that it has been distributed over a third of the area of the United States, its progress being simply limited by excessive heat or by the rarified cold air of the mountains.

One very interesting circumstance noted by Professor RILEY is, that the species as it has spread over the country has undergone modification in character. From a scientific point of view, as showing how varieties and species may originate, this fact is one of very great interest. Some questions as to this excite but feeble interest in comparison with the more directly practical matters to which we have alluded. Our object is to warn gardeners and farmers to be on the look-out, and to take active measures immediately the insect is detected. A figure of the insect is given at p. 55, vol. 1, 1874, and some further particulars may be seen in our review of Professor RILEY'S little book, entitled *Potato Pests* (New York: ORANGE JUDD & CO.), at p. 183.

The letter of Mr. FISH in our last issue will serve to draw attention once more to the CUCUMBER DISEASE, and to the means of eradicating it. Mr. FISH has on former occasions sent us distressing examples of the ravages of the disease, and we have received them also from other quarters. We can imagine his triumph when he sent us, a few days since, other specimens all but free from the disease, the happy result of the application of Mr. WORTHINGTON SMITH'S "Salus." Another correspondent sends us leaves of the Hollyhock

almost entirely free from the Hollyhock fungus, this freedom having been effected also by the use of Salus. In general we are apt to look with suspicion on any well-puffed remedy which is advertised to cure all the diseases to which flesh is heir to, and a great many more besides, knowing how defective the evidence in these cases usually is. Even when the good faith of the witness is beyond question we are disposed in general to be very sceptical and to inquire whether the alleged good effect is real and not imaginary, and, if real, if it is fairly attributable to the supposed cause. In the present instance the evidence is much better than usual. On the one hand we have a man of science whose researches into the nature of the Potato disease led him to experiment with various chemical substances known to be detrimental alike to fungi and to insects. The result was the compound known as Salus. On the other hand, we have practical and disinterested observers who could scarcely be mistaken, and their testimony is that the Salus does what is claimed for it. The substance in question acts not only as a destroyer of parasites, whether of fungous or of insect nature, but it clearly serves as a stimulant to vegetable growth, so that it may be in some cases that

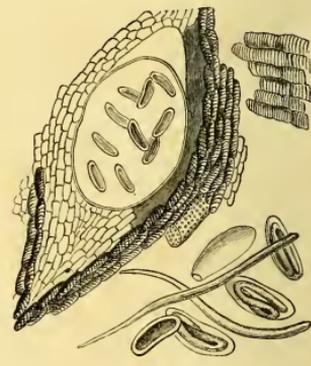


FIG. 134.—CUCUMBER DISEASE, SHOWING THE VIRUS HIGHLY MAGNIFIED.

the good it does is more due to its power as a manure than as an annihilator of fungi or of insects. Reverting to the Cucumber disease it is now well established in some cases that it is associated with the presence of very minute worms (fig. 134), which cause a swelling of the tissues of the root, an exudation of gum from the fruit, &c., and in the end general putrefaction. But we are not clear that the gumming of Cucumbers, or what is generally called the Cucumber disease, is always associated with the presence of these worms. In many of the samples submitted to us there have been no worms present, and it is clear the gumming might be due to some constitutional disease.

Whether we have to do with two forms of disease or only with one is the point about which we are not clear. The matter is of practical importance, because the Salus may be useful in the one case and not in the other, and if applied without discrimination it may produce disappointment, and suffer unfounded loss of reputation. At any rate, there seems every reason to believe that Mr. SMITH is once more entitled to receive the congratulations of his friends, and the thanks of the body horticultural at large.

— We have been requested to make public the following statement important to BULB IMPORTERS and PURCHASERS:—"The Society of Bulb and Seed Merchants, 'Eusebisten-Vereening,' founded at Haar-

lem with the object of promoting the interests of the BULB TRADE, held an extraordinary meeting on May 28, in order to discuss the actual condition of the Hyacinths now standing in the fields, and considering the unfavourable symptoms that have therein appeared since the middle of May, the following motion was proposed and carried unanimously. The opinion of the meeting is—

"1. That in consequence of the late unfavourable weather, the bulbs of many sorts of Hyacinths will most

belongs to a butcher who had purchased some American bacon. The fact was immediately notified to the Ministry of Agriculture. Should this report prove to be well-founded, there is no saying how soon the pest may make its appearance in this country. Potato growers should keep a vigorous look-out for the enemy, and adopt the measures mentioned in another column.

— The *Revue Horticole* speaks of a new WHITE CINERARIA shortly to be distributed by Messrs. VIL-

the last meeting of the Floral Committee was LILIUM ELEGANS ALICE WILSON, exhibited with several other fine Lilies by G. F. WILSON, Esq. The flowers are of fine size, of a bright orange-yellow colour, and very distinct. In habit the plant somewhat resembles *L. dahuricum*.

— The well-known herb RAMFION (*Campanula Rapunculus*) deserves much more attention as a garden flower than is generally given to it. In Messrs.



FIG. 135.—DAVIDSONIA FRURIENS. (SEE P. 820.)

probably not grow to their usual size, and apparently there may be some sorts of which only very small bulbs, if any, will be obtained this season.

"2. That, although at present it cannot be ascertained whether this check in the growth of the bulbs will also affect their flowering, it is beyond doubt that coming mild weather will have a favourable influence on the blooming of the Hyacinth bulbs next spring."

— A telegram sent from Cologne to the *Daily News* through REUTER'S Agency, and dated June 25, states that the Colorado beetle, in every stage of development, was discovered on the previous day in a Potato field in the vicinity of that city. The field

MORIN. The history of this new form is this. M. IGNACE, a foreman in the employ of Messrs. VILMORIN, selected four of the double Cinerarias sent out by MM. HAAGE & SCHMIDT, with a view of fixing and improving the variety. From the seeds produced by these he obtained a progeny of only three plants, mostly with semi-double flowers. With a few exceptions, in which the colour was slightly spotted with red or violet, the flowers produced on the three plants were of a pure white. This year the production of white flowers has been even more abundant, so that the variety may be considered as fixed.

— Amongst the various subjects certificated at

CARTER & Co.'s seed grounds at Dedham there is now a large plantation of it in full bloom, being grown for seed purposes. It attains a height of from 2 to 2½ feet, and at this season of the year the plants throw up long spikes of mauve-blue flowers. The seed was sown in the open ground thinly, in drills, in May, 1876, and thus is in full bloom in a year from the time of sowing.

— Lying before us are the schedules of prizes offered by two societies for FLORAL DECORATIONS at their approaching exhibitions, and characterised by very different features. One of these refuses to allow any one to compete who is not a lady-amateur of the

district, or a lady-member of the family of a subscriber who is also an amateur. In the other schedule all the classes are open. We shall watch the result of these two shows with much interest, because we entertain the belief that, as amateurs have so often beaten professionals, so will they continue to run away from them in the race if they will only think over and make notes beforehand of what they are going to use. The exclusiveness of the West Kent Horticultural Society appears to us unnecessary; while the Royal Botanic Society's determination to throw all the classes open will afford amateurs an opportunity of showing how well light and original groupings will contrast with the more stereotyped arrangements of professional decorators.

— At the sale on Tuesday last of Mr. WILLES' NEW DRACENAS, the entire stocks of D. Scottii, D. Renardii, D. Frederici, D. superba, D. Beckleyi, D. Bausci, and D. Mrs. Bausci, were purchased by Mr. B. S. WILLIAMS, for £195.

— Colonel PUCKLE sends us the following interesting note respecting the SUPERSTITIONS of the HINDOOS in relation to TREES:—

"The tree most generally worshipped by them is the ASWATHA—*Ficus religiosa*—from its having been declared in the Bhagavadgita to be the most sacred of all trees. It is moreover supposed to represent the Trimurti, the root being considered as the abode of Bramha, the stem of Vishnu, and the top of Shiva. There are four kinds, each being named according to the four castes of Hindus, viz. Aswathi, Khasthiya, Vyashiba, and Sadra. The Bramha kind is preferred to the others.

"The ceremony of the marriage of two Aswatha trees is exactly analogous to a marriage between a man and a woman. A stone platform is erected around the trees, and between them a Neeam (*Margosa*) tree is generally planted with a Bilpatri (wood Apple) close by. This is done under the belief that if raindrops fall upon the fruits of the Neeam tree (which are held to resemble a Linga, Shiva's emblem), from the points of the Aswatha leaves or Panivattam, the planter of the trees will secure to himself that bliss which is only otherwise attained by undergoing to bathe the image of Shiva with roco pots of water.

"The expense attending on the celebration of such a marriage is sometimes so great that it is usual to leave them unmarried; a Neeam tree is, however, almost always planted by the side of an Aswatha, and ignorant people suppose that the former is wedded to the latter. The Bilpatri and Neeam are also witnesses to the marriage."

— The marriage, by the Rev. GEORGE HENSLOW, of Professor DYER to HARRIET, eldest daughter of Sir JOSEPH DALTON HOOKER, K.C.S.I., Pres. R.S., and Director of the Royal Gardens, Kew, took place on the 23d inst., at Kew.

— Among Mr. EULL's new plants not as yet sent out is one which the name DAVIDSONIA FRIESENII is attached. A plant under this name is described by Baron VON MUELLER in the sixth volume of the *Fragmenta Phytographia Australis*, 1867, p. 4, tab. 46, and assigned to the order Saxifragaceae. In spite of sundry discrepancies between Mr. EULL's plant and the published description above referred to, we have little doubt of the identity of the cultivated plant which is described by Baron VON MUELLER, though it is so very unlike most Saxifragas in general aspect that a doubt as to its affinity may, perhaps, be pardoned. The cultivated plant has not yet flowered, and at present it is but small. It appears, however, to be of arborescent habit. The stem is thickly clothed with villous hairs; the leaves are very graceful in their recurved habit and singular form, and in their young state are specially beautiful, from their dense investment of crimson bristly hairs. The leaves are alternate, unequally pinnate, 12–18 inches long, on short stalks, thickened at the base, and provided with suborbicular, acuminate, sharply toothed leafy stipules. The pinnae, or leaflets, are articulated to the rachis, and arranged as leaflets, with one odd one at the end. In form they are oblong-lanceolate, shortly acuminate, irregularly denticate. The terminal leaflet is blunter at the end than the lateral one, and tapers at the base into a short stalklet, which, like the principal rachis of the leaf, is bordered on each side by a narrow foliaceous wing deeply cut up into sharp villous teeth. The uppermost leaflets are 6 to 8 inches long by about 3 inches

in breadth, the pairs being about 2 inches apart. The leaflets gradually decrease in size from above downwards till the lowermost are represented merely by very small leaf-like processes. The terminal pinna seems sometimes to be destroyed in the young state, in which case, of course, the leaf becomes pinnatifid. The plant is a native of north-east tropical Australia.

— FREMONTIA CALIFORNICA is now in splendid bloom on one of the walls at Kew. The upper part of the tree forms quite a sheet of yellow, and with such neat foliage and compact habit can only be mentioned as one of the best trees for a wall covering. It does not thrive in the open, and this only is its true position.

— There is every reason to believe that, as far as the probable HARVEST OF SEEDS is concerned, many things will fall very short of the ordinary yield. The prices of Sweetes and Turnips, for instance, are expected to rule very high, and indeed there has already been a marked advance. This advance may already be temptations to those who would evade the Seed Adulteration Act; but we trust that the good sense of the trade will at once stop the iniquitous practices which led to the passing of that Act, and which up to this time has worked well. All the Brassica crops are very late, owing to the long wet winter and the comparatively sunless spring. The harvest depends so much on the autumn, and many of the seeds sown then did not grow kindly and rapidly as usual, owing to the ground being soddened with wet; and the plants put out to stand the winter to seed this summer made but little root in the autumn. The wind blew them about on the soft ground, and the wet filling up the void made many of them rotted. Things are very much later than usual, and what is urgently required by seed growers is a fine warm genial time to mature the seeds now in pod as thoroughly and quickly as possible.

— The rich Iris collection at Kew has recently been a fine display. The latest of these, now in flower, are *I. Niphonia*, *I. notha*, *I. ochroleuca*, *I. Monnierii*, and *I. variegata* var. *clatior*. They are all distinct and desirable.

— One of the MARICAS, perhaps *M. Northiana*, is much grown as a window plant in that part of the borough of Oldham, Lancashire, known as Roydon. Many of the windows contain from one to three or four examples, some of them of large size, and remarkably well grown. Its blossoms are somewhat fleshy, but its Iris-like evergreen character is always fresh and good, and therefore acceptable as a window plant. The operatives and others who make a pet of this plant have evidently hit upon a capital mode of cultivating this somewhat scarce representative of an interesting genus.

— A patch of PAPAVER SOMNIFERUM in double and highly coloured forms, flowering in the herbaceous ground at Kew, remind us how very effective it is when sown broadcast in park shrubberies and similar places. Foxgloves in a variety of colour are also handsome for the same purpose.

— A copy of the ninth annual Report of the *Noxious, Beneficial, and other Insects of the State of Missouri*, by CHARLES V. RILEY, is before us. Like its predecessors, it is full of valuable information, practical and scientific. The value of such publications, in the future, can hardly be overrated, and they reflect great credit alike on the sagacity of the Government which distributes them, and on the talent and industry of their author. The insects treated of in the present report are the several Curran and Gooseberry worms, their habits, and the best means of extirpating them; the Pine worm, the Colorado Potato beetle, the Army worm, and the Rocky Mountain locust.

— A few PLANTS in the HERBACEOUS GROUND at Kew attract our special attention. The first of these, *Galax aphylla*, is somewhat rare. It has a dwarf, compact mass of dark green leaves, through which appear a number of graceful spikes of white flowers. *Tropaeolum polyphyllum* is very effective with its trailing stems of dense, glaucous leaves and golden flowers. *Bahia lanata* is a pretty silver-leaved Com-

posite, now bearing a mass of showy yellow flowers. *Gilia trifoliata* is extremely pretty; its stems are red, and the pure white flowers are very pretty in contrast. A well-established specimen of *Sarracenia purpurea* is flowering freely.

— In reference to the DINNER to Mr. F. W. WILSON, at the "Criterion," on Tuesday next, we are desired to state that friends who cannot conveniently obtain tickets may secure places by an intimation on a post-card addressed to Mr. J. MACKENZIE, 1 and 2 Great Winchester Street Buildings, E.C. The forwarding of a small sum of money is often a matter of difficulty, and in this case the ticket can be paid for at the dinner-table.

— TECTONA GRANDIS, the Teak tree of India, is generally found a difficult plant to grow, and indeed is often spoken of as a difficult plant to keep alive. That this need not be so, is evident by inspection of plants in the Economic-house at Kew. A seedling of about two years old is growing vigorously, and has leaves 11 inches long by 6 inches broad. Another plant of greater age is equally healthy, but the leaves are smaller and the growth short. The greatest enemy is red-spider, and no plant is more liable to attack. To this pest may be attributed nearly all the difficulty of its culture. Cleaning with a sponge is of little use from the many recesses afforded by the roughness of the leaf; and an efficient remedy will be found in the use of sulphur, which should be dusted at intervals of a few days so as to cover every part. After a few applications there will be no further trouble for some time. During the time of growth there should be no lack of water, to ensure which it is an excellent plan to stand the plant in a saucer of water. After the growth is completed a moderately dry season of rest is requisite. The warmest stove temperature is desirable throughout the year.

— We understand that Mr. B. S. WILLIAMS has sent as a contribution to the forthcoming INTERNATIONAL HORTICULTURAL EXHIBITION AT OPORTO, a choice collection of over a hundred new and rare plants, including Palms, Cactons, Dracenas, Ferns and Orchids.

— Four large specimens of AGAVE AMERICANA have started their flower-spikes in the gardens of T. A. BORRIEM SMITH, Esq., Tresco Abbey, Isles of Scilly, and are growing rapidly at the rate of from 6 to 9 inches per day. This rate will increase as the spikes get higher. Several others show indications of flowering this summer. There are also two beautiful small green-leaved Agaves (marked here *Mild*), which have thrown up flower-spikes at present 4 feet high, flower not yet open. They are very interesting plants. Mostly all the old flower-spikes of the large number (forty-eight) of American Aloes that flowered here in 1875 are still standing. Only one flowered last year, and that had been damaged and lost its centre spike by being overgrown by a large *Fuchsia*, but it threw up three small spikes from the axils of the leaves at the base of the plant.

— The annual exhibition of WINDOW PLANTS grown in the CITY OF LONDON will take place in the gardens of Finchley Circus, on Tuesday, July 10. The Right Hon. the Lord Mayor will open the exhibition at half-past twelve o'clock, and the prizes will be distributed by Her Grace the Duchess of WESTMINSTER at 5 o'clock.

— PHORUM TENAX is flowering freely in the Tresco Abbey gardens, Isles of Scilly. The spikes are 6 feet long and more. At the present time the gardens are very gay with choice flowers. The beautiful *Metrosideros floribunda* is in full flower, and also *Dracena indivisa* or *australis*, perfuming the gardens with sweet odours. The curious *Puya chilensis*, figured in our columns 1872, p. 1102, had four large flower-spikes this spring.

— A correspondent writes to protest against the symbolism employed by some teachers, which is often misleading. Our correspondent seeing an announcement of an address on the "Causes of Failure in the Vineyard," naturally bethought himself of *Phylloxera*, Oldium, shanking, scorching, and the like; but he quickly found that the address was of a theological not viticultural nature.

flowers all the year round; its sweet-scented delicate rosy flowers are indeed most useful to those in search of flowers suitable alike for bouquet or decorative purposes. *Vanda teres* is also flowering freely. I noticed two plants in flower, about 3 feet high; the shoots had been tied down to prevent them from touching the glass, and Mr. Knight, as he stated some time since, attributes his success in flowering to the tying of the shoots down. There is doubtless something in this, although in years of the 16th Mr. Munro of Finnart Gardens, Garelochhead, Dumbarton, states he has a plant 3 feet high with three spikes, eleven flowers on each spike. This is very remarkable; these I notice had a spike of four flowers each only. *Vitis heterophylla variegata* is also a most useful plant for the decoration of a conservatory; when grown, as seen here, on a trellis 4 feet by 3 feet, beautifully coloured, this will prove another grand acquisition to those in search of the like. Mr. Knight, the gardener at Floors, to whom great credit is due for the grand condition everything is in, both outdoors and in, seems very fond of trying experiments with such as mentioned, and I was glad to see he was amply repaid for his labours. *A. O.*

Euconymus japonicus in Bloom.—I send you herewith a branch of this shrub in flower. For the information of those who may not have seen it, I may explain that the flower is very pale green, and has four sepals, petals, and stamens, the latter arising

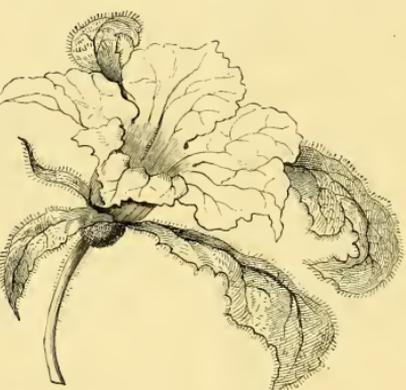


FIG. 136.—CUCUMBER FLOWER WITH LEAFY CALYX.

from a dark green ridge, which surrounds the ovary. The stigma is simple, crowning a quadrangular pyramidal ovary, in which there are grooves opposite the stamens. On the plant were a few white leaves, and also a few striped with white. I found it in the nursery grounds of Mr. C. Davies, at Blackpill, near Swansea. Has it flowers elsewhere? *W. T. Z.* [It flowers very sparingly in our Middlesex garden every year, and on the south coast frequently. *EDS.*]

Bedding Violas and Pansies.—I am more and more convinced that the best method to secure a continuous bloom on these plants, with freedom from that sudden shanking-off so common to the Pansy in hot weather, is to plant in the autumn. Beds of many kinds here, that have remained untouched all the winter, are grandly in bloom, and have been so for a long time, whilst those planted out during the spring and early summer are still small, and not nearly so robust as could be desired. During hot summers I have found that every spring-planted plant of certain kinds would die off in a few weeks, whilst some autumn-planted ones remained alive and robust. This is an important fact, and cannot be too warmly made known. It applies, however, only to warm situations, as farther north Violas thrive gloriously. *A. Z.*

Ferns at The Mumbles.—In addition to the list given last week I can now mention having found *Osmunda regalis*, *Lastrea Ocreopteris*, *Blechnum spicatum*, *Asplenium marinum*, and the red-stemmed variety of *Filix-foemina*. These occur within 2 miles of the place; and I am told that within the same radius may be found *Lastrea Foeniculi*; but I have

not yet walked in the direction in which that Fern grows. I am also informed that there is a valley within 3 miles of this where the Royal Fern grows 15 feet high, and where *Polypodium phegopteris* is also found; I can believe the latter without seeing it; when I have seen *Osmunda* of that height I will believe that also. The commonest Fern about here (excepting Brake) is the Lady Fern; and the most frequent variety of it is the pale green plumose one, the midrib of which nearly describes a semicircle. *W. T. Z.*

Vanda coerulescens Boxallii.—This *Vanda* is a flower with a fine spike of some fifteen to twenty flowers, at the present time in the collection of Provost Russell, Falkirk, N.B. It is one of the importations of Mr. Low, and answers to the description given in *poets* of the 16th inst. *A. O.*

Entomological Specimens.—On p. 766 you advise "W. G. P." to use Laurel leaves to kill butterflies. This mode is slow, and the leaves have to be renewed often. The following I find to be the best and easiest, and costs only a few pence. Get a short bottle with a large neck—an old pomade bottle will do; into this scrape 1 oz. of cyanide of potassium (be careful, this is a powerful poison); over this place a piece of paper or cardboard, and on the top a quarter of an inch of plaster-of-Paris. Leave the bottle open till this dries, then keep it corked. An insect put into this is stupefied in about thirty seconds,

the cultivation of trees suited to the climate of Scotland, and to prevent the feuing of the ground for millings, &c., they only have spoiled the amenity of the gardens, but would have been productive of much injury to the plants by the smoke which would have been carried over the gardens by the west winds. Mr. Alexander Beattie was the first with whom he communicated on the subject, and through him he was enabled to bring the matter to the notice of Mr. W. H. Smith, Secretary of the Treasury. The First Commissioner of Works, Lord Henry Lennox, approved of his proposal, in which also he was supported by the Lord Justice-General, the Duke of Buccleuch, and others. No one took a warmer interest in the scheme than the President of the Society, Sir Robert Christison. His next step was to go to London, and personally to bring the matter under the notice of the Treasury. He was introduced to the Secretary of the Treasury by Dr. Louis Playfair, their zealous University member, who always takes a great interest in anything connected with the promotion of science. Having laid the case fully before Mr. Smith, shown him the plans of the ground, and urged the importance of making such an addition to the Royal Garden, he was enabled to inform him that the Chief Commissioner of Works had seen the ground, and considered that it would be a most important and valuable acquisition. Mr. Smith stated that if it were proved to him that the town of Edinburgh would be enabled to bring the matter contributing to the acquisition of the ground, he would hand it over to Government, the arborium would be put under regulations similar to those of the London parks, and would be supported in all time coming by an annual grant from Government. On returning to Edinburgh he waited on the Lord Provost. To him he made a complete statement of the matter, showed him the nature of the grounds, the advantage which this acquisition would confer upon the city and upon science, and asked him to submit the matter as soon as possible to the Town Council. The Lord Provost entered most enthusiastically into the plans, and said he would do all he could to further the scheme. Many difficulties presented themselves, but by his energy, tact, and enthusiasm he overcame them all, and to his lordship the city was indebted for this important addition to its public gardens. The Government was pledged to enclose the grounds and complete the arrangements in two years, and he therefore hoped that immediate steps would be taken to fence the grounds and begin the building of the lodges at the different entrances. To £8,400, the sum for which the town was assessed, did not include the money required for the purchase of the house and garden for the Regius keeper. These, as well as a small piece of additional ground belonging to Mr. Rocheid, of Inverleith, had been purchased by Government for £4,900. In granting this lot to the Regius keeper, the Government had deprived him of all his salary, amounting to the sum of £120 per annum.

The Chairman said that the Society would be delighted to hear of the successful results of the negotiations with the Treasury, and he thought that the adoption of the Inverleith grounds to the Botanic Garden was the greatest improvement of the city of Edinburgh, in a sanitary and educational point of view, which had taken place during the last thirty years.

The following communications were read:—
I. *Notice of a fungus growing in immense profusion on the ceilings and walls of Inverleith House.* By Professor Balfour.—Professor Balfour remarked that Inverleith House (recently purchased by Government for the Regius keeper's dwelling) took fire on August 24, 1876, and he thought that in the attic, the partitions of which were wooden. The supply of gas for extinguishing the flames being deficient, his assistant, Mr. Sadler, suggested that piping should be carried over the wall to the pond in the Royal Botanic Garden, and be thought that the water in the engine be sent there to pump up the Regius. This suggestion being complied with was the means of preventing the total destruction of the building; the roof and upper storey, however, were completely destroyed. The house has remained in this state ever since, exposed to the rain and wind of last winter. An attempt was made to cover the house with tarpaulin, but the wind was too strong to allow it to remain. Sawdust about a foot deep was put to soak up the water in the rooms, but being left all winter on the floors, it did more harm than good. The ceilings, plaster on the walls, &c., are all destroyed. The flooring, which was particularly well laid, is useless, and the house cannot be habitable for at least nine or ten months. Fortunately, the insurance on the house yielded Government £1,700.

There is a Scotch proverb, "It is an ill wind that blows nobody good," and so in this case. Amidst all this moisture, destruction, and desolation, there has sprung up on the ceilings and walls of almost all the rooms in the house—drawing-room, dining-room, and bedrooms—mouldy and toxic fungus. This was first noticed by my daughter, who brought me a beautiful specimen of this lilac-coloured fungus, which she had picked up on the floor, and which had fallen from the ceiling. It is a very interesting

and may then be taken out to examine. If wanted, put it back, a few minutes more will kill most butterflies (moths are most tenacious of life); if useless, leave it in the open air, it will soon revive. Better not keep the bottle in your bedroom. *A. W. C.*

Burnet Rose.—The sandy shores of Swansea Bay are covered with sheets of white flowers, which upon closer inspection prove to belong to a dwarf Scotch Briar, seldom growing there higher than 15 inches. The blooms perfume the air for some distance with their fragrance. Its suckers extend for a long way underground, and then grow erect generally for 8 or 10 inches high, with side-shoots less than 2 inches long, each terminating in a flower. What is the species? One of the leaves has two galls. *W. T. Z.* [*Rosa spinosissima*. The galls are very common. *EDS.*]

Reports of Societies.

Edinburgh Botanical.—The Society met in the lecture-hall at the Royal Botanic Garden on June 14. Dr. Cleghorn, V.P., in the chair.

The Arboretum.—Professor Balfour said that this was the first meeting of the Society since the arrangements with regard to the formation of an arboretum had been completed by the Fettes Trustees, the Town Council, and the Government. Twenty-seven acres of ground had thus been added, and the garden now embraced 54 acres. The first steps for the addition were taken by him three years ago, with the object of having room for

species, having never been described before. It has spread most rapidly by means of its minute spores, which are scattered in millions like smoke when the plants are touched. It is now to be found in all parts of the house, and the spores must be inhaled largely by any visitors.

Another very interesting fungus, there is also another one which Mr. Turner noticed (another species of the same genus), but which has only once before been noticed. There is also a very pretty *Coprinus*, which has not yet been carefully examined.

Specimens of the fungi have been transmitted to the Office of Works for inspection and preservation, and Dr. M. C. Cooke, the great fungologist, India Office, London, has drawn up full descriptions with figures of the species, which will appear in the next part of the Society's *Transactions*.

It may be observed, that a botanical investigation is required before the species can be determined, and ere long we hope for a coloured drawing to commemorate the events connected with the preparation of the old mansion-house of Inverleith as an official residence for the Regius keeper of Her Majesty's garden in Edinburgh.

II. Remarks on some British Plants in the University Herbarium at the Royal Botanic Garden. By Mr. H. M. Webb.

III. Notes on a Botanical Excursion in North Wales. By Mr. C. Druce, communicated by Mr. Sadler.—Mr. Druce's paper details the principal plants seen by him during an eight days' excursion into North Wales. It appears to have limited his exploration to the usual tourist tract, visiting such places as Llanidloes, Betws-y-Coed, Dolgellau, and Gwynedd, Capel Curig, the localities of some Arctostaphylos rarities, Llanberis, and Snowdon, so that the list he gives adds very little to information that has long been in print. The two plants that have not perhaps been heretofore recorded from the locality he visits are *Spergularia rupestris* and *Polygonum Rasil*, both of which he mentions, with what critical species. Amongst the rarities, he says that after long search he found a single plant of the *Comeaster* on Orme's Head (showing that it has not yet been fully carried away piecemeal, as has been reported). The two species of *Elatine* were obtained from Llyn Coron, where they were first found by Mr. Wilson. *Hellephantem Breweri* was got near Holyhead, and *Sella verna*, *Orbanche Hederae*, *Silene nutans*, *Rubia perigrina*, *Hellephantem comanum*, *Epilactis ovalis*, *Wahlenbergia*, *Sedum Fosteri*, *Loisel. Dortmanna*, *Viola Curtisi*, *Knapia*, *Woodia ilvensis*, were gathered from well-known localities. The *Lloydia serotina* was not obtained. The district Mr. Druce traversed abounds in natural beauties, and as a botanical area has the merit of being the first explored in Wales and the only one named in the *Chronicle*. It was visited by Ray, Sherard, Dillenius, Brewer, &c., and during the last hundred years by most of our British botanists.

IV. Notes on Open-Air Vegetation for May. By Mr. M. N'ab, Curator. (This paper is given at p. 2.)

V. Note on the Fruiting of Holly. By Mr. M. N'ab. (This paper appeared at p. 78.)

Crystal Palace Rose Show: June 23.—If the directors of the Crystal Palace Pansy will not act upon timely warnings, but will persist in holding their annual Rose show at a time when, comparatively speaking, there are no Roses, they cannot wonder at the immense falling off in the display of Roses brought together on Saturday last. The show was at least a week too early, for so backward has been the season that many of the best exhibitors at the Palace show had not even been in appearance at all. Both as regards numbers and quality it was much behind former exhibitions held here; therefore we shall not inflict a long notice of it upon our readers, and the more so as we shall have to next week to speak of the doings at the Alexandra Palace and St. James's Hall.

The nurserymen's class for seventy-two single trusses brought out only four exhibitors, and the prizes were awarded to the following in the order named:—Mr. Henry May, Hope Nurseries, Kinkington; Messrs. Paul & Son, Tottenham; Mr. Turner, Slough; and Messrs. Mitchell & Sons, Pitt-down. Mr. May's flowers, which, of course, could not have been grown in the open air, were, on the whole, uncommonly good for the time, and included many of great beauty. The finest bouquets, judged by their size and ornamental brightness of colour and freshness of appearance, were those of Camille Bernardin, Prince Fortia, Comtesse de Paris, Paul Néron, Captain Christy, Marie Baumann, Etienne Levet, a most perfect bloom; François Michelon, Le France, Antoinette Duchery, and the Duke of Devonshire. Madame Lacharme, splendidly shown in many collections; Louis Van Houtte, and Madame Villermoz, &c. In the 2d prize collection, from Messrs. Paul & Son, we noted perfect blooms of Monsieur Nomant, Annie Laxton, and Maurice de la Roche. The 3d prize collection, Sultan of Zanzibar, Marchal Niel, François Michelon, Devonensis. Mr. Turner's flowers were smaller than those of his more successful rivals, but

very fresh and clean. In the next class, which was for forty-eight varieties, three trusses of each, Mr. Turner's collection of Messrs. Paul & Son, was the champion in 1st, the last-named firm being placed 2d. Mr. Turner had some splendid blooms of La Belle Lyonnaise, Madame Lacharme, Chesnut Hybrid, Royal Standard, Marguerite de St. Amant, Elie Marie Marguerite de Castillane, Duke of Edinburgh, alba rosea, Rev. J. B. M. Camm, and John Hopper. Amongst the Chesnut flowers were exceedingly good representatives of Boule de Neige, Annie Laxton, Abel Grand, Madame Lacharme, Navier Oilbo, Boule de Neige, and Hon. Mrs. Vernon. For twenty-four varieties, three trusses of each, Messrs. Paul & Son came in 1st, and Mr. Turner 2d, both showing good collections. Mr. H. May also showed a fine series, but having unfortunately misunderstood the terms, and so the exhibition was drawn out. For twenty-four varieties, three of each, Mr. G. W. Piper, of Uckfield, was 1st, and Mr. Meadmore, of Romford, 2d.

Very few amateurs took part in the competitions reserved to them. The best forty-eight distinct single trusses came from Mr. J. Davis, The Square, Wilton, whose flowers were small, but very fresh and nice. J. Hollingworth, Esq., Turkey Court, Maidstone, sent the best twenty-four varieties, an excellent lot, and Mr. J. Davis was 2d in the class. The 51st-named, Duke of Edinburgh, 2d in the class for thirty-six, in which Mr. Jowitt, The Old Weir, near Hereford, was a good 1st. Mr. J. Ridout, got to J. B. Hayward, Esq., Woodhatch Lodge, Reigate, sent the best dozen, an especially good lot, and the 51st-named, Duke of Edinburgh, Rev. J. B. M. Camm, Monkton Wyld, Charnmouth.

New Roses were shown only by two growers in the classes for twelve distinct blooms of varieties sent out in 1875-76—and for six blooms of any variety sent out during the same years, and the 1st prize in both instances went to Messrs. Paul & Son. Mr. Turner taking the second honours. In the first-named class Messrs. Paul & Son showed Avocat Duviérier, Miss Hassard, Madlle. Prosper, Langier, Marchioness of Exeter, Marguerite Bussac, Duchesse de Vallambrosa, Abel Carricre, Emily Laxton, Sir Garnet Wolseley, Souvenir de Arthur Sansal, Sultan of Zanzibar, and Oxonian. The blooms of Emily Laxton and Sultan of Zanzibar were particularly fine of their kind; the last-named is very rich in colour. Mr. Turner's collection consisted of Sultan of Zanzibar, Hassard, Mrs. Baker, Rev. J. B. M. Camm, Marchal Robert, John Stuart Mill, Duchesse de Vallambrosa, Madame F. Jamin, Monsieur Fournier, Oxonian, and Souvenir de Arthur Sansal. In the other class, Messrs. Paul & Son showed a fine half-dozen of Marchioness of Exeter, which were 1st; and Mr. Turner a capital lot of Miss Hassard. Messrs. Paul & Son also showed Emily Laxton, in very fine form.

One of the best boxes of Roses in the show was that containing twelve sea-ascended and Noisette varieties, exhibited by Messrs. Mitchell & Sons, and which took the 1st prize in their class, Mr. Turner being 2d. The Messrs. Mitchell's blooms, all of well-known varieties, were remarkably fine, fresh, and chaste. Mr. Turner's collection, the classes of Marchal Niel, very good, but not so fine as this variety has been shown. The best collection of yellow Roses also came from Messrs. Mitchell & Sons, but they were not quite up to the mark. The next best were very poor. Mr. Turner was 1st for a vase or epergne of 24 buds and Rose-hedge, and 2d for a vase to W. O. Hanbury, Esq., Weald Hall, near Brentwood, being 2d.

Of "40 bouquets and objects of ornament in natural flowers" the display was somewhat extensive, and Mr. Turner's bouquet was worst in appearance before, as usual attracted a great deal of attention from the visitors. For table decorations the leading exhibitors were Mr. Chard, Mr. E. Spelling, Grosvenor Road, South Norwood, and Mrs. Todd, Weald Cottage, near Brentwood. The competition in this class was being very strong. The best wedding bouquet came from Mr. S. Moyses, Stockbridge Terrace, Belgrave, and the best opera bouquet from Mr. Hepburn, of the Crystal Palace. Mr. Turner was 1st for a vase of bouquets.

Miscellaneous subjects included an excellent display of hardy herbaceous plants from Mr. Parker, a beautiful collection of skeleton leaves and flowers from Mrs. Hodgkins, Hyde Grove, Manchester; some fine Finks and Carnations from Mr. Turner, Ardenham, near Mr. Cannell, cut and dried from Mr. C. Burley, and cut Roses from Mr. Corp.

Scottish Pansy Society's Show.—The thirty-third annual competition of the Scottish Pansy Society was held in Edinburgh on the 15th inst. The show was more of a success than was anticipated from the backward spring. The flowers exhibited last year were remarkably good, and the prizes were submitted to the decision of the judges by nurserymen, gardeners, and amateurs, and many of the exhibits came from comparatively distant loca-

ties. At a general meeting of the Society held in the afternoon Mr. W. Paul, Paisley, President of the Society, in the chair, it was agreed to hold next year's show a week later than usual, in order to induce a larger number of competitors to come forward; and that the entry-money of £2, payable by competitors on entering each exhibition stand, be abolished. The following are the names of the varieties which were adjudged the best of their class:—Dark self, Michael Saunders; white self, Princess Beatrice; yellow self, Zama; blue self, Sunnypark Rival; white ground, Jeannie Fleming; yellow ground, Jeannie Fleming; Burns; flower in bud, Michael Saunders, shown by Mr. Paul, Paisley. A First-class Certificate was awarded to Mr. Paul, Paisley, for three blooms of seedling white ground Pansy Annie Wood. A Certificate of Merit to Mr. Todd, Newcastle, for one bloom of seedling yellow ground, Rev. J. T. Burton. A Certificate of Merit to Mr. Paul, for one bloom of seedling mauve self, Michael Saunders. The following were among the finest named blooms:—Fancy Pansies: The Bride, James Currie, James Taylor, J. B. Downie, Lizzie Cowan, Isa, Mr. Meeking, Rev. H. Donbrain, Miss Wallace, Mrs. Taylor, Buttercup, W. Nimmo, M. Scott, Auntie Cuckoo, W. Melville, Thos. Grainger, John Currie, F. W. Leland, W. Broadbent, Kirby, Hon. Mrs. Jas. Inglis, Jas. White, Fortia, Miss M. Stewart, Mrs. J. Taylor, Mrs. Birkmyre. Show Pansies: Jessie Foot, Robert Black, Jenny Anderson, Robert Burns, Bessie M'Aslan, Mrs. Athur, Miss Hope, Annie Wood, Paul, Miss Rogers, May Queen, Michael Saunders, Mrs. Todd, Newcastle, Jeannie Fleming, Princess Beatrice, Zama, Jeannie Fleming, Mrs. Fraser, Mrs. Horsburgh, D. M' Hutcheson, Royal Blue, D. Sutherland, Ebor, John Waterston, Captain Knowles, Jeannie Grieve, Rev. J. T. Burton, Sunny-land, Mrs. M. Stewart, *Christyford*. The following is the prize list, for which we are unable to find space. Eds.]

Disse Horticultural: June 20.—This exhibition was held in conjunction with the annual gathering of the Norfolk Agricultural Association held this year in the above town. The latter body acted as the disposal of the committee of the flower show the sum of £75, and this with subscriptions and donations enabled the committee, of which the Rev. H. T. Frère, of Burnton Rectory, Diss, was honorary secretary, to procure a most splendid series of prizes. A horticultural society formerly existed at Diss, but died out for want of public support, but it is hoped that the holding of the above exhibition will be the means of again starting the defunct society. The owners of the neighbourhood ought to furnish material for a good show.

The exhibition took place in the grounds of F. Chase, Esq., closely adjoining the Agricultural Show. It was by no means large, but then it was the commencement of what it is hoped will become a permanent institution. The Rev. H. T. Frère, of Burnton, and Miss Taylor were the principal exhibitors of stove and greenhouse plants; and some small but nicely grown exotic Ferns came from C. Mason, Esq. (H. Reeve, gr.), and G. H. Wilson, Esq. Mr. Mason's plants were most excellently grown examples of *Todea hypophyllodes*, of good size and in capital condition. Strange to say they were all differently named, some of them after entirely distinct species bearing no resemblance whatever to them.

The group of six variegated *Zonal Pelargoniums* shown in the greenhouse was very fine in strong force in growth and finish to anything staged at the exhibition of the Pelargonium Society at South Kensington on the previous day. The Balsams from Miss Steward and G. E. Frère, Esq., the Cockscombs from the last-named exhibitor, Messrs. Wilson, Esq., and the Rev. H. T. Frère; and the Calceolarias from H. Taylor, Esq., were all in good condition.

Cut flowers were represented by some excellent Roses from Miss Penrice, Norwich, the Rev. H. T. Frère, and Miss Steward. The former was to the fore in all the classes, and showed some excellent flowers, the season considered. General Jacquemont, Marchal Niel, Niphotos, Madame Caroline Kuster, Madame Marie Cointet, Perle de Lyon, and Madame Wood were remarkably good. Cut flowers of stove and greenhouse plants were scarce, and good, so were the *Zonal Pelargoniums*, which were well represented. There were also table decorations, bouquets, and wild flowers, the latter containing some pretty things, particularly the *Boe Orchis*.

Fruit and vegetables were sparingly shown, with the exception of Cucumbers, which were in strong force. The cottagers' classes were pretty well represented, and there was evidence, if the show be continued, that the cottagers growers will do their share in a proper way in the time to come.

Messrs. Daniels, Moss, Southampton, Norwich, sent some fine Mimosa, especially the Billis, very bright and effective; some good blooms of double *Pyræthrums*, and also of *Zonal Pelargoniums*, which were Highly Commended. Out in early spring, in

well-prepared beds, the plants won't in all probability bloom at the end of April and early in May. It has a close, compact habit of growth, which becomes completely covered with bright golden-yellow flowers.

Romford and Essex Horticultural: June 21.—The annual exhibition of this Society, which took place in Marshall's Park, was in most respects a good one. The exceptional feature was a falling off in the display of fruit and vegetables, the latter being by contrast of a very meagre description; indeed, in the matter of cottage produce there was barely more than two exhibitors in the arena, and these between them made up most of the prizes offered. It is to be regretted that the past ungenial weather has proved of great injury to the cottager in regard to this wholesome addition to his simple "fare."

The chief feature of interest was the collection of eight stove and greenhouse plants in flower, staged by Mcintosh, Esq., of Tlavinger Park (Mr. Bones, gr.), which, by a technical oversight on the part of Mr. Bones, was disqualified. His rival exhibitor in this class, Major-General Fytche (Mr. Lane, gr.), protested against the collection on the ground that four cuttings of *Stephanotis floribunda* originally placed in one pot to strike had not been separated but grown on to the specimen size, and this specimen had to be withdrawn from competition by Mr. Bones. This collection was, however, in every other respect in all respects that staged by Mr. Lane, containing, amongst others, of an excellent *Pimelea mirabilis*, *Erica obtusa*, &c.; and to it the judges awarded an extra 1st prize equal in amount to the 1st prize, which was attached to Mr. Lane's collection. Orchids were not numerous, though Mr. Lane's *Cattleya supera*. This exhibitor staged the single star plant—*F. Whitbourne*, Esq. (Mr. Douglas, gr.) being 1st, with neat masses, including *Dendrobium forosomum*, *Odontoglossum crispum*, &c.; for six Cape Heaths, Mr. Bones was 1st with a neat specimen of *Candollea* and others. Neat double *Pelargoniums* were staged by O. Hanbury, Esq. (Mr. Soder, gr.). Mr. Meadmore, Romford, had for the early season excellent cut roses. Mrs. C. Burley, Brentwood, staged the most elegant stand for table decoration, and in a kindred class Mr. S. Stier was 1st with very tasteful arrangements. Mr. Burley also showed his remarkable new *Pelargoniums*, Tom Bowling, Immaculata, Mrs. J. C. Quenell, and Silvia. Cape *Pelargoniums* were extremely well staged by Mr. Bones, his Rob Roy and Chieftain possessing a great quantity of flowers. The latter was 1st. Many other meritorious subjects were staged, but they call for no special remark. *W. E.*

Obituary.

We have this week to record the death of Mr. CHARLES LIDGARD, of Albion Road, Hammer-smith, one of the older members of the metropolitan fraternity of florists, now rapidly disappearing. Mr. Lidgard was born on February 19, 1810, and was consequently in his 68th year. He was a sound and conscientious judge of most of the popular florists' flowers, and as one of the representatives of this department of floriculture was selected many years since as a member of the Floral Committee of the Royal Horticultural Society, at the meetings of which he has subsequently been a pretty constant attendant, though of late his tottering footsteps have indicated that his life-journey was nearly accomplished. Mr. Lidgard was in former days a grower and exhibitor of *Ariculcas* and *Pansies*, and latterly has been a cultivator and exhibitor of *Celery*, for which he has occasionally taken prizes at South Kensington. He died on June 20, and was buried at Kensal Green on Tuesday last.

—On June 1 there died at Eccleshell, near Sheffield, at the age of sixty-two years, Mr. JOSEPH WALKER, a most worthy and successful florist, well known in his particular sphere, and respected by many attached friends among *Ariculca* cultivators. His death was unexpected, and he was interred at Eccleshell Church, near Sheffield, on June 4, in the presence of many sorrowing horticultural friends who left the ground with hearts full of "tranquil memories for the dead." From his earliest years a love of gardening pursuits, and especially of floriculture, was inherited by Joseph Walker. From his attached friend Ben Simonds we learn that when he first knew him, now many years ago, he was gardener at Banner

Cross, near Sheffield, and at that time was famous as a *Polyanthus* grower. Afterwards he removed to Ford Hall, Chapel-le-Frith, with the family with which he was living, carrying with him his stock of plants, and whilst there he purchased a few *Ariculcas*, not more than half a dozen, from which he raised the following fine seedlings—George Levick, John Simonite, Peveril of the Peak, Nimrod, and several others, which he lost. The most favoured were fine flowers, and have been most favourably mentioned; at present the varieties are in the hands of a few only, but they will be distributed as soon as the stock of plants in cultivation will admit of its being done. About five years ago Joseph Walker gave up active gardening pursuits, and came to reside again at Banner Cross, to manage the Eccleshell estate. At the early age of nine years Joseph Walker commenced the pursuit of gardening under his uncle, who was at that time gardener to Mr. Grievs, of Banner Cross, and when his uncle died he succeeded him in that post.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, JUNE 29, 1877.

MONTH AND DATE.	BAROMETRICAL.	TEMPERATURE OF THE AIR.		HYGROMETRIC.	DIRECTIONS OF WIND.	RAINFALL.
		Maximum.	Minimum.			
June 29	30.06	61.4	57.0	72.3	62	N.E. E. 1.4
30	30.04	59.7	53.3	62.7	58	S.W. W. 0.00
1	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
2	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
3	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
4	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
5	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
6	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
7	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
8	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
9	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
10	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
11	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
12	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
13	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
14	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
15	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
16	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
17	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
18	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
19	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
20	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
21	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
22	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
23	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
24	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
25	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
26	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
27	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
28	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
29	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
30	30.01	59.7	53.3	62.7	58	S.W. W. 0.00
Mean	30.01	59.7	53.3	62.7	58	S.W. W. 0.00

June 21.—Fine, bright, partially cloudy till evening. Overcast, dull, with few drops of rain at 11 A.M. — 22.—Fine, bright, very cloudy till 11 A.M. at intervals. Little rain fell in afternoon. Windy. — 23.—A fine day, cool and windy. — 24.—A fine day, but neither warm nor bright. Cool. — 25.—A fine bright day. Partially cloudy. Cool. — 26.—Fine, but very cloudy till dusk, with slight rain at times. Cool. Windy. — 27.—Dull and showery till 11 A.M. Fine and bright afterwards.

LONDON: Barometer.—During the week ending Saturday, June 23, in the vicinity of the metropolis the reading of the barometer at the level of the sea decreased from 30.10 inches at the beginning of the week to 30.04 inches by noon on the 17th, increased to 30.12 inches by the morning of the 22d, decreased to 29.57 inches by the afternoon of the 22d, and increased to 30 inches by the end of the week. The mean of the mean at sea level was 29.94 inches, being 0.14 inch below that of the preceding week, and 0.04 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 84° on the 19th, and 84½° on the 18th, to 67½° on the 23d; the mean range was 78°. The lowest temperatures of the air observed by night ranged from 50½° on the 21st to 57½° on the 22d; the mean for the week was 54½°. The mean daily range of temperature in the week was 23½°, the greatest range in the day was 39° on the 18th, and the least 13½° on the 22d. The mean daily temperatures of the air and the departures from their respective averages were as follows:—17th, 65° 7', +6° 4'; 18th, 67° 3', +7° 8'; 19th, 67° 8', +8° 1'; 20th, 65° 5', +5° 3'; 21st, 62°, +2° 9'; 22d, 62° 7', +2° 3'; 23d, 57° 4', -3° 3'. The mean temperature of the air for the week was 65° 8', being 3° 8' above the average of sixty years.

The highest readings of a thermometer with blackened bulb in vacuum, placed in sun's rays, were 135° on the 15th, 150° on the 17th, 147° on the 18th, and 144° on the 21st; the mean for the week was 142°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 39° on the 23d, 42½° on the 17th, and 42½° on the 18th; on the 22d the lowest readings were 5°.

The direction of the wind was E., and its strength gentle. The weather during the week was fine, bright, and warm.

Rain fell on the 22d, but only to the amount of 0.01 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 88° at Manchester, 85½° at Cambridge, 84½° at Blackheath, and 84° at Bristol; at Hull the highest temperature was 79°. The mean value from all stations was 79½°. The lowest temperatures of the air observed by night were 42½° at Cambridge, 43° at Sheffield, and 44½ at Colles; at Brighton the lowest temperature was 55°. The mean value from all stations was 48½°. The range of temperature in the week was the greatest at Cambridge, 42°, and the least at Portsmouth, 19°; The mean range of temperature from all stations was 31°.

The mean of the seven high day temperatures was the highest at Cambridge, 79½°, and the lowest at Sunderland, 65°; the general mean from all stations was 74°. The mean of the seven low night temperatures was the lowest at Cambridge, 40½°, and the highest at Portsmouth and Plymouth, both 57½°; the mean from all stations was 55°. The mean daily range of temperature in the week was the least, 15°, at both Portsmouth and Sunderland, and the greatest, 30°, at Cambridge; the mean daily range from all stations was 21°.

The mean temperature of the air for the week from all stations was 61½°, being 1½° higher than the value for the corresponding week in 1876. The highest was 63½° at Blackheath, Bristol, and Manchester; and the lowest 56½° at Sunderland.

Rain fell on two or three days in the week at most places. The amounts varied from seven-tenths of an inch at Nottingham to one-tenth of an inch at Cambridge. At Bedford, and several of Blackheath one-hundredth of an inch (only) fell. At Truro 2 inches was measured (1.92 inch of which fell on the 21st inst.), whilst at Plymouth and Bristol three-tenths of an inch was recorded. The average fall over the country for the week was six-tenths of an inch.

The weather during the week was fine and warm. Fog prevailed at Cambridge on the 19th, 20th, and 21st, and thunder was heard at Hull on the 22d.

SCOTLAND: Temperature.—The highest temperatures of the air varied from 77½° at Greenock, and 76° at Glasgow, to 59½° at Leith; the mean value from all stations was 69½°. The lowest temperatures of the air ranged between 46° at Perth, and 46° at Aberdeen. The mean from all stations was 44½°. The mean range of temperature from all stations was 25°.

The mean temperature of the air for the week from all stations was 56½°, being 2½° lower than the value for the corresponding week in 1876. The highest was 61° at Greenock, and the lowest 53½° at Leith.

Rain.—The amount of rain measured at Perth was 1½ inch; at Aberdeen 1 inch fell; at Paisley one-tenth of an inch only was measured; the general average fall over the country was six-tenths of an inch.

DUBLIN.—The highest temperature of the air was 81°, the lowest 38½°, the range 42½°, the mean 67°, and the fall of rain 0.29 inch.

JAMES GLAISHER.

Enquiries.

He that questioneth much shall learn much.—Eccos.

193. *WISTARIA* and *LABURNUM*.—Would it be possible to bud or graft the *Wistaria* on *Laburnum*, as the two are somewhat nearly allied? *G. Bath*, June 25. [Try it. Eds.]

Answers to Correspondents.

AMERICAN WATCHES: H. S. M. Your question is not a horticultural one, but the address you require is that of Messrs. Robbins & Appieton, Waltham Buildings, Holford Circus, E.C.

APPLES: H. B. What you send is the American Biting. Brush the stems wherever you can get at the insects with a hard brush, and in winter give the trunk a thorough cleaning with soap and water.

BOOKS: B. & S. Thompson's Gardener's Assistant, new edition (Blackie & Co.).

INSECTS: F. P. Orlatus (Darnus) geniculatus, Acaria, which is said by some to be injurious to trees and by others to be harmless. It would be well if our correspondent kept his eye upon them, and saved us the trouble of our own enquiries.

A. M.—J. H. Cytus arcticus, a timber-boring longicorn.—*T. S. P.* Anthrenus muscorum, the museum pest in all parts of the world. *A. M.*

INDIAN PLANTS: ATRILA USA SPICA.—This plant, which gained a First-class Certificate at the last meeting of the Floral Committee, was inadvertently allowed to pass as having been exhibited by Messrs. Fisher, Holmes & Co., instead of Mr. Holmes, Whittington Nursery, Lichfield.

LOBELIA: F. C. The sample sent was too small and too dry to be pressed and mounted. It is possible to give an opinion about it. The colour appears to be very deep and rich.

NAMES OF PLANTS: *R. B.* Rhus Cotinus, the Wig
Pl. D. *P. D.* We cannot undertake to name
 Roses or fibroids-flowers of any kind.—*J. C. C.*
Aralia floribunda—*C. E. F.*, *Cupressus Lawsoniana*;
 2, *C. macrocarpa*—*H. F.*, *M. G.* The specimens
 have been mislaid, and moreover, are of no horticultu-
 rical interest.—*T. K. B.* *Sempervivum punctatum*.—
W. T. V. A *Mesembryanthemum* escaped from
 Glasgow. We cannot recognize it.—*W. T. V.*
G. F. *Koeleria cristata*.—*T. L.* *Luzula nivea*;
 2, *Dianthus birus*.—*H. M. E.* *Pyrethrum roseum*.—
 2, *Drumstick*, 1, *Scandellia Martensii*; 2, *S. M.* varietal.
S. K. *Scandellia Martensii*; 2, *S. M.* varietal.
S. G. *Galatitola*; 6, *S. Martensii divaricata* (flexuos.);
 7, *S. uncinata*.—*W. W.* 1, some *Begonia*, but we
 cannot undertake to say which; 2, *Franco scaberrima*.
 3, *Adiantum capillus-veneris*. 4, *Polichnum angu-
 laeforme proliferum*; 5, *Adiantum cucullatum*. All
 very bad specimens, badly packed, like a wisp of hay,
 instead of flattened.—*H. F.* 1, *Rose* is the old
 double-white; 2, *Bignonia speciosa*.—*A. D. W.*
Polystichum aculeatum lobatum.—*C. W. D.* One of
 the double-flowered varieties of *Pyrethrum roseum*.
 They are usually increased by seeds (the seedlings vary
 or by division; but possibly the lower joints of the
 flowering stem would grow if planted as cuttings.
 We have, however, no experience on this point.
H. F. *Silene* *capitata*—*S. M.* *Scandellia
 Martensii*; 6, *S. Kraussii*. The other specimens are
 not sufficiently good.—*R. P.* Appears to be one of
 the *Cerithes*, but the specimen is too imperfect to
 say more of it.

PEACHES: *H. C. D.* This is simply a case of gumming,
 exactly like what takes place on the wood, and every
 cultivator knows what depends on it. You must
 apply similar remedies to your peaches. The
 blights is that it originated in the dull, cloudy weather.
M. J. B.—*T. P.* Your Peaches, which in earlier
 stages were attacked by the common green mildew,
 which is now dead, but supplying a nutriment to other
 fungi. Part of the threads are, however, due probably
 to the germinating of the spores of the mildew. We
 know too late to give any remedy. *M. J. B.*

FOSE: *H. H.* Evidently the "Old Double White,"
 belonging to, and a *fac simile* of "Maide's Blush,"
 of the old Scotch Rosa Alba. It is a double form of
 the "Maide's Blush," which was first introduced
 since Hooker, nurseryman, Breckley, Kent, issued a
 list of normal forms about the year 1836.
 VARIETATED VIOLETTA: *A. M.* *Viola*—A very variegated
 sport from *Veronica chamensis* is apparently a
 very pretty thing, and will probably prove useful as an
 edging plant. By all means give it a trial.
 VIOLETTA: *H. H.* We cannot name such a scrap.
 2, English Iris, Spanish Iris, Iris Favonia, persica,
 and reticulata; these are all cheap, and nothing could
 be more showy. Iris punia, and the varieties of Iris
 bornea, planted in autumn, so that they would have
 a good hold of the ground to resist the heat of sum-
 mer, we find do well on dry ground. Iris alba,
 caucasia, cristata, ibetica, stylosa, susiana, tuberosa,
 and we apprehend most of the other species of Iris,
 will do well on the soil described. With reference to
 Liliums, the varieties of bulbiferum, croceum, Dahuricum,
 candidum, longiflorum, chalcidonicum, marte-
 num, pulchellum, pinnatifidum, pinnatifidum, auratum,
 speciosum, and tigrinum—with due
 regard to shade and situation, and with a little pre-
 paration of the soil, will be better than any.
 All the Gladioli will succeed, we have no doubt, as the
 thing they have to contend with most is the excess of
 moisture in water. It is difficult to answer such
 questions satisfactorily, and our correspondence must
 do as other people have to do—try and find out
 for himself. The royal road to knowledge in the
 adaptation of plants is through the pocket in the first
 place, and those who do not prefer for the first
 step may follow the Irishman's example by omitting it
 and taking the next. 4. Any not too highly bred
 variety of *Cannula* we believe perfectly hardy in
 sheltered localities.

VINES: *J. V.* Without details of management we
 will give the probable cause of the constitutional
 disease which we have named, and which is
 turning yellow. The berries are simply scalded. Give
 air earlier in the morning.
 CATALOGUES RECEIVED.—Messrs. Messager & Co.
 (Mind. Hort.)—Messrs. Loughborough &
 Illustrated Catalogue of Greenhouses, Hot-water
 Apparatus, &c.—Messrs. W. Rollison & Sons (Toot-
 ing, London, S.W.), General Catalogue of Bedding,
 Straw, Greenhouses, Hardy, Alpine and Exotic
 Plants, Roses, Vines, &c.

COMMUNICATIONS RECEIVED.—G. D. V. (Horn)—A. O.
 (Mind. Hort.)—H. G. (Mind. Hort.)—W. C. I. T. A. O. W. E.
 S. S. A. M. T. W. D. S. J. A. (next week)—
 (Mind. Hort.)—S. A. (next week)—H. F. (next week)—
 J. S. A. W.

Markets.

COVENT GARDEN, June 28.

Business has been somewhat quieter during the week.
 Grapes selling badly, but Peaches in fine condition. Outdoor
 Straw has been made their appearance, and show
 signs of a fair crop. St. Michael Pines have now finished
 for the season, those of Mr. arriving being coarse, and dry
 eating. *James Weber, Wholesale Apple Market.*

FRUIT.

Appricots, per box	.. 2 s. 6 d.	Peaches, per doz.	.. 10 s. 0 d.
Cherries, per box	.. 3 s. 0 d.	Pears, per doz.	.. 10 s. 0 d.
Plums, per box	.. 3 s. 0 d.	Strawberries, per lb.	.. 0 s. 6 d.
Lemons, per 100	.. 10 s. 0 d.	Figs, per doz.	.. 0 s. 6 d.
Melons, each	.. 10 s. 0 d.		
Oranges, per 100	.. 12 s. 0 d.		

VEGETABLES.

Artichokes, English		Herb Radish, per lb.	4 s. 0 d.
Globe, doz.	.. 0 s. 4 d.	Leeks, per bunch	.. 0 s. 4 d.
Carrots, per 100	.. 10 s. 0 d.	Onions, per bush	.. 0 s. 6 d.
per bun.	.. 3 s. 0 d.	Minut, green, bunch 6	0 s. 6 d.
Chicory, per 100	.. 10 s. 0 d.	Onions, per bush (pot.)	.. 0 s. 10 s.
Aubergines, per doz.	6 s. 0 d.	— young, per bun.	0 s. 6 d.
Beans, French (new)		Shallots, per bush	.. 0 s. 6 d.
Chart, per 100	.. 13 s. 6 d.	Peas, green, per bush	3 s. 0 d.
Beet, per doz.	.. 10 s. 0 d.	per quart	.. 0 s. 6 d.
Calabros, per doz.	.. 10 s. 0 d.	Radishes, per qt.	.. 0 s. 6 d.
Carrots, per 100	.. 10 s. 0 d.	— Spanish, doz.	.. 1 s. 0 d.
— New French, per	.. 16 s. 0 d.	— New Jersey, doz.	.. 1 s. 0 d.
Cauliflowers, per doz.	3 s. 0 d.	Rhubarb, per bundle	6 s. 0 d.
Celery, per bundle	1 s. 0 d.	Salsify, per bundle	1 s. 0 d.
Chickweed, per 100	.. 10 s. 0 d.	Shallots, per bush	.. 0 s. 6 d.
Cucumbers, each	.. 0 s. 6 d.	Spinach, per bush	1 s. 0 d.
Endives, per doz.	.. 10 s. 0 d.	Tomatoes, per doz.	.. 3 s. 0 d.
F. B. Beans, per doz.	.. 10 s. 0 d.	Turrops, per bundle	4 s. 0 d.
Garlic, per lb.	.. 0 s. 6 d.	— new, per bundle	0 s. 6 d.
Coseleriches, green,		Vegetable Marrows	.. 0 s. 6 d.
— per quart	.. 0 s. 6 d.	— doz.	.. 3 s. 0 d.
Herbs, per bun.	.. 0 s. 4 d.		

Potatos, old, are nearly finished.—New: 10s. Jersey Kidneys, 14s. 6d. to 20s. cvt. King's, 12s. to 10s. cvt.

CUT FLOWERS.

Bovardias, per bun.	0 s. 4 d.	Pinks (white and co- loured), 12 bun.	1 s. 0 d.
Calceolarias, 12 bun.	0 s. 4 d.	Primula, double, per bunch	.. 1 s. 0 d.
Carnations, per dozen	6 s. 0 d.	Rhododendron, 12 bun.	4 s. 0 d.
12 bunches	3 s. 0 d.	Rose, 12 bunches	3 s. 0 d.
Chrysanthemum, 12 bun.	6 s. 0 d.	Rose, 12 bunches	3 s. 0 d.
Daisies, 12 bunches	1 s. 6 d.	Rose, 12 bunches	3 s. 0 d.
Eschscholias, per doz.	6 s. 0 d.	— (double), per doz.	1 s. 6 d.
Eucharis, per doz.	6 s. 0 d.	Rose, 12 bunches	3 s. 0 d.
Gardenia, per doz.	3 s. 0 d.	Rose, 12 bunches	3 s. 0 d.
H. B. Beans, per doz.	6 s. 0 d.	Rose, 12 bunches	3 s. 0 d.
Heliotropes, 12 spr.	0 s. 6 d.	Rose de Meaux, 12 bunches	.. 3 s. 0 d.
Lilium, 12 bunches	6 s. 0 d.	Spiraea, 12 spr.	0 s. 6 d.
Lilium, 12 spr.	0 s. 6 d.	Stephanotis, 12 spr.	2 s. 0 d.
Mignonette, 12 bun.	4 s. 0 d.	Stocks 12 bunches	4 s. 0 d.
Myrtles, 12 bun.	3 s. 0 d.	Sweet 12 bun.	1 s. 0 d.
Pelargonium, 12 spr.	0 s. 6 d.	Tropaeolum, 12 bun.	1 s. 0 d.
— zonal, 12 sprays	3 s. 6 d.		

PLANTS IN POTS.

Balans, per doz.	1 s. 6 d.	Heliotrope, per doz.	1 s. 6 d.
Bedding-out plants,		Hydrangea, per doz.	10 s. 0 d.
per doz.	.. 1 s. 6 d.	Lilium, per doz.	1 s. 6 d.
Begonia, per doz.	6 s. 0 d.	Myrtles, per doz.	1 s. 6 d.
Begonia, per doz.	6 s. 0 d.	Myrtles, per doz.	1 s. 6 d.
Calceolaria	.. 0 s. 18 d.	Palm in variety, each	3 s. 6 d.
Clematis	.. 2 s. 6 d.	Pelargonium, per doz.	9 s. 6 d.
Cockscomb, per doz.	0 s. 12 d.	Scarlet, per doz.	2 s. 6 d.
Coleus, per dozen	.. 3 s. 0 d.	Petunias, per doz.	9 s. 0 d.
Cyperus, doz.	.. 0 s. 12 d.	Rhododendron, per doz.	6 s. 12 d.
Chrysanthemum, per doz.	6 s. 0 d.	Rose, per doz.	1 s. 0 d.
— viridis, per doz.	18 s. 0 d.	— per doz.	.. 9 s. 18 d.
Chrysanthemum, per doz.	6 s. 0 d.	Rose, per doz.	1 s. 0 d.
Ficus elastica, per doz.	6 s. 15 d.	— fairy, per dozen	9 s. 18 d.
Fuchsia, per dozen.	4 s. 18 d.	Syringa, per doz.	12 s. 30 d.
Heaths, variety, doz.	1 s. 6 d.	Viburnum, per doz.	12 s. 18 d.

CATTLE.

On Monday, at Copenhagen Fields, the demand for
 beasts showed an increase, and prices on the average
 were higher. Sheep were readily disposed of at a small
 advance on last week's quotations. The trade was
 scarcely as good for lambs. The few calves on offer
 made about as of late. Quotations:—Beasts, 4s. 6d. to
 5s. 4d., and 5s. 8d. to 6s. 2d. calves, 5s. to 6s. 4d.,
 sheep, 5s. to 5s. 8d., and 5s. 10d. to 6s. 8d.; lambs,
 7s. to 8s. 2d.; pigs, 4s. to 5s. 4d.—On Thursday beasts
 sold slowly, but barely below the market's prices. Sheep were
 quite in demand. Lambs were barely 90 firm,
 and calves showed no change.

HAY.

At Whitechapel Market on Tuesday the supply of
 hay and straw was rather limited, but the trade
 was slow as to former prices. The price of Clover, 100s.
 to 110s.; inferior, 85s. to 95s.; prime meadow hay,
 117s. to 127s.; 100s. to 85s.; and straw, 43s. to 57s.
 per 16 of 35 trusses.—On Thursday there was a moderate
 supply on offer. The trade was slow, and un-
 changed prices. Quotations:—Clover, best, 100s. to 128s.;
 inferior, 85s. to 95s.; hay, best, 90s. to 112s.; inferior,
 70s. to 85s.; and straw, 44s. to 57s. per 16.—Cum-
 berland mixed quotations:—Superior meadow hay,
 128s. to 135s.; inferior, 105s. to 114s.; superior Clover,
 132s. to 140s.; inferior, 105s. to 120s.; and straw, 55s.
 to 60s. per load.

POTATOS.

The Borough and Spitalfields report state that there
 was a moderate supply, which changed hands steadily,
 at the following prices:—Old Fines, 12s. to 15s.;
 Viridians, 10s. to 16s.; rocks, 10s. to 12s.; Regents,
 10s. to 11s.; New Jersey, round, 10s. to 20s.; do,
 Kidneys, 20s. to 28s. per ton.—The imports into London
 during the week comprised:—287 packages, 28,000
 285 casks from Malta, 1975 bags Kolberg, 1506 pack-
 ages Lisbon, 625 casks 377 boxes Barleux, 300 bags
 181 packages Rotterdam, 67 sacks Rouen, 65 bags
 100 sacks Calcutta, 285 packages, 285 bags,
 300 sacks Jersey, 20 casks Oporto, and 12 bags
 Hamburg.

SIMPSON'S RED SPIDER, THRIPS, &c.,
 and the best of the highest order of application.
 Per quart, 2s. 6d. per gallon, 10s. 6d. per
 Supplied to Seedsmen and Chemists. Strongly recommended in
 the Garden and in many other places. For sale by
 Prepared by JOHN KILNER, Wortley, near Sheffield.

GISHURST COMPOUND.—
 G used by many of the leading Gardeners since 1852,
 against Red Spider, Mildew, Thrips, Greenfly, and other blights,
 and is sold in a most durable form. Price list, which covers the
 of from 2 to 16 ounces as a winter dressing for Vines and Fruit
 Trees. Has outlived many preparations intended to supersede it.
 Sold in all the principal Cities, Towns, and Villages, and by
 Wholesale by PRICE'S PATENT CANE COMPANY
 (Limited).

RUSSIA MATS.—A large stock of Archangel
 and Petersburg, for Covering and Packing (price on
 application), and also of Russia Mats, formerly, assisted by
 superior close-work, 6s. 100, 50s. and 45s. per 100; Faking Mats
 2s. 100, and 12s. 100; and all other descriptions of
 Mats at equally low rates. At
 J. BLACKBURN AND SONS, 4 and 5, Warmwood Street,
 London, E.C.

RUSSIA MATS, for Covering Garden
 frames.—ANDERSON'S TAGANROK MATS are
 the cheapest and most durable. Price list, which covers the
 of every class of Mat, forwarded post free on application.
 London, E.C. ANDERSON, 149, Commercial Street, Shoreditch,
 London, E.C.

M. R. MECH'S ADDRESS
 to his OLD FRIENDS and CUSTOMERS and to
 the PUBLIC:—

"As it has been erroneously supposed by some that I am no
 longer interested in my London business, I think it desirable
 to state that I continue to carry on as energetically, and I
 trust as successfully, as ever. My business, as formerly, assisted by
 my only son, who will in due time succeed me. It is now
 fifty years ago since I first commenced business in Leadenhall
 Street, and what changes have taken place! This every body
 would have said, and that the trade was immense; and
 monstache and beard are the order of the day, and the razor
 and strap trade is comparatively defunct. Then there were no
 railways, so people stayed at home and used wooden dressing-
 cases, and every body travels by rail, and we have dressing-
 bags to suit the altered conditions. Fifty years ago the poor
 geese supplied our pens, and many a now rich merchant in the
 City will remember the quality of Mech's skilling pen-knives; but
 steel pens have extinguished the pen-knife trade and the
 penkniving machines, and the geese are in peace, except at
 Michaelmas. In fact, steam has altered, and I may safely
 say, improved everything, and has made us a nation of travel-
 lers both by land and sea. I wonder how much time is now
 occupied in reading the steam-worked press? and how much
 less time is occupied in signing port wine, as we used to do
 fifty years ago, when we used to travel in Stage-coaches, and
 our 4 to 10 leaves cheaper some day, just as it has converted calico
 into 2s. 6d. to 6d. or less per yard. Then, again, a letter
 which used to cost 6d. to Cork is now carried for 3d.
 Sir Rowland's business, and I have not been in the
 business fifty years ago, when I first commenced on a small
 scale, I made it an axiom that what I sold should be good and
 useful, and I believe thousands who used the strap and paste,
 which I personally invented, can testify to this; it is, in fact,
 sometimes complained of that I stamped on my razors 'Ex-
 changed if not approved.' I have never, and shall never, so
 long as I live, deviate from that principle, because it is the true
 means to retain and increase one's connection. I devote my
 attention especially to the quality and convenience of arrange-
 ments in the dressing bag and dressing case department, and in
 the tasteless and unbecoming mode of presentation, as well
 as on the matter of dispatch boxes and writing cases. Although
 both razors and penknives have 'gone out,' our sportsmen
 remain, and 'sporting knives' form one of our special depart-
 ments. I feel firmly convinced that there is no fear of the
 important department in quality and price. In conclusion, I
 ask no favours, but simply desire that my customers should
 compare the quality of my goods with those of any other
 respectable establishments, and form their own conclusions.
 Most of my worthy assistants and workmen have been nearly
 forty years in my service, and long ago learned that civility and
 attention to the customer are as important as the quality of the
 articles sold. Illustrated catalogues will be forwarded
 post-free on application."

112, REGENT STREET, W., opposite Victoria Street, — 1877.

RUSTIC
 Garden Furniture
 IN
 GREAT VARIETY.

Garden Seats, Awnings and Tents, Rustic Tables, Chairs,
 and Flower Stands, Lawn Mowers, Garden Rollers, Water
 Barrows, Wheelbarrows, Garden Tools, Fancy Wirework,
 and all kinds of Garden Furniture at lowest market prices.

CATALOGUES POST-FREE.

THE PANKLIBANON, 59, BAKER STREET,
 BELGIAN GLASS FOR GREENHOUSES, &c.,
 Can be obtained in all sizes and qualities of,
 BETHAM & SON,
 8, LOWER GOWER STREET, LONDON, E.C.
 R. & S. have always a large Stock in London of 20 in.
 12 in., 20 in. by 14 in., 30 in. by 16 in., 16 oz., 20 oz. and 24 oz.



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

Under the Patronage of the Queen.
J. SMITH'S IMPERISHABLE STRATFORD LABELS.



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

Indestructible Terra-Cotta Plant Markers.
MAW AND CO.'S PATENT.—Prices, Printed Patterns, and Specimens, sent free on application; also Patterns of Ornamental Tile Pavements for Conservatories, Entrance Halls, &c.
MAW AND CO., Benthall Works, Bromley.

Rosher's Garden Edging Tiles.



THE ABOVE and many other PATTERNS are made in materials of great durability. The plainest sorts are especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense. As do "grown" Edgings, consequently being much cheaper. GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design. F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.
Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS and PROPAGATING BOXES; also for FOKLEY'S PATENT BEADED GARDEN WALL BRICKS.
Illustrated Price Lists free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 2s per square yard upwards. Pattern Sheets, of plain or more elaborate designs, with prices, sent free on application.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Suitable Paving of great durability. Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety. Slates, Cement, &c.
F. ROSHER AND CO., Brick and Tile Merchants.
See addresses above.

SILVER SAND, fine or coarse grain as desired. Prices by Post per Ton or Truck-load, on Wharf in London, or delivered direct from Pits in any Railway Station. Samples of Sand free by post. **FLINTS and BRICKS** supplied for Roekeries or Farmsteads. **KENT PEATS or LOAM** supplied at lowest rates in any quantities.

E. ROSHER AND CO.—Addresses see above.
N.B.—Orders promptly executed by Rail or to Wharves. A Liberal Discount to the Trade.

Gather Honey from Your Flowers.
NEIGHBOUR'S Celebrated BEEHIVES.
PHILADELPHIA EXHIBITION, 1876.
PARIS EXHIBITION, 1875.

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

Price, complete £4 15 0
Stand for ditto 9 10 6

THE L'JOUBAN or ITALIAN ALP BEE HIVE, much in request. G. N. & Sons supply a Swarm of bees with Italian Queen, in the Improved Cottage Hive, at £4. Price included.

an Italian Alp Queen, with full directions for uniting to Black Stocks, 12s each.

ENGLISH BEES.—Stocks and Swarms may be obtained as heretofore.
THE APIARY. By A. NEIGHBOUR. 6s. postage 4d.
A newly arranged Catalogue of improved Hives, with Drawings and Prices, sent on receipt of 2s stamps.
GEO. NEIGHBOUR AND SONS, 127, High Holborn, W.C., or 149, Regent Street, London, W.

Horizontal Shadings Manufactured by R. H. HAMPSON, Egerton Mills, Stockport, for Covering Glass, Protecting Wall Trees from Frost, Insects, &c., at the same time admitting Light and Sun. Any length from 10 to 100 yards.
Nos. 1, 2 and 3, 60 inches wide ... Superseding Tiffany.
No. 4, 60 inches wide ... For lighter purposes.

SHAW'S TIFFANY, ELASTIC NETTING, CANVAS, &c., for Shading, Protecting, and other Horticultural Purposes. For Samples and Prices apply to **JOHN SHAW AND CO.**, 29, Oxford Street, Manchester.

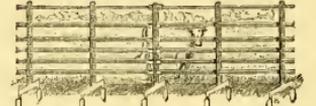
Established over a Quarter of a Century.



Is in use over many thousand miles, and has been awarded the Medals and highest Commendation of all the leading Agricultural Societies.

It is constructed with **POWERFUL WINDING STRAINING PILLARS, RIGID INTERMEDIATE IRON POSTS, STRONG and DURABLE WIRE CABLE STRANDS,** forming the most efficient Strained Iron Fencing known for agricultural and general purposes.

Continuous Bar Iron Fencing.



With bars secured by F. M. & Co.'s Patent Self-locking Joints, which effectually prevent the uprights being pushed aside, and are independent of loose pins, wedges, or staples.

IRON ENTRANCE and FIELD GATES, IN WROUGHT and CAST IRON.

Designed for the Mansion, Villa, or Farm, **WICKET and GARDEN GATES,** In Great Variety of Patterns.

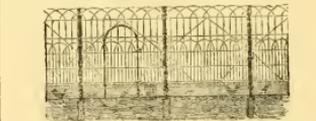
Iron Hurdles, Railing, Tree Gazards, FRUIT ESPALIERs, WALL FRUIT TRAINERS, &c.

Illustrated and Described in F. M. & Co.'s New Catalogue, sent on application.

LONDON BRANCH:
1, DELAHAY ST., WESTMINSTER, S.W.

THOMAS'S NEW POULTRY FENCING,

No. 508. Very strong and durable. Reduced Prices, 1877.



Galvanized after Manufacture, with Iron Standards, Painted Black, and SPACES 2 FEET APART, rendering it the strongest and best Fence in the Market.

This Ornamental Fencing is easily fixed or removed by any labourer, without extra cost.

PRICES—**6 feet high, 6s. per yard; 7 feet high, 7s. per yard.**

Including the Iron Standards and the Bolts and Nuts for securing the Panels to the Standards. Doors are charged 3s. extra, except when 12 yards are ordered, in which case a door is included.

Five per cent. discount allowed or prompt cash on Orders amounting to 40s. and upwards.

Illustrated and Priced Catalogues of every description of Horticultural Wirework on application.

J. J. THOMAS & CO., PADDINGTON WIREWORKS, 285 and 305, EDGWARE ROAD, LONDON, W.

NETTING FOR FRUIT TREES, SETTED BEES, RIBS STRAWBERRIES, &c.
TANNED NETTING for protecting the above from Frost, Hight, Birds, &c., 2 yards wide, 6d. per yard, or 100 yards, cost: 4 yards wide, 6d. per yard, or 20 yards, cost.
NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s. per yard; 1/2-inch mesh, 4 yards wide, 1s. 6d. per yard. **TIFFANY, 4d. 6d. and 7d. 6d. per piece of 20 yards.**
EATON AND DELLER, 6 & 27, Crooked Lane, London Bridge.

EDGINGTON'S GARDEN NETTING (the cheapest and most durable, at 1d. per square yard, or in quantities of 950, 500, or 100 yards, carriage free. **EDGINGTON'S MARQUEES and GARDEN TENTS** are the best.
EDGINGTON'S MARQUEES for Hire are the most handsome and capacious.
EDGINGTON'S RICK CLOTHS for 71 years have maintained their celebrity as the best.
HATHORN'S and WALLER'S NETTINGS. A quantity of good Second-hand Government TENTS from Abyssinia for Sale, Cheap.
Sample of material free on application.
Be particular.—**FREDK. EDGINGTON AND CO., 33 (only) Old Kent Road, London, S.E.**

HORTICULTURAL IRON and WIRE WORKS.

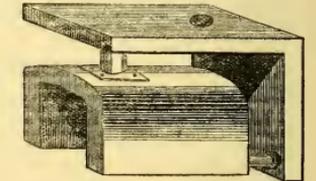


For CONSERVATORIES. Wirework Baskets. Wirework Trellis. Wirework Flower Stands. Ironwork Flower Stands. Balloon and other Trainers. GARDEN. Wirework Arches. Wirework Rustics. Wirework Summer-houses. Wirework Screens. Wirework Hurdles. Fencing. Iron and Wire Espaliers. Iron Gates. Water-piping laid on in Gardens.

Illustrated CATALOGUE of Designs.
R. HOLLIVAY, Iron and Wire Works, 2A, Portobello Terrace, Notting Hill Gate, London, W.

GREENHOUSES for SALE.—To be Sold Immediately, **THREE GREENHOUSES, THREE TWO-LIGHT CUCUMBER FRAMES, and a COLD FRAME—7 1/2 feet long.** Photographs will be sent on receipt of twelve stamps. Apply to **MR. ASTON, 11, Addison Road, Kensington, W.**

JONES'S PATENT "DOUBLE L" SAFFLE BOILER.



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

Sizes.	To heat of 4-in. Pipe.	Price.
High. 15 "	Long. 15 "	£ 4 9 0
20 "	18 "	4 0 0
20 "	18 "	4 0 0
24 "	24 "	7 0 0
24 "	24 "	8 10 0
24 "	24 "	1 000 0
24 "	24 "	1 400 0
28 "	28 "	1 800 0
28 "	28 "	2 000 0

Larger sizes if required.

From **MR. CHARLES VULNER, Nurseries, Baltham Hill, S.W.,** May 20, 1877.
"Having given your Patent 'Double L' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or **ESTIMATES for HOT-WATER APPARATUS,** erected complete, will be sent on application.

J. JONES and SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.
When order Boilers please refer to the above advertisement.

ROSES, ROSES, ROSES.

SPECIAL NOTICE.

THE GARDENERS' CHRONICLE

For NEXT SATURDAY (July 7), will contain a SPECIAL REPORT of the

GREAT ROSE SHOW AT ST. JAMES'S HALL ON JULY 4,

ALSO A

TWELVE-PAGE SUPPLEMENT

DEVOTED TO

THE ROSE,

And a Double-Page (18 inches by 13 inches)

BEAUTIFULLY COLOURED PLATE

Of a GROUP of ROSES, by FITCH, entitled

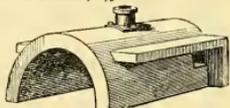
"OUR BOUQUET."

PRICE FIVEPENCE, POST-FREE FIVEPENCE-HALFPENNY.

 NOTICE TO ADVERTISERS.—As a very large Extra Circulation of the above Number is anticipated, Advertisers are particularly requested to send in application for space not later than Tuesday next.

W. RICHARDS, 41, WELLINGTON STREET, STRAND, LONDON, W.C.

Silver Medal, 1874.
THE TERMINAL SADDLE BOILER.—
 Highest Certificate, 1873; Highly Commended, 1873;
 and First-class Certificate, 1875.



"This Boiler possesses the rare merit of sucking all the heat from the fire."—*Gardener's Magazine*, p. 254.
 "I have no doubt the Best Boiler, that will burn any kind of fuel, is the Terminal Saddle."—*Journal of Horticulture*, p. 37.
 "For moderate cost and real efficiency the Terminal Saddle is one of the very best."—*The Gardener*, p. 25.
 Prospectus free.

T. JONES, Temple Street, Manchester.

AN EXTRAORDINARY BOILER.—
 During the Great Boiler Contest at Birmingham, in 1874, all Boilers were severely tested to prove their respective merits. One test was, "How long can each Boiler go without Night Attention?" However, one Boiler proved this to a surprising degree, as after being shut up for twelve hours (from 9 P.M. to 9 A.M.), it still retained its heat in 2000 feet of 6-inch pipes, and yet had more than a bushel of fire drawn from its furnace in the morning—equal, in point of fact, to seventeen hours of continuous firing. What a boon to Gardeners. This was THE CHAMPION, Deards' Patent Close-Coal Boiler, for Drawings and Prices of which send two stamps to

Messrs. DEARDS, Boiler Works, Harlow, who now have their Boilers at work in every county of England except three. Amateurs will also find THE WONDER, a smaller kind of Boiler, equally as satisfactory, and certainly "the best thing" out. Awarded five First Prize Silver Medals.

AGRICULTURAL LOCOMOTIVES,
 STEAM PLOUGHING MACHINERY
 ROAD LOCOMOTIVES, TRAMWAY LOCOMOTIVES,
 STEAM ROAD ROLLERS.

For Prices, Description, and Reports of Working, apply to the Manufacturers,
AVELING & PORTER,
 ROCHESTER, KENT; 75, CANNON ST., LONDON, E.C.; and 9, AVENUE MONTAIGNE, PARIS.

AVELING & PORTER'S ENGINES have gained the highest Prizes at every important International Exhibition. The two Medals for Progress and Merit were awarded them at Vienna for their STEAM ROLLERS and ROAD LOCOMOTIVES; and at the last trials of the Royal Agricultural Society of England their AGRICULTURAL LOCOMOTIVES gained the First Prize after exhaustive trials, when one of their 10-horse power Engines, fitted with single slide and ordinary link-motion, indicated 35-horse power, with a consumption of three and one-fifth pounds of coal per horse-power per hour.

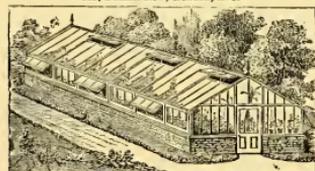
STEVENS,
TRENTHAM GREENHOUSE BOILER,



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

F. & J. SILVESTER,
HOT-WATER ENGINEERS, &c., &c.,
 Castle Hill Works, Newcastle, Staffordshire.
 Their Boilers are the only ones made with the sanction and under the inspection of the inventor, Mr. Stevens—all others being base imitations.

W. H. LASCELLES, HORTICULTURAL
 BUILDER, Finsbury Steam Joinery Works,
 121, Bunhill Row, London, E.C.



Estimates given on application for GREENHOUSES and CONSERVATORIES of all kinds, and to any design.

GARDEN BOXES and LIGHTS.	Each.
Portable Box with One Light, 6 feet by 4 feet, glazed good 16-oz. sheet glass, painted four coats, and packed ready for use	35 0
Portable Box with Two Lights, as above, each light 6 feet by 4 feet	65 0
LIGHTS ONLY.	
3 feet by 4 feet Light, not painted nor glazed	3 6
Doitto glazed, good 16-oz. sheet glass, and painted 4 coats	10 0
3 feet by 4 feet, not painted nor glazed	6 9
Doitto glazed and painted four coats	16 6

THE THAMES BANK IRON COMPANY,

Old Barge Wharf, Upper Ground Street, London,
 SURREY SIDE, BLACKFRIARS BRIDGE.



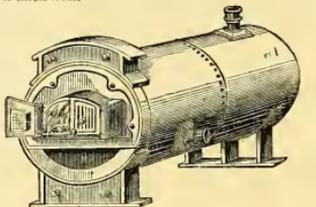
HOT-WATER BOILERS,
 PIPES, CONNECTIONS.

NEW PATENT "CLIMAX" BOILER (1874). See p. 666, 1874; *Gardener's Chronicle*.
 "GOLD MEDAL" BOILER (Birmingham, 1874).
 PATENT "EXCELSIOR" BOILER (1875).

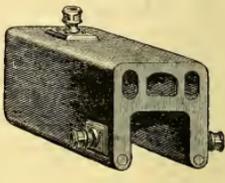
☞ The largest and most complete Stock in the Trade; upwards of Twenty Thousand Pounds' worth to choose from.

"WITLEY COURT" BOILER (Silver Medal 1872).
 "TRENTHAM IMPROVED" BOILER, with Water-way End and Smoke Consumer.
 "TUBULAR," and every other Boiler of known merit or excellence.

☞ Prize Medal Awarded at the National Contest, Birmingham, 1874.



("TRENTHAM IMPROVED" BOILER.)

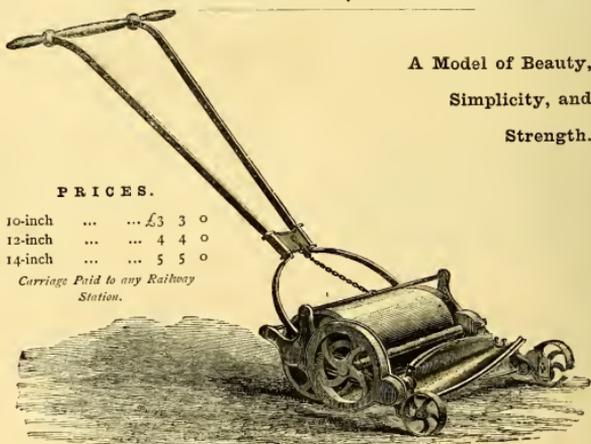


("GOLD MEDAL" BOILER.)

Which can be attached to any ordinary Boiler. These Tubes are the greatest Economisers of Fuel and Preservatives of Boilers, Fire Bars, and Furnace Fronts ever yet introduced to the public.
STANTON'S NEW PATENT FROST DEFYING LIQUID (see *Gardener's Chronicle*, Aug. 19, 1876).
HOT-WATER APPARATUS ERECTED COMPLETE.
 PRICE LIST on application; or, Six Stamps for DESCRIPTIVE CATALOGUE, 4th Edition.

"THE PRESIDENT," Latest and Most Improved American Lawn Mower.

A Model of Beauty,
 Simplicity, and
 Strength.



PRICES.

10-inch	... ..	£3 3 0
12-inch	... ..	4 4 0
14-inch	... ..	5 5 0

Carriage Paid to any Railway Station.

EVERY MACHINE UNCONDITIONALLY WARRANTED.

The "President" is the best Lawn Mower in use in the United States. The new and important improvements which have been made in these machines have wrought a complete revolution in their manufacture, resulting in their being celebrated throughout the world.

In offering to the Public this beautiful Machine, we desire to call attention to many valuable improvements. It has a noiseless positive ratchet, a full roller, and an adjustable iron handle, allowing the machine to follow an uneven surface on slopes, terraces, and borders, without any inconvenience to the operator.

This Mower is of lighter draught, and we feel warranted in saying, will outwear any in the market. The workmanship and material far surpass anything of this character now manufactured, and we invite inspection and comparison with any Lawn Mower yet produced.

The machine is simple, easy to adjust and keep in order, and the knives can be sharpened without removing them from the machine. The gearing is all perfectly enclosed, rendering it entirely free from clogging. In brief, if you want a Lawn Mower that will run easy, do good work, last you longer than any you can buy, and give you less trouble, we recommend the "President" with perfect confidence to your favourable consideration.

THOMAS MCKENZIE & SONS (LIMITED),
 79, MARK LANE, LONDON, E.C.;

DAWSON STREET, DUBLIN; and VICTORIA STREET, BELFAST.

Metallic Hothouse Builder to Her Majesty.

HENRY HOPPER
(late Clark & Hoop, formerly Clark),
HOTHOUSE BUILDER and HOT-WATER
APPARATUS ENGINEER,
55, Lionel Street, Birmingham. Established A.D. 1818.

BOOKS OF DESIGNS, &c. each.
The Extensive Ranges of Metallic Hothouses in the Royal Gardens, Windsor and Osborne, were executed at this Establishment.

SIR J. PAXTON'S HOTHOUSES for the MILLION.—Price List free. Conservatories, &c., built to Architects' Plans, or Designs prepared and Estimates given to Rough Sketches, with sizes required. Heating apparatus fixed complete. Pamphlet, with Illustrations, post-free, *gd.*
HERMAN and MORTON, 2, Gloucester Street, Regent's Park, London, N.W.

JOHN BOWMAN,
GREENHOUSES—every description,
VINERIES—all the latest improvements, } From £10
GLASSHOUSES—perfect ventilation, } to £1000.
HORTICULTURAL BUILDER and THIRTY
ED STREET, Newcastle.
West End Steam Joinery, Newcastle.

WILLIAM S. BURTON,
39, OXFORD STREET, W.

GARDEN NECESSARIES, consisting of
ARCHES, BASKETS, FLOWER STANDS, WIRE-
WORK, &c.
GARDEN SPRINKLES 4s. 6d. to 25s.
GARDEN ENGINES 30s. 6d. to 125s.
GARDEN WATER-BARROWS 45s. 6d. to 87s.
GARDEN ROLLERS 40s. 6d. to 85s.
GARDEN CHAIRS 7s. 6d. to 35s.
GARDEN SEATS 20s. 6d. to 300s.

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

WILLIAM S. BURTON,
GENERAL FURNISHING IRONMONGER, by appointment to H.R.H. the Prince of Wales, sends a Catalogue containing upwards of 800 Illustrations of his unvarnished Steel, with Lists of Prices and Plans of the Thirty Large Show-rooms, post-free.—39, Oxford Street, W.; 1, 11, 21, 31, and 41, Newmarket Street; 4, 5, and 6, Perry's Place; and 1, Newman Yard, Manufacturers, 54, Newman Street, and Newman Works, London, W.

For Sale, a
STEVENS' IMPROVED TRENTHAM
WROUGHT IRON HORTICULTURAL ROILER,
6 feet long by 1 feet diameter, fitted with Inlet and two Outlet Pipes, 1 1/2-inch and Grate complete. For price and particulars apply to
HILL and SMITH, Brierley Hill Ironworks, Dudley.

GRANITIC PAINT
for Staircase Purposes.
SILICATE ZOPHISA COMPOSITION. All colours. For Walls, Ceilings, either internal or external.
LIQUID SILICATE ZOPHISA COMPOSITION. Colourless. For Preserving Stone, Brick, or Cement. All perfectly washable and durable. To be had genuine only of the Original Manufacturer.

THE SILICATE ZOPHISA COMPOSITION and GRANITIC PAINT COMPANY, removed to
43, Fish-street Hill, London, E.C.

Oil Paint No Longer Necessary.



HILL and SMITH'S BLACK VARNISH for Preserving Ironwork, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the inventors, and its genuine good quality, notwithstanding a host of unprincipled imitations, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.
Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom.

UNSOLICITED RECEIVED MAY 3, 1877.
"The *Express*, Alderley Edge, Manchester.—Messrs Hill & Smith.—Sir.—For some 20 years I have used your 'Black Varnish,' and shall be glad if you will forward me another cask, as I consider it the best thing known for the preservation of all outdoor work, either wood, iron, or stone, which requires to be painted.—Yours respectfully, ALFRED LOWE, J.P."

Apply to HILL and SMITH, Brierley Hill Ironworks, near Dudley, and 43, Queen Victoria Street, London, E.C., from whom only it can be obtained.
CAUTION.—It having lately come to the knowledge of HILL & SMITH that spurious imitations of this Varnish are being offered by unprincipled dealers at a slight reduction in price, they would especially draw attention to the fact that every cask of their Varnish is legibly marked with their name and address, without which none is genuine.



PATRONS BY THE QUEEN,
H.R.H. THE PRINCE OF WALES,
H.R.H. THE DUKE OF EDINBURGH,
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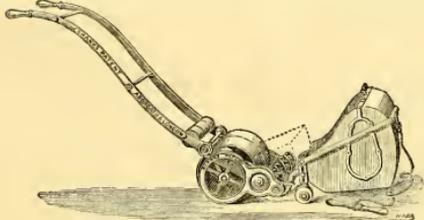
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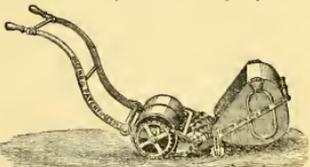
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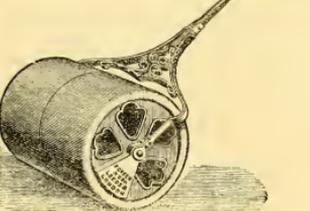
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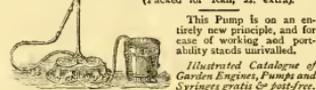
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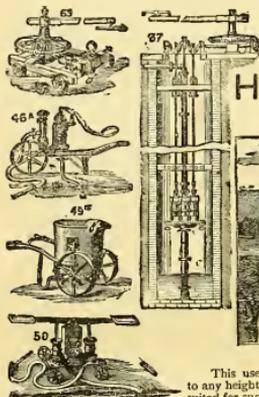
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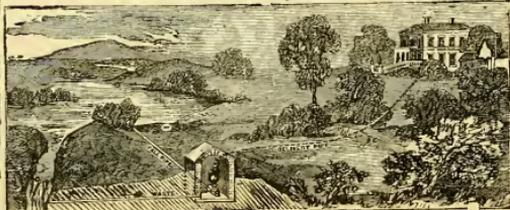
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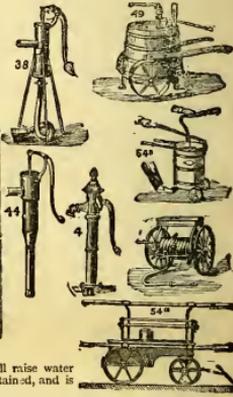


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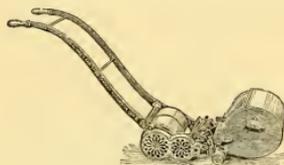
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